

**Date and Time:** Monday 9 September 2024 16:50:00 CEST

**Job Number:** 233028403

**Documents (100)**

1. [*USDA Encourages Ag Producers, Residents to Prepare for Tropical Storm Beta*](https://advance.lexis.com/api/document?id=urn:contentItem:60WS-N7T1-JDG9-Y3GH-00000-00&idtype=PID&context=1516831)

**Client/Matter:** -None-

**Search Terms:** removals and target or removals and emissions or removals and land or removals and forest or target and emissions or target and land or target and forest or emissions and land or emissions and forest or land and forest

**Search Type:** Terms and Connectors

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| News | Tijdlijn: jul 14, 2020 tot jul 14, 2021; Locatie: International; Plaats van publicatie: Europe; Taal: English |

2. [*Brazil ’s Amazon Soy Moratorium reduced deforestation*](https://advance.lexis.com/api/document?id=urn:contentItem:693W-H841-F129-P4GS-00000-00&idtype=PID&context=1516831)

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3. [*A blueprint for business to transition to a nature-positive future*](https://advance.lexis.com/api/document?id=urn:contentItem:60CB-C4N1-JDG9-Y425-00000-00&idtype=PID&context=1516831)

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4. [*A trillion dollars to fix the world*](https://advance.lexis.com/api/document?id=urn:contentItem:6234-NTK1-JBPJ-70M3-00000-00&idtype=PID&context=1516831)

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5. [*Global bioenergy with carbon capture and storage potential is largely constrained by sustainable irrigation*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2M1-JCWX-C2GN-00000-00&idtype=PID&context=1516831)

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6. [*Federal Register: Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly Pages 81813 - 81822 [FR DOC #2020-27523]*](https://advance.lexis.com/api/document?id=urn:contentItem:61JB-4TX1-F0YC-N3SG-00000-00&idtype=PID&context=1516831)

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7. [*Site condition report evaluation template: City Oils Limited*](https://advance.lexis.com/api/document?id=urn:contentItem:62F8-M8G1-F0YC-N3NW-00000-00&idtype=PID&context=1516831)

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8. [*What can we all do to slow the speed of climate change?*](https://advance.lexis.com/api/document?id=urn:contentItem:62PC-2031-JBNF-W07M-00000-00&idtype=PID&context=1516831)

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9. [*Endangered and Threatened Species: 12-Month Finding for the Monarch Butterfly*](https://advance.lexis.com/api/document?id=urn:contentItem:61JR-T7D1-F0YC-N48K-00000-00&idtype=PID&context=1516831)

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10. [*What can we all do to slow the speed of climate change?*](https://advance.lexis.com/api/document?id=urn:contentItem:62PC-2031-JBNF-W04B-00000-00&idtype=PID&context=1516831)

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11. [*Readout of the Third National Climate Task Force Meeting*](https://advance.lexis.com/api/document?id=urn:contentItem:62GV-W171-JDG9-Y1XY-00000-00&idtype=PID&context=1516831)

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12. [*A breath of fresh air in the field Agriculture should produce CO2-free. No furrows, a better soil structure. All this is expensive. It could be financed with the recipes of the energy turnaround*](https://advance.lexis.com/api/document?id=urn:contentItem:6312-28S1-DY2B-S2KR-00000-00&idtype=PID&context=1516831)

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13. [*Less talk, more action: 5 things the most successful partnerships share*](https://advance.lexis.com/api/document?id=urn:contentItem:60XG-GB61-F0YC-N1NB-00000-00&idtype=PID&context=1516831)

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14. [*Reductions in the deposition of sulfur and selenium to agricultural soils pose risk of future nutrient deficiencies*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2K1-JCWX-C0PR-00000-00&idtype=PID&context=1516831)

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15. [*FACT SHEET: President Biden’s Leaders Summit on Climate*](https://advance.lexis.com/api/document?id=urn:contentItem:62HG-58X1-JDG9-Y4Y2-00000-00&idtype=PID&context=1516831)

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16. [*WTAS: BUILDER Act*](https://advance.lexis.com/api/document?id=urn:contentItem:60XD-KF11-JDG9-Y4YF-00000-00&idtype=PID&context=1516831)

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17. [*Rep. Boebert Introduces 30 x 30 Termination Act to Block Biden Land Grab*](https://advance.lexis.com/api/document?id=urn:contentItem:62N1-KP41-JDG9-Y213-00000-00&idtype=PID&context=1516831)

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18. [*UKSA&#8217;s National Space Innovation Programme funds 21 UK organisations*](https://advance.lexis.com/api/document?id=urn:contentItem:61GM-V5G1-JDHR-82J1-00000-00&idtype=PID&context=1516831)

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19. [*Earth Day 2021: A turning point for climate action*](https://advance.lexis.com/api/document?id=urn:contentItem:62H2-9KX1-F0YC-N387-00000-00&idtype=PID&context=1516831)

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20. [*Endangered and Threatened Wildlife and Plants: Reclassification of Eugenia woodburyana as Threatened and Section 4(d) Rule*](https://advance.lexis.com/api/document?id=urn:contentItem:6147-V2D1-F0YC-N098-00000-00&idtype=PID&context=1516831)

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21. [*This project maps bees around the globe. Here's why that matters*](https://advance.lexis.com/api/document?id=urn:contentItem:61F5-2M11-JDG9-Y24X-00000-00&idtype=PID&context=1516831)

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22. [*Senate Committee Hansard: BILLS 22/02/2021*](https://advance.lexis.com/api/document?id=urn:contentItem:622M-2XN1-JDG9-Y3M0-00000-00&idtype=PID&context=1516831)

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23. [*Green electricity does not pay off Green activists and politicians claim that renewables are the cheapest source of energy. But why is there a need for compulsory regulation and subsidies? The really smart alternatives are being pushed aside*](https://advance.lexis.com/api/document?id=urn:contentItem:61MW-F341-JBK9-23R5-00000-00&idtype=PID&context=1516831)

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24. [*Council of the European Union: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulation (EU) No 1305/2013 of the European Parliament and of the Council ST 10439 2020 INIT03-09-2020*](https://advance.lexis.com/api/document?id=urn:contentItem:60ST-X421-F0YC-N3T8-00000-00&idtype=PID&context=1516831)

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25. [*COP26 President addresses UN Member States*](https://advance.lexis.com/api/document?id=urn:contentItem:61YV-JRN1-JDG9-Y3JG-00000-00&idtype=PID&context=1516831)

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26. [*Executive Order on Establishing The Wildland Fire Management Policy Committee January 14, 2021*](https://advance.lexis.com/api/document?id=urn:contentItem:61SY-21B1-JDG9-Y14N-00000-00&idtype=PID&context=1516831)

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27. [*COP26 President addresses UN Member States*](https://advance.lexis.com/api/document?id=urn:contentItem:61YM-X561-JDKC-R043-00000-00&idtype=PID&context=1516831)

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28. [*COP26 President addresses UN Member States*](https://advance.lexis.com/api/document?id=urn:contentItem:61YG-D5B1-F0K1-N3S3-00000-00&idtype=PID&context=1516831)

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29. [*COP26 President addresses UN Member States*](https://advance.lexis.com/api/document?id=urn:contentItem:61YG-D5B1-F0K1-N3T3-00000-00&idtype=PID&context=1516831)

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30. [*COP26 President addresses UN Member States*](https://advance.lexis.com/api/document?id=urn:contentItem:61YM-X561-F0K1-N183-00000-00&idtype=PID&context=1516831)

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31. [*COP26 President addresses UN Member States*](https://advance.lexis.com/api/document?id=urn:contentItem:61YM-X561-F0K1-N165-00000-00&idtype=PID&context=1516831)

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32. [*Federal Register: Reissuance and Modification of Nationwide Permits Pages 2744 - 2877 [FR DOC #2021-00102]*](https://advance.lexis.com/api/document?id=urn:contentItem:61S2-NGY1-F0YC-N486-00000-00&idtype=PID&context=1516831)

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33. [*Regional Conservation Partnership Program (ID: CCC\_FRDOC\_0001-0409)*](https://advance.lexis.com/api/document?id=urn:contentItem:61SY-39Y1-F0YC-N218-00000-00&idtype=PID&context=1516831)

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34. [*Federal Register: Regional Conservation Partnership Program Pages 3735 - 3744 [FR DOC #2021-00300]*](https://advance.lexis.com/api/document?id=urn:contentItem:61SY-21B1-JDG9-Y0TX-00000-00&idtype=PID&context=1516831)

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35. [*The need to secure an outcome that delivers for each and every country and that delivers for our planet as a whole*](https://advance.lexis.com/api/document?id=urn:contentItem:61YG-7N91-JD3Y-Y43S-00000-00&idtype=PID&context=1516831)

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36. [*The need to secure an outcome that delivers for every country and for our planet: COP26 President-Designate's speech*](https://advance.lexis.com/api/document?id=urn:contentItem:61YV-JRN1-JDG9-Y3JJ-00000-00&idtype=PID&context=1516831)

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37. [*The need to secure an outcome that delivers for each and every country and that delivers for our planet as a whole*](https://advance.lexis.com/api/document?id=urn:contentItem:61YG-7N91-JD3Y-Y44V-00000-00&idtype=PID&context=1516831)

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38. [*Freshwater Conservationists Worldwide Implore Federation of Bosnia and Herzegovina to Permanently Protect Europe’s Last Wild Rivers*](https://advance.lexis.com/api/document?id=urn:contentItem:60XG-GB61-F0YC-N1G0-00000-00&idtype=PID&context=1516831)

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39. [*Federal Register: Endangered and Threatened Wildlife and Plants; Endangered Status for the Beardless Chinchweed and Designation of Critical Habitat Pages 31830 - 31868 [FR DOC #2021-12005]*](https://advance.lexis.com/api/document?id=urn:contentItem:62XR-M051-F0YC-N020-00000-00&idtype=PID&context=1516831)

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40. [*FACT SHEET: Bipartisan Infrastructure Framework Creates Economic Opportunities for Rural America July 08, 2021*](https://advance.lexis.com/api/document?id=urn:contentItem:633V-6541-F0YC-N2D6-00000-00&idtype=PID&context=1516831)

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41. [*Federal Register: Subsistence Management Regulations for Public Lands in Alaska -2021-2022 and 2022-2023 Subsistence Taking of Fish Regulations Pages 17713 - 17726 [FR DOC #2021-07016]*](https://advance.lexis.com/api/document?id=urn:contentItem:62CS-TMN1-F0YC-N16F-00000-00&idtype=PID&context=1516831)

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42. [*Federal Register: Subsistence Management Regulations for Public Lands in Alaska -2021-2022 and 2022-2023 Subsistence Taking of Fish Regulations Pages 17713 - 17726 [FR DOC #2021-07016]*](https://advance.lexis.com/api/document?id=urn:contentItem:62CS-TMN1-F0YC-N13R-00000-00&idtype=PID&context=1516831)

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43. [*ZERO AMBITION IN THE FIGHT AGAINST CLIMATE CHANGE*](https://advance.lexis.com/api/document?id=urn:contentItem:62SD-YW51-DY2B-S0NB-00000-00&idtype=PID&context=1516831)

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44. [*A framework for national scenarios with varying emission reductions*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2B1-JCWX-C2S0-00000-00&idtype=PID&context=1516831)

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45. [*Plant diet may save 10 years of emissions*](https://advance.lexis.com/api/document?id=urn:contentItem:60SS-BTN1-JCS0-D048-00000-00&idtype=PID&context=1516831)

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46. [*Federal Register: Establishing the Wildland Fire Management Policy Committee Pages 6549 - 6552 [FR DOC #2021-01476]*](https://advance.lexis.com/api/document?id=urn:contentItem:61TS-VRM1-JDG9-Y4GC-00000-00&idtype=PID&context=1516831)

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47. [*How the EU plans to reshape its economy to limit climate change*](https://advance.lexis.com/api/document?id=urn:contentItem:634S-80M1-DXP9-9471-00000-00&idtype=PID&context=1516831)

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48. [*USA : Biden wants to pay farmers to grow carbon-capturing crops. It’s complicated.*](https://advance.lexis.com/api/document?id=urn:contentItem:631Y-BCH1-F0YC-N44Y-00000-00&idtype=PID&context=1516831)

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49. [*Global patterns of geo-ecological controls on the response of soil respiration to warming*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2B1-JCWX-C2SP-00000-00&idtype=PID&context=1516831)

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50. [*Overview of investment legislation in Papua New Guinea*](https://advance.lexis.com/api/document?id=urn:contentItem:60P0-PFJ1-DXYV-701P-00000-00&idtype=PID&context=1516831)

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51. [*Government funds UK companies at the forefront of space innovation*](https://advance.lexis.com/api/document?id=urn:contentItem:61G6-HN51-F0YC-N3Y2-00000-00&idtype=PID&context=1516831)

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52. [*Letter: Sustainable farming needs reform and new blood*](https://advance.lexis.com/api/document?id=urn:contentItem:62DV-1691-JB77-K3KC-00000-00&idtype=PID&context=1516831)

**Client/Matter:** -None-

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53. [*Wild at heart Last year Anders Povlsen, the UK's largest private landowner, lost three children in the Sri Lankan terror attacks. In a rare interview he talks to Dan McDougall about finding new purpose in his plans to reforest Scotland*](https://advance.lexis.com/api/document?id=urn:contentItem:61BS-JG51-JCBW-N29P-00000-00&idtype=PID&context=1516831)

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54. [*Intraspecific diversity as a reservoir for heat-stress tolerance in sweet potato*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2B1-JCWX-C2M2-00000-00&idtype=PID&context=1516831)

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55. [*Federal Register: Conservation Stewardship Program (CSP) Pages 63993 - 64003 [FR DOC #2020-22345]*](https://advance.lexis.com/api/document?id=urn:contentItem:611M-K981-F0YC-N495-00000-00&idtype=PID&context=1516831)

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56. [*Federal Register: Conservation Stewardship Program (CSP) Pages 63993 - 64003 [FR DOC #2020-22345]*](https://advance.lexis.com/api/document?id=urn:contentItem:611M-K981-F0YC-N49Y-00000-00&idtype=PID&context=1516831)

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57. [*Negative to positive shifts in diversity effects on soil nitrogen over time*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2M1-JCWX-C2C4-00000-00&idtype=PID&context=1516831)

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58. [*Affront to the patron Hardly any construction project in Germany is treated as obligingly by politicians as the planned factory of e-car manufacturer Tesla . Nevertheless, the company is not satisfied and has drawn up a list of demands*](https://advance.lexis.com/api/document?id=urn:contentItem:62D0-CRC1-DY2B-S311-00000-00&idtype=PID&context=1516831)

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59. [*Federal Register: Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Threatened Species Status With Section 4(d) Rule for Suwannee Alligator Snapping Turtle Pages 18014 - 18034 [FR DOC #2021-06946]*](https://advance.lexis.com/api/document?id=urn:contentItem:62D0-R6Y1-F0YC-N2TN-00000-00&idtype=PID&context=1516831)

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60. [*- University of Connecticut : Op-Ed: American Environmentalism's Racist Roots Have Shaped Global Thinking About Conservation*](https://advance.lexis.com/api/document?id=urn:contentItem:60V9-BM91-F0K1-N1SR-00000-00&idtype=PID&context=1516831)

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61. [*Federal Register: Endangered and Threatened Wildlife and Plants; Reclassification of the Red-Cockaded Woodpecker From Endangered to Threatened With a Section 4(d) Rule Pages 63474 - 63499 [FR DOC #2020-21510]*](https://advance.lexis.com/api/document?id=urn:contentItem:6118-7DF1-F0YC-N47D-00000-00&idtype=PID&context=1516831)

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62. [*COLORADO WILDERNESS ACT OF 2021; Congressional Record Vol. 167, No. 37 (House of Representatives - February 26, 2021)*](https://advance.lexis.com/api/document?id=urn:contentItem:6243-MR31-JDG9-Y0X8-00000-00&idtype=PID&context=1516831)

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63. [*Anders Povlsen on his radical mission to ‘rewild’ Scotland*](https://advance.lexis.com/api/document?id=urn:contentItem:61BR-RP61-JBNF-W1V7-00000-00&idtype=PID&context=1516831)

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64. [*What the parties are saying on the big issues facing Scotland Still undecided on how to cast your two votes? Compare and contrast the manifesto pledges on the key aspects in our at-a-glance guide by Kenny Farquharson*](https://advance.lexis.com/api/document?id=urn:contentItem:62KH-MJG1-JCBW-N22C-00000-00&idtype=PID&context=1516831)

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65. [*Federal Register: Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule for Sickle Darter Pages 71859 - 71873 [FR DOC #2020-24471]*](https://advance.lexis.com/api/document?id=urn:contentItem:618R-3571-JDG9-Y00X-00000-00&idtype=PID&context=1516831)

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66. [*Endangered and Threatened Species: Section 4(d) Rule for Sickle Darter*](https://advance.lexis.com/api/document?id=urn:contentItem:619Y-2MW1-F0YC-N3FX-00000-00&idtype=PID&context=1516831)

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67. [*ARE THESE THE LATEST VICTIMS OF THE TRENDY REWILDING' CRAZE?*](https://advance.lexis.com/api/document?id=urn:contentItem:62TN-YJT1-JCBD-D32F-00000-00&idtype=PID&context=1516831)

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68. [*Are these the latest victims of the trendy 'rewilding' craze? These shocking pictures revealed the plight of deer - including one in calf - killed illegally near a Scottish estate. But as GUY ADAMS reveals, they may also be evidence in a criminal inquiry*](https://advance.lexis.com/api/document?id=urn:contentItem:62TK-MX41-JBNF-W1N2-00000-00&idtype=PID&context=1516831)

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69. [*FAILURE OF THE ENDANGERED SPECIES ACT; Congressional Record Vol. 167, No. 103 (House of Representatives - June 14, 2021)*](https://advance.lexis.com/api/document?id=urn:contentItem:62XR-M051-F0YC-N0GW-00000-00&idtype=PID&context=1516831)

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70. [*UK Intellectual Property Office grants trade mark "Daisy Roots London Walks" to Sandra Crowley*](https://advance.lexis.com/api/document?id=urn:contentItem:61HW-X621-JDG9-Y1NM-00000-00&idtype=PID&context=1516831)

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71. [*Data-driven and interpretable machine-learning modeling to explore the fine-scale environmental determinants of malaria vectors biting rates in rural Burkina Faso*](https://advance.lexis.com/api/document?id=urn:contentItem:693W-H7S1-F129-P3NT-00000-00&idtype=PID&context=1516831)

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| News | Tijdlijn: jul 14, 2020 tot jul 14, 2021; Locatie: International; Plaats van publicatie: Europe; Taal: English |

72. [*Senate Committee Hansard: BILLS - Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021*](https://advance.lexis.com/api/document?id=urn:contentItem:622M-2XN1-JDG9-Y3M1-00000-00&idtype=PID&context=1516831)

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73. [*Scottish election manifestos: the Greens, Alba, Lib Dems and All for Unity*](https://advance.lexis.com/api/document?id=urn:contentItem:62KG-TSJ1-DY4H-K1S4-00000-00&idtype=PID&context=1516831)

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74. [*The most innovative UK-led space companies exploring new galaxies of technology in 2020*](https://advance.lexis.com/api/document?id=urn:contentItem:61DY-BS71-JCMN-Y089-00000-00&idtype=PID&context=1516831)

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75. [*Federal Register: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Yellow Lance Pages 18189 - 18215 [FR DOC #2021-06736]*](https://advance.lexis.com/api/document?id=urn:contentItem:62D6-R671-F0YC-N2YH-00000-00&idtype=PID&context=1516831)

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76. [*Blackstone Minerals announces completion of scoping study for development and restart of Ta Khoa Nickel-Cu-PGE Project*](https://advance.lexis.com/api/document?id=urn:contentItem:6141-NTT1-DYG0-714D-00000-00&idtype=PID&context=1516831)

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77. [*The EU’s biomass dilemma: can burning trees ever be green?*](https://advance.lexis.com/api/document?id=urn:contentItem:631X-V121-DXP9-933J-00000-00&idtype=PID&context=1516831)

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78. [*Senate Committee Hansard: BILLS - Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021 - Second Reading*](https://advance.lexis.com/api/document?id=urn:contentItem:622M-2XN1-JDG9-Y3M2-00000-00&idtype=PID&context=1516831)

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79. [*How human activity threatens the world’s carbon-rich peatlands*](https://advance.lexis.com/api/document?id=urn:contentItem:61PN-C2H1-JDG9-Y1S1-00000-00&idtype=PID&context=1516831)

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80. [*Endangered and Threatened Species: Reclassification of the Red-Cockaded Woodpecker from Endangered to Threatened with a Section 4(d) Rule*](https://advance.lexis.com/api/document?id=urn:contentItem:611M-K9S1-F0YC-N12V-00000-00&idtype=PID&context=1516831)

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81. [*Denitrification is the major nitrous acid production pathway in boreal agricultural soils*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2K1-JCWX-C0N2-00000-00&idtype=PID&context=1516831)

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82. [*The Brazilian forestry giant striking a blow for sustainability*](https://advance.lexis.com/api/document?id=urn:contentItem:610C-P151-JB77-K53K-00000-00&idtype=PID&context=1516831)

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83. [*UK will be hit by 'food shortages, power cuts, floods and catastrophic heatwaves every TWO years by 2050': Damning report slams government for failing to prepare homes and services for devastating climate change*](https://advance.lexis.com/api/document?id=urn:contentItem:62XP-6J51-DY4H-K32C-00000-00&idtype=PID&context=1516831)

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84. [*Environmental Quality Incentives Program (Updated on 26-10-2020)*](https://advance.lexis.com/api/document?id=urn:contentItem:615F-1KN1-F0YC-N33F-00000-00&idtype=PID&context=1516831)

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85. [*Environmental Quality Incentives Program (ID: CCC\_FRDOC\_0001-0405)*](https://advance.lexis.com/api/document?id=urn:contentItem:615F-1KN1-F0YC-N33V-00000-00&idtype=PID&context=1516831)

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86. [*Federal Register: SES Positions That Were Career Reserved During CY 2020 Pages 21490 - 21631 [FR DOC #2021-08389]*](https://advance.lexis.com/api/document?id=urn:contentItem:62H2-9KX1-F0YC-N3HN-00000-00&idtype=PID&context=1516831)

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87. [*Federal Register: Environmental Quality Incentives Program Pages 67637 - 67648 [FR DOC #2020-23437]*](https://advance.lexis.com/api/document?id=urn:contentItem:615N-JS51-F0YC-N31C-00000-00&idtype=PID&context=1516831)

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88. [*Reflections and projections on a decade of climate science*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2B1-JCWX-C2R0-00000-00&idtype=PID&context=1516831)

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89. [*Agrifood Brief: Brexit crunch time - no time to chew the fat*](https://advance.lexis.com/api/document?id=urn:contentItem:61VW-R821-JCF9-43YH-00000-00&idtype=PID&context=1516831)

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90. [*UK Intellectual Property Office grants trade mark "BYŌME" to The Byome Ltd*](https://advance.lexis.com/api/document?id=urn:contentItem:616Y-DM81-JDG9-Y0T3-00000-00&idtype=PID&context=1516831)

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91. [*Council of the European Union: COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS An EU-wide assessment of National Energy and Climate Plans Driving forward the green transition and promoting economic recovery through integrated energy and climate planning PDF document ST 10874 2020 INIT18-09-2020*](https://advance.lexis.com/api/document?id=urn:contentItem:60YG-W0J1-JDG9-Y1XD-00000-00&idtype=PID&context=1516831)

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92. [*INTRODUCTION OF BILLS AND JOINT RESOLUTIONS; Congressional Record Vol. 167, No. 56 (Senate - March 25, 2021)*](https://advance.lexis.com/api/document?id=urn:contentItem:629F-5T01-JDG9-Y25W-00000-00&idtype=PID&context=1516831)

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93. [*Extraordinary human energy consumption and resultant geological impacts beginning around 1950 CE initiated the proposed Anthropocene Epoch*](https://advance.lexis.com/api/document?id=urn:contentItem:671W-P2K1-JCWX-C0HP-00000-00&idtype=PID&context=1516831)

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94. [*RDPE Annual Implementation Report for 2017 Citizens’ Summary*](https://advance.lexis.com/api/document?id=urn:contentItem:60FV-NTJ1-F0YC-N1P0-00000-00&idtype=PID&context=1516831)

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95. [*Rewilding policy futures: Maori whakapapa and the ecology of the subject*](https://advance.lexis.com/api/document?id=urn:contentItem:6BNK-7DJ1-DY41-72RG-00000-00&idtype=PID&context=1516831)

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96. [*Federal Energy Regulatory Commission Issues Letter providing the Scoping Document 2 for the North Hartland Hydroelectric and Clay Hill Road Line 66 Transmission Projects under P-2816 et al*](https://advance.lexis.com/api/document?id=urn:contentItem:60R9-2V51-JDG9-Y3GN-00000-00&idtype=PID&context=1516831)

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97. [*Plenty more fish in the sea?*](https://advance.lexis.com/api/document?id=urn:contentItem:61YX-6Y31-DY5K-Y0M2-00000-00&idtype=PID&context=1516831)

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98. [*Indefinite Detention, Colonialism, and Settler Prerogative in the United States*](https://advance.lexis.com/api/document?id=urn:contentItem:61XJ-VJP1-JBMY-H001-00000-00&idtype=PID&context=1516831)

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99. [*Sen. Booker, Rep. McEachin Announce Reintroduction of The Environmental Justice Legacy Pollution Cleanup Act*](https://advance.lexis.com/api/document?id=urn:contentItem:62XR-M051-F0YC-N04J-00000-00&idtype=PID&context=1516831)

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100. [*Federal Register: Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of the California Condor in the Pacific Northwest Pages 15602 - 15623 [FR DOC #2021-05646]*](https://advance.lexis.com/api/document?id=urn:contentItem:628W-8H61-F0YC-N2KP-00000-00&idtype=PID&context=1516831)

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# [***USDA Encourages Ag Producers, Residents to Prepare for Tropical Storm Beta***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60WS-N7T1-JDG9-Y3GH-00000-00&context=1516831)

Impact News Service

September 21, 2020 Monday

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**Length:** 1568 words

**Body**

Washington: US Department of ***Agriculture*** has issued the following news release:

The U.S Department of ***Agriculture*** (USDA) reminds communities, farmers and ranchers, families and small businesses in the path of Tropical Storm Beta that USDA has programs that provide assistance in the wake of disasters. USDA staff in the regional, state and county offices stand ready and are eager to help.

In a continuing effort to serve the American people, USDA partnered with FEMA and other disaster-focused organizations and created theDisaster Resource Center. This central source of information uses a searchable knowledgebase of disaster-related resources powered by agents with subject matter expertise. The Disaster Resource Center and web tool now provide an easy access point to find USDA disaster information and assistance.

Steps to follow to prepare for a possible weather emergency

Severe weather forecasts often present the possibility of power outages that could compromise the safety of stored food. USDA encourages those in the path of the storm to take the following precautions:

* Store food on shelves that will be safely out of the way of contaminated water in case of flooding.

1. Place appliance thermometers in both the refrigerator and the freezer to ensure temperatures remain food safe during a power outage. Safe temperatures are 40°F or below in the refrigerator, 0°F or below in the freezer.
2. Freeze water in small plastic storage bags or containers prior to a storm. These containers are small enough to fit around the food in the refrigerator and freezer to help keep food cold.
3. Freeze refrigerated items, such as leftovers, milk and fresh meat and poultry that you may not need immediately—this helps keep them at a safe temperature longer.
4. Consider getting 50 pounds of dry or block ice if a lengthy power outage is possible. This amount of ice should keep a fully-stocked 18-cubic-feet freezer cold for two days
5. Group foods together in the freezer—this ‘igloo’ effect helps the food stay cold longer.
6. Keep a few days’ worth of ready-to-eat foods that do not require cooking or cooling.

Protecting livestock during a disaster

USDA's Animal and Plant Health Inspection Service (APHIS) is urging everyone in the potential path of the storm to prepare now – not just for yourselves, but also for your pets and your livestock.

* Plan for evacuation – know how you will evacuate and where you will go. If it is not feasible to evacuate your livestock, be sure to provide a strong shelter and adequate food and water that will last them until you can return.

1. If you are planning to move livestock out of state, make sure to contact the State Veterinarian’s Office in the receiving state before you move any animals. You also may contactAPHIS Veterinary Servicesstate offices for information and assistance about protecting and moving livestock.
2. Listen to emergency officials and evacuate if asked to do so.

USDA also developed adisaster assistance discovery toolspecifically ***targeted*** to rural and ***agricultural*** issues. The tool walks producers through five questions that generate personalized results identifying which USDA disaster assistance programs can help them recover from a natural disaster.

USDA also encourages residents and small businesses in impact zones to contactUSDA officeswhich meet their individual needs.

Owners of meat and poultry producing businesses who have questions or concerns may contact the FSISSmall Plant Help Deskonline 24 hours a day, by phone at 1-877-FSIS-HELP (1-877-374-7435) and by email [*atinfosource@fsis.usda.gov*](mailto:atinfosource@fsis.usda.gov)

Helping producers weather financial impacts of disasters

Livestock owners and contract growers who experience above normal livestock deaths due to specific weather events, as well as to disease or animal attacks, may qualify for assistance under USDA’sLivestock Indemnity Program.

Livestock, honeybee and farm-raised fish producerswhose mechanically harvested or purchased livestock feed was physically damaged or destroyed; or who lost grazing acres or beehives due to an extreme weather event may qualify for assistance. Producers of non-insurable crops who suffer crop losses, lower yields or are prevented from planting ***agricultural*** commodities may be eligible for assistance under USDA'sNoninsured Crop Disaster Assistance Programif the losses were due to natural disasters.

Helping operations recover after disasters

USDA also can provide financial resources through itsEnvironmental Quality Incentives Programto help with immediate needs and long-term support to help recover from natural disasters and conserve water resources. Assistance may also be available for emergency animal mortality disposal from natural disasters and other causes.

Farmers and ranchers needing to rehabilitate farmland damaged by natural disasters can apply for assistance through USDA’sEmergency Conservation Program. USDA also has assistance available for eligible private ***forest*** landowners who need to restore forestland damaged by natural disasters through theEmergency ***Forest*** Restoration Program(PDF, 257 KB). For declared natural disasters that lead to imminent threats to life and property, the USDA Natural Resources Conservation Service (NRCS) can assist local government sponsors with the cost of implementing recovery efforts like debris ***removal*** and streambank stabilization to address natural resource concerns and hazards through theEmergency Watershed Protection Program.

Orchardists and nursery tree growers may be eligible for assistance through USDA’sTree Assistance Programto help replant or rehabilitate eligible trees, bushes and vines damaged by natural disasters.

When major disasters strike, USDA hasan emergency loan programthat provides eligible farmers low-interest loans to help them recover from production and physical losses. USDA’s emergency loan program is triggered when a natural disaster is designated by the Secretary of ***Agriculture*** or a natural disaster or emergency is declared by the President under the Stafford Act. USDA also offers additional programs tailored to the needs of specific ***agricultural*** sectors to help producers weather the financial impacts of major disasters and rebuild their operations.

Helping individuals recover after disasters

In the aftermath of a disaster, USDA’s Food and Nutrition Service (FNS) works with state, local and nongovernmental organizations to provideemergency nutrition assistance– including food packages and infant formula – to households, shelters and mass feeding sites serving people in need. Upon request from states, the agency also provides emergency flexibilities in the administration of its nutrition assistance programs. In recent weeks, the agency has allowed the purchase of hot foods with SNAP benefits in California, Louisiana, and Iowa, and has provided automatic replacement of benefits due to food loss in California, Connecticut, Louisiana, Massachusetts, North Carolina, and Texas. In some circumstances, the agency also works with local authorities to provide Disaster Supplemental Nutrition Assistance Program (D-SNAP) benefits, as it has inLouisianaandIowa, for individuals and families who do not normally receive SNAP benefits. Once the disaster recovery efforts begin, emergency nutrition assistance and flexibilities requested by states and approved by FNS will be posted to theFNS Disaster Assistance website.

USDA National Institute of Food and ***Agriculture*** provides support for disaster education through theExtension Disaster Education Network (EDEN). EDEN is a collaborative multi-state effort with ***land***-grant universities and Cooperative Extension Services across the country, using research-based education and resources to improve the delivery of services to citizens affected by disasters. EDEN's goal is to improve the nation's ability to mitigate, prepare for, prevent, respond to and recover from disasters. EDEN equips county-based Extension educators to share research-based resources in local disaster management and recovery efforts. The EDEN website offers a searchable database of Extension professionals, resources, member universities and disaster agency websites to help people deal with a wide range of hazards, and food and ***agricultural*** defense educational resources.

Producers with coverage through the Risk Management Agency (RMA) administered Federal crop insurance program should contact their crop insurance agent for issues regarding filing claims. Those who purchased crop insurance will be paid for covered losses. Producers should report crop damage within 72 hours of damage discovery and follow up in writing within 15 days. The Approved Insurance Providers (AIP), loss adjusters and agents are experienced and well trained in handling these types of events. As part of its commitment to delivering excellent customer service, RMA is working closely with AIPs that sell and service crop insurance policies to ensure enough loss adjusters will be available to process claims in the affected areas as quickly as possible.

Helping with the long-term recovery of rural communities

USDA Rural Development has more than 50 programs available to rural and tribal communities for the repair and modernization of rural infrastructure including drinking and waste water systems, solid waste management, electric infrastructure, and essential community facilities such as public safety stations, health care centers and hospitals, and educational facilities.

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[***Brazil’s Amazon Soy Moratorium reduced deforestation***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:693W-H841-F129-P4GS-00000-00&context=1516831)

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**Body**

Main

The scale and pace of Brazilian Amazon deforestation in the early 2000s provoked widespread concern about biodiversity loss, endangerment of indigenous livelihoods, and local to global climate impacts–. In response, policymakers and other stakeholders adopted a broad array of policies to reduce deforestation,. Government interventions included, among other policies, the designation of indigenous ***lands*** and new conservation areas, elevated penalties against and enforcement of deforestation restrictions, and sanctions directed at local jurisdictions with the highest rates of deforestation–. At the same time, private actors pioneered several interventions to ***remove*** deforestation from commodity supply chains, including the Amazon Soy Moratorium (ASM) and agreements in the cattle sector–. While these public and private policies contributed to an 84% decrease in the rate of deforestation in the Brazilian Amazon between 2004 and 2012 (falling from 27,800 km2 to 4,500 km2), deforestation rates doubled between 2012 and 2019 (reaching 9,800 km2). To sustain ***forest*** conservation in the Amazon, and to replicate Brazil’s success globally, the scientific community must provide a deeper understanding of the relative contributions and interactions among the policies that contributed to Brazil’s deforestation decline.

The ASM was set in motion in May 2006, when a provocative Greenpeace report linked three American commodities traders (Cargill, Bunge and ADM) to millions of hectares of Amazon deforestation and called for the companies to withdraw from the region. By July of the same year, the Brazilian Association of Vegetable Oil Industries and National Association of Grain Exporters responded by announcing the ASM—a 2-year ban on the purchase of soy from newly deforested areas in the Amazon biome–. Together, these organizations were responsible for 90% of the trade in soy produced in the Amazon. The ASM was renewed annually or biannually until 2016, when it was renewed indefinitely. The original agreement prohibited soy production on ***lands*** cleared after 24 July 2006, although the date was later revised to 22 July 2008 to align with a cut-off established in the 2012 revision of Brazil’s ***Forest*** Code.

To monitor and enforce its restrictions, the ASM integrates a variety of public and private institutions. Monitoring and enforcement is overseen by the soy working group (Grupo de Trabalho da Soja in Portuguese; hereafter, GTS)—a partnership between soy traders, non-governmental organizations and government agencies. Each year, the GTS commissions maps of soy extent in the Amazon. In municipalities with a sizeable amount of soy (>5,000 ha for most years), areas of new expansion are assessed for overlap with post-2008 deforestation, as identified by the government’s deforestation monitoring system (Projeto de Monitoramento do Desmatamento na Amazônia Legal por Satélite in Portuguese; hereafter, PRODES). To link violations to specific actors, the ASM previously encouraged and now requires that soy producers register their properties in the Rural Environmental Registry (Cadastro Ambiental Rural in Portuguese; hereafter, CAR). Using a combination of information in the CAR, satellite data and field visits, the GTS prepares an annual list of farms with ASM violations. Soy traders are required to reference this list to determine whether potential suppliers have violated the ASM.

By prohibiting the purchase of soy grown on recently cleared ***lands***, the ASM creates multiple disincentives that could decrease deforestation in the Amazon. Soy farmers who believe that the ASM will restrict the sale of non-compliant soy are unlikely to invest in the direct conversion of ***forests*** to soy production. In addition, the ASM prohibits soy expansion into pastures or other croplands that were cleared after the historic cut-off. As a result, the ASM may limit the expected revenues from future ***land*** uses for currently ***forested*** ***lands***, decreasing the speculative value of deforestation for cattle ranchers and other investors. Farmer opposition to the ASM and Brazil’s ***Forest*** Code has inspired efforts to end these ***land*** use restrictions, which have intensified under the Bolsonaro administration,.

The impacts of the ASM are of particular interest to inform similar private supply-chain interventions in other sectors and geographies,. Since these policies are voluntary, there is concern that supply-chain interventions will not generate real conservation benefits. However, recent research has revealed several trends that suggest that the ASM has played a role in reducing Amazon deforestation. First, rates of deforestation and soy conversion have declined dramatically since the early 2000s,–. In addition, the share of new soy planted on recently cleared ***lands*** and the share of recently deforested areas converted to soy have both sharply declined,,. At the same time, soy has continued to expand in the Amazon, predominately over pasture,. Accordingly, compliance with the ASM has been remarkably high. The GTS has identified only 64,316 ha of soy that were planted in violation of the moratorium, accounting for 1.4% of all soy grown and 1.2% of all deforestation in the Amazon biome. Nevertheless, these studies do not integrate formal counterfactual analysis to isolate the impacts of the ASM from contemporaneous policy and economic changes. As a result, the causal effect of the ASM on deforestation is still unknown.

In this study, we seek to attribute deforestation reductions to the ASM, to quantify that impact and to document the mechanisms by which the ASM has achieved success. We focus our study on Brazil’s Arc of Deforestation, which we define as the portions of the Amazon and Cerrado biomes that fall within 300 km of the Amazon biome or Legal Amazon borders (Fig. ). To measure the ASM’s impact, we leverage a natural experiment made possible by the policy’s distinct commodity and geographic focus (that is, soy production in the Amazon biome). We use a triple-differences model that isolates post-ASM changes in deforestation rates occurring only on soy-suitable portions of the Amazon biome relative to ***forests*** located in the Cerrado biome or in non-soy-suitable locations in the Amazon biome (Methods). This model and the extensions described in the Methods and allow us to isolate the impact of the ASM from the impacts of concurrent public policy reforms, such as the federal government’s Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm), the expansion of conservation and indigenous preserves and the introduction of public property registries,,,. Without careful consideration of these policies, their impact on deforestation rates might be inappropriately attributed to the ASM. In addition, we explore deforestation patterns outside of the boundaries of the ASM to assess whether leakage has undermined the benefits of the ASM or biased our results. Finally, we quantify heterogeneity in the impacts of the ASM to help identify the policy design elements that have contributed to its effective implementation. We anticipate that careful consideration of the ASM’s impacts can guide effective implementation of sustainable supply-chain interventions in other sectors and contribute to sustained protection of the Amazon’s ***forests*** and communities.

Deforestation patterns across Brazil’s Arc of Deforestation.

Our study focuses on the portions of the Amazon and Cerrado biomes located within 300 km of either the Amazon biome or Legal Amazon boundary (inset). Our analysis measures the impact of the ASM by comparing post-ASM changes in deforestation rates occurring on soy-suitable portions of the Amazon biome, relative to non-suitable locations, or locations in the Cerrado biome portion of the Legal Amazon (main panel).

Results

Avoided deforestation

The ASM had a substantial effect on deforestation rates in the Amazon. Before its adoption in 2006, deforestation trends were similar across the Amazon and Cerrado portions of the study region, declining sharply after reaching a peak in 2003 (Fig. ). After 2006, deforestation rates stabilized and/or increased in the Cerrado but continued to decline within the Amazon biome, except for in 2016 when deforestation spiked across both biomes due to widespread burning that was exacerbated by El Nino–Southern Oscillation-related drought conditions. This cross-biome divergence in deforestation rates was most pronounced on soy-suitable ***lands*** (Fig. ). Before the adoption of the ASM, deforestation rates were slightly higher on soy-suitable ***lands*** in the Amazon biome (3.2% per year) than within the Cerrado portion of the Legal Amazon (2.7% per year) as well as the portion of the Cerrado biome outside of the Legal Amazon (2.8% per year). Between 2006 and 2016, soy-suitable deforestation rates in the Amazon biome fell to 1.1% per year—0.24 percentage points (pp) per year below the rate of soy-suitable deforestation in the Cerrado portion of the Legal Amazon, and 0.89 pp per year below the rate in the Cerrado biome outside of the Legal Amazon. These broad trends are consistent with a variety of studies that have argued that the dramatic decline in deforestation experienced after 2006 is indicative of the ASM’s effectiveness,,,–.

Time-varying impacts of the ASM.

a,b, We differentiate regional deforestation trends in locations that are not suitable for soy (a) and in locations that are soy suitable (b). Our primary triple-differences model specification compares the post-ASM change in deforestation rates across ecological biomes (green versus pink lines) and across locations with differential suitability for soy production (a versus b). c, Temporal variation in the estimated treatment effect of the ASM based on this triple-difference estimator within the Legal Amazon, with the shaded area representing the 95% confidence interval. The dashed vertical lines in a–c depict the year (2006) in which the ASM was adopted.

Our econometric models isolate and quantify the ASM’s impacts by comparing relative trends in deforestation rates across biomes and soy suitability classes (Table ). Relative to the Cerrado portion of the Legal Amazon, the annual deforestation rate on soy-suitable locations declined by 0.70 ± 0.37 pp in the Amazon biome after the adoption of the ASM (all error bounds describe the 95% confidence interval). Similarly, post-ASM deforestation in soy-suitable regions of the Amazon biome declined by 0.98 ± 0.25 pp relative to non-soy-suitable portions of the biome. Using a triple-differences model that integrates both of these comparisons, we estimate that the ASM reduced annual deforestation by 0.66 ± 0.32 pp. This smaller estimated effect reflects the fact that soy-suitable areas of the Cerrado biome also experienced a relative decline (0.42 ± 0.23 pp) in deforestation in the latter half of our study period. To quantify what would have happened had the ASM never been adopted, we construct a counterfactual scenario in which we add our estimated treatment effect (0.66 ± 0.32 pp) to historical 2006–2016 deforestation rates. When compared with this counterfactual scenario, the ASM reduced deforestation rates by 35 ± 16%, contributing 18,000 ± 9,000 km2 of avoided deforestation in the Amazon biome. As a point of comparison, previous research found that public policies in the Amazon reduced deforestation by 54%. Our results are robust to additional model specifications that use alternative functional forms, definitions of soy suitability, subsamples and control variables (see ). Parallel trends in deforestation rates before the ASM’s implementation give us additional confidence in the validity of our estimates (Fig. ).

Estimates of avoided deforestation as a result of the ASM

|  | **1** | **2** | **3** | **4** | **5** |
| --- | --- | --- | --- | --- | --- |
| **Amazon DD** | **Cerrado DD** | **Soy-suitable DD** | **Non-soy-suitable DD** | **Triple difference** |
| Suitable for soy × post-ASM | ?0.00975\*\*\*(0.00126) | ?0.00420\*\*\*(0.00116) |  |  | ?0.00330\*\*\*(0.00122) |
| Amazon biome × post-ASM |  |  | ?0.00696\*\*\*(0.00189) | ?0.00129(0.00107) | ?0.000208(0.00126) |
| Amazon biome × suitable for soy × post-ASM |  |  |  |  | ?0.00656\*\*\*(0.00163) |
| Sample | Within-Amazon biome | Outside-Amazon biome | Within soy-suitable areas | Outside soy-suitable areas | All points |
| Number of points | 161,862 | 113,033 | 141,234 | 138,126 | 279,360 |
| Number of municipalities | 330 | 336 | 493 | 545 | 563 |

The columns present difference-in-differences (DD) and triple-difference regressions contrasting changes in deforestation rates across biomes and soy suitability ratings. The models were estimated using ***forested*** points in the Legal Amazon. They include additional covariates and interaction terms, as described in the Methods. All regressions are linear probability models using a binary indicator of deforestation as the dependent variable. Coefficient estimates can be interpreted as a change in the probability of deforestation, measured in percentage points. Standard errors, clustered by municipality, are given in parentheses. \*\*\*P < 0.01.

Further evidence of the ASM’s impact can be seen in changing rates and locations of soy establishment across the study region (Fig. ). Consistent with previous studies, we found that the rate of soy expansion into previously cleared locations increased across the entire study region in the post-ASM period,,. Although the Amazon biome saw the greatest increases in soy establishment in previously cleared areas, it experienced the greatest relative declines in soy establishment in previously ***forested*** locations. Preferential planting of soy on previously cleared ***land*** provides additional support for the ASM’s effectiveness and highlights the potential for supply-chain governance to reduce deforestation while allowing for continued cropland expansion. While this effect would be expected to reduce soy-driven deforestation leakage to other biomes, it could accelerate indirect ***land*** use change due to displaced cattle ranching. We explore this concern further in our discussion of leakage dynamics below.

Changes in patterns of soy establishment.

We differentiate soy establishment trends by region (colour) and starting ***land*** use (dashed lines: non-***forested*** locations; solid lines: ***forested*** locations). The Amazon biome experienced the largest relative increase in soy establishment in non-***forested*** locations and the largest relative decrease in soy establishment in ***forested*** locations.

Complementarities with public policies

The ASM is part of a mosaic of public and private policies that have reduced deforestation in Brazil (Methods and Supplementary Fig. ),,,,,. Declines in deforestation predate the adoption of the ASM and extend beyond the Amazon biome. In addition, our estimate of the impact of the ASM (−0.66 pp) represents only 25% of the 2.6 pp decrease in deforestation rates that occurred between 2002 and 2016 on soy-suitable locations in the Amazon biome portion of the Arc of Deforestation. We assess the overlapping impacts of the ASM and public reforms, including those contained within the PPCDAm, by exploring differences in deforestation trends across the Amazon biome, the Legal Amazon portion of the Cerrado biome and the portion of the Cerrado biome falling outside of the Legal Amazon (Methods and Supplementary Table , column 6). We show that, after the adoption of the PPCDAm in 2004, the Legal Amazon experienced a 0.46 ± 0.44 pp decrease in deforestation across biomes and soy suitability classes. However, soy-suitable locations within the Amazon biome experienced a significant (P < 0.05) additional decrease in deforestation after the adoption of the ASM in 2006. Further tests outlined in the Methods and provide evidence that the estimated impacts of the ASM are additional to impacts from a variety of public policies that previous studies have recognized for their conservation impacts. These include heightened public deforestation monitoring, Central Bank restrictions on rural credit for farmers that violated ***forest*** requirements, and the government’s blacklist of priority municipalities (Supplementary Table , columns 1–4)–,,,.

Nevertheless, the ASM only reduced deforestation when its threat of market sanctions was reinforced through GTS monitoring or property-level registration in the CAR (Table , column 4). Although the ASM nominally applies to the entirety of the Amazon biome in Brazil, its full implementation is restricted to those locations where the GTS monitors for violations (see ). Furthermore, the ASM now requires farmers to register their properties with the CAR, to help assign culpability for violations and to encourage farmers to meet public ***forest*** laws. We mapped the spatiotemporal footprints of the GTS monitoring system and CAR property registrations within the state of Mato Grosso to explore interactions between these policy design elements. Deforestation reductions did not occur in locations that were neither monitored by GTS nor registered with the CAR (−0.16 pp; P = 0.46). Similarly, properties that were registered with the CAR outside of the ASM’s spatiotemporal footprint did not experience a significant decline in deforestation (0.050 pp; P = 0.70). Post-ASM deforestation declines in the Amazon biome were concentrated in places that were either monitored by GTS (−1.14 pp; P < 0.01) or registered in the CAR (−1.15 pp; P < 0.01). Locations where the ASM was fully monitored and enforced through both property registration and GTS monitoring experienced the greatest decrease in deforestation (1.53 pp; P < 0.01). The complementary interaction between CAR registration and the ASM could reflect either increased registration in the CAR by properties selling into ASM supply chains, or improved enforcement of the ASM as a result of access to CAR registration data. The lack of statistically significant impacts from CAR registration in the absence of market sanctions, or from the ASM’s threats of market sanctions in the absence of monitoring and enforcement, provide additional evidence to support a causal interpretation of the relationship between the ASM and declining deforestation. In addition, these results provide context for the interpretation of previous studies assessing the conservation impacts of the CAR; the importance of interactions between property registration and private sanctions could be one explanation for observed heterogeneities in the CAR’s conservation benefits,,.

Complementarities between the ASM, CAR and monitoring by the GTS

|  | **1** | **2** | **3** | **4** |
| --- | --- | --- | --- | --- |
| ASM only | ?0.00656\*\*\*(0.00211) | ?0.00237(0.00217) | ?0.00548\*\*\*(0.00204) | ?0.00160(0.00215) |
| CAR only |  | 0.00007(0.00128) |  | ?0.00050(0.00128) |
| ASM and CAR |  | ?0.01174\*\*\*(0.00252) |  | ?0.01146\*\*\*(0.00239) |
| ASM and GTS |  |  | ?0.01300\*\*\*(0.00245) | ?0.01141\*\*\*(0.00247) |
| ASM, CAR and GTS |  |  |  | ?0.01526\*\*\*(0.00285) |
| Number of points | 102,246 | 102,246 | 102,246 | 102,246 |
| Number of municipalities | 186 | 186 | 186 | 186 |

The models were estimated using ***forested***, soy-suitable points in the states of Mato Grosso and Pará. They include additional covariates and interaction terms, as described in the Methods. All regressions are linear probability models using a binary indicator of deforestation as the dependent variable. Coefficient estimates can be interpreted as a change in the probability of deforestation, measured in percentage points. Estimates presented in this table represent linear combinations of coefficients on individual and interaction terms to capture aggregate effects of multiple policies. Standard errors, clustered by municipality, are given in parentheses. \*\*\*P < 0.01.

The ASM has leveraged existing public institutions, such as property registries (CAR) and deforestation monitoring (PRODES), to reduce implementation costs and increase its credibility among a diversity of stakeholders. Our results indicate that these public investments played a critical role in enabling the ASM’s effectiveness. For example, the GTS’s use of PRODES deforestation data allowed for the rapid deployment of a monitoring system that was trusted by diverse stakeholders. Similarly, the combined effect of property-level accountability from the CAR and the ASM’s sanctions achieved deforestation reductions that neither policy was able to achieve in the absence of the other,. The impacts from the overlapping adoption of the ASM, GTS monitoring and CAR registration aggregate nonlinearly, highlighting the potential for complementarities in public and private policies to amplify their individual impacts–.

Leakage

The ASM’s focus on soy-driven deforestation in the Amazon may have encouraged leakage of deforestation by, for example, pushing soy production into other biomes or displacing cattle ranching into new ***forest*** frontiers,,,. Such leakage poses two potential challenges to the interpretation of our primary results. First, by affecting deforestation rates in our control units, leakage could bias our estimate of avoided deforestation within the Amazon biome. Second, leakage could weaken the ASM’s aggregate carbon and biodiversity impacts by trading avoided deforestation within its footprint for accelerated deforestation in other locations. Below, we evaluate the evidence for and implications of three leakage pathways cited in previous assessments of ***land*** use change dynamics in Brazil: leakage across the biome boundary; indirect ***land*** use change; and the exploitation of gaps in the ASM’s rules and monitoring.

By drawing attention to the Amazon biome, the ASM could have pushed soy-driven deforestation into the neighbouring Cerrado. Such spillovers are typically thought to concentrate near a policy’s boundary,,, and ongoing ***agricultural*** expansion has been observed in the Cerrado during the post-ASM period–,. However, soy-suitable locations in the Cerrado that were close to the biome boundary did not experience a relative increase in deforestation compared with more distant soy-suitable locations (Table , columns 1–3). While this provides some evidence against cross-biome leakage, it does not rule out the possibility that leakage has affected both proximate and distant portions of the Cerrado. This is an important consideration given the growing share of soy-driven deforestation occurring in the more distant portions of the Cerrado that fall outside of the Legal Amazon (Figs. and ),,,,. To explore whether the ASM encouraged the emergence of new soy frontiers in the Cerrado, we tested whether different regions experienced a post-ASM relative increase in deforestation on soy-suitable locations compared with non-suitable locations (Supplementary Table ). After the adoption of the ASM, soy-suitable locations in the Cerrado experienced a similar or greater decline in deforestation compared with non-suitable locations. These results provide no evidence to support the concern that the ASM caused significant cross-biome leakage of soy-driven deforestation.

Tests for cross-biome leakage, indirect ***land*** use change, evasion and on-farm leakage

|  | **All points** | **Soy suitable** | | **Not converted to soy** | | **Not GTS monitored** | **Properties with soy-suitable *land*** | | **Properties growing soy in 2000** | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **All points** | **Not converted to soy** | **All points** | **Not converted to soy** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Post-ASM × Amazon biome | ?0.000708(0.00129) |  |  | ?0.00180\*(0.000988) | ?0.00156(0.00109) | ?0.00224(0.00192) | ?0.00478\*\*(0.00190) | ?0.000872(0.00129) | ?0.0194\*\*(0.00866) | 0.0000749(0.00490) |
| Post-ASM × Amazon biome × suitable for soy | ?0.00538\*\*\*(0.00190) |  |  |  |  | 0.00261(0.00248) |  |  |  |  |
| Post-ASM × close | ?0.00150(0.00117) | 0.00279(0.00204) |  |  | 0.000393(0.00102) |  |  |  |  |  |
| Post-ASM × close × suitable for soy | 0.00255(0.00237) |  |  |  |  |  |  |  |  |  |
| Post-ASM × proximity |  |  | 0.00200(0.00713) |  |  |  |  |  |  |  |
| Number of points | 279,360 | 57,963 | 57,963 | 272,836 | 272,836 | 83,680 | 101,014 | 95,812 | 4,990 | 4,433 |
| Number of municipalities | 563 | 286 | 286 | 563 | 563 | 467 | 475 | 474 | 111 | 108 |

The models were estimated using ***forested*** points located within the Legal Amazon. They include additional covariates and interaction terms, as described in the . All regressions are linear probability models using a binary indicator of deforestation as the dependent variable. Coefficient estimates can be interpreted as a change in the probability of deforestation, measured in percentage points. Standard errors, clustered by municipality, are given in parentheses. \*P < 0.1; \*\*P < 0.05; \*\*\*P < 0.01.

Soy expansion into non-***forested*** locations accelerated after the adoption of the ASM (Fig. ), which could have encouraged and enabled additional ***forest***-to-pasture conversion. At the same time, the ASM may have disincentivized pasture establishment on soy-suitable ***forests*** by prohibiting the future establishment of soy on recently cleared pastures, thereby weakening one incentive for speculative clearing. To explore these contrasting dynamics, we repeated our primary analysis using only locations that were not converted to soy by 2017 (Table , columns 4 and 5). We find that the Amazon biome and the proximate portions of the Cerrado biome did not experience significant post-ASM increases in deforestation for non-soy uses relative to more distant portions of the Cerrado. While previous research raised the concern that indirect ***land*** use change might undermine the effectiveness of the ASM, our results are consistent with multiple subsequent studies that showed that indirect ***land*** use change in the Amazon was rare or declined dramatically after the adoption of the ASM,,. Future research exploring the impact of the ASM on ***land*** markets and the behaviour of ranchers could provide additional insights into the indirect ***land*** use change effects of single-commodity supply-chain interventions.

A final concern is that farmers could exploit gaps in the ASM’s restrictions, monitoring and enforcement to undermine the policy’s effectiveness. For example, farmers in the Amazon biome might respond to the ASM by accelerating ***forest***-to-soy conversion outside of the GTS’ monitoring footprint. However, compared with deforestation rates in the Cerrado, we find that unmonitored portions of the Amazon biome did not experience a relative increase in post-ASM deforestation (Table , column 6), suggesting that farmers did not change their behaviour to exploit monitoring gaps. Second, since the ASM does not sanction farmers for deforesting ***land*** on their farms that is not planted with soy, the ASM may encourage soy farmers to increase deforestation for other uses,,. Instead, consistent with other studies, we find that soy properties in the Amazon did not experience a significant post-ASM increase in non-soy deforestation relative to properties in the Cerrado (Table , columns 8 and 10). Declines in aggregate deforestation rates on these properties provide further evidence supporting our broad conclusion that the ASM reduced deforestation (Table , columns 7 and 9).

These results and the expanded discussion in the emphasize that cross-biome and on-farm leakage and indirect ***land*** use change did not lead to a significant, observable increase in deforestation within the Amazon biome or the nearby Legal Amazon portions of the Cerrado. It is possible that complementary conservation policies have inhibited leakage within the Legal Amazon. Similarly, ***agricultural*** intensification induced by the ASM could moderate market-mediated leakage,. Importantly, all observations we used for controls in our primary analyses fall within the Legal Amazon. As a result, leakage should not bias our primary finding that the ASM reduced deforestation on soy-suitable portions of the Amazon biome by 0.66 ± 0.32 pp. Nevertheless, our empirical approach does not allow us to rule out more distant and indirect forms of leakage and, consequently, we are unable to make claims of the ASM’s effectiveness in reducing aggregate global deforestation,. Future research using simulation models or broader scales of analysis could better quantify the global effects of the ASM.

Conclusions

The ASM reduced deforestation in the Brazilian Amazon, demonstrating that private, zero-deforestation agreements in ***agricultural*** supply chains can yield meaningful conservation benefits. The determinants of the ASM’s effectiveness provide multiple insights that are directly relevant to ongoing efforts to extend zero-deforestation commitments to other geographies and commodities. First, the ASM was adopted by traders who purchased 90% of the soy produced in the Amazon. This level of market penetration ensured a consistent and strong market signal for compliance and provided protections against leakage. Efforts to expand the ASM into the Cerrado, where less than half of soy exports are covered by company-specific zero-deforestation commitments, will face greater barriers in achieving widespread reductions in deforestation,,.

Second, the ASM is only one part of the diverse mix of policies that collectively yielded a dramatic decline in Amazon deforestation. Between 2003 and 2016, soy-suitable deforestation in the Amazon biome declined by 2.6 pp. We find that the ASM contributed one-quarter of this decline. However, even in achieving this success, the ASM was dependent on critical complementarities with public conservation policies. Our analysis indicates that public deforestation monitoring and property registration were essential preconditions for the ASM’s success. Supply-chain interventions that attempt to circumvent governments that are unwilling or unable to provide a strong enabling environment may struggle to replicate the ASM’s impact.

Finally, despite the ASM’s success, debates over whether to continue the ASM in its early years and recent political changes in Brazil have highlighted the potentially tenuous nature of all ***forest*** conservation policies. In 2019, members of the Bolsonaro government joined with the association representing Brazilian soybean farmers, Aprosoja, in criticizing the ASM as an inequitable and undemocratic breach of Brazil’s ***Forest*** Code by multinational corporations. At the same time, the government has sought to weaken conservation requirements in the ***Forest*** Code. In the end, seemingly redundant public and private mandates may serve as an important buffer against policy inconsistencies emerging from changes in either business or political cycles.

Methods

Study region

Our analysis focused on the Brazilian Amazon and Cerrado biomes, where deforestation and soy expansion were prominent during our study period (2002–2016). The Amazon biome, where the ASM applies, covers 4.2 million km2 and shares a 6,165-km border with the neighbouring Cerrado biome. We further restricted our analysis to those portions of the Amazon and Cerrado biomes falling within 300 km of the eastern borders of either the Amazon biome or the Legal Amazon (Fig. ). This region roughly corresponds with Brazil’s Arc of Deforestation and covers 96% of the Amazon biome’s 2017 planted soy area, 96% of the soy established on Amazon ***forests*** and 94% of the ***forests*** monitored by the GTS between 2007 and 2014. By limiting our focus to this Arc of Deforestation, we exclude the more distant interior of the Amazon biome—a region that has experienced very different drivers and rates of deforestation (see Supplementary Fig. ). In contrast, our focus on the Arc of Deforestation improves the comparability of deforestation trends, as evidenced by parallel trends in pre-ASM deforestation rates (Fig. ).

In addition, we focus our primary analyses on the portion of our sample falling inside the Legal Amazon. Due to proximity and common state governments, we believe the Cerrado biome portion of the Legal Amazon provides the strongest control for deforestation changes in the Amazon biome. We include observations falling outside the Legal Amazon in a model extension to test the robustness of our results (see ).

Data

Across our study region, we sampled observations at each vertex of a grid of evenly spaced (2 km) horizontal and vertical lines. This produced 616,274 sample points, 246,943 of which fall inside the Amazon biome and 369,331 of which fall inside the Cerrado biome. For each of these points, we identified whether and when deforestation events occurred using the MapBiomas Collection 2.3 data product. We extracted a variety of other attributes, as detailed in the .

Research design

The ASM’s geographic and commodity focus allows for a triple-differences research design to isolate the causal impact of the ASM. The ASM applies only to the Amazon biome, an ecological designation that does not follow political borders. The biome boundary bisects multiple municipalities and states and differs from the Legal Amazon, an administrative designation that serves to define the boundary of several public policies meant to reduce deforestation (Fig. ). As a result, contrasting deforestation trajectories before and after the adoption of the ASM across either side of the biome boundary can help isolate the ASM’s impacts while also controlling for the effects of public policies. Second, the ASM applies only to soy production and does not restrict the use of cleared ***land*** for other purposes. Since 90% of soy is planted in locations that meet specific soil and climatic suitability conditions, the ASM’s direct conservation benefits should be concentrated on these biophysically suitable ***lands***. We contrast deforestation trends on soy-suitable and non-suitable ***lands*** to control for additional policy and economic changes that might have led to declining deforestation across the entirety of the Amazon biome,,,.

Our primary model specification combines these two comparisons through a triple-differences research design in which we compare deforestation across ecological biomes (first difference) after the adoption of the ASM (second difference) and across locations with differential suitability for soy production (third difference). We specify this model as a linear probability of the likelihood that a point i, in municipality m, in state s, is deforested in year t (Dimst). The full model is presented in equation ().Biomei is a binary variable that indicates whether point i falls within the boundaries of the Amazon biome. SoySuiti indicates whether the point has been classified as suitable for soy production. Post-ASMt indicates whether the year of observation occurs after the ASM’s adoption in 2006. Xit is a matrix of economic and biophysical control variables described in Supplementary Table . γst are a series of state × year fixed effects and ζm are municipality-specific fixed effects. We clustered standard errors by municipality to allow for temporal and spatial correlations in our error term, .

The parameter of interest is β6, which isolates the post-ASM deviation in deforestation rates that occurs on soy-suitable portions of the Amazon biome. Under a set of assumptions (described below), this coefficient can be interpreted as the average treatment effect of the ASM on soy-suitable ***forests*** in the Amazon biome (that is, the average treatment effect on the treated, ATT). To provide a more intuitive metric of impact, we used the ATT to estimate the area of avoided deforestation attributed to the ASM. To do so, we first calculated the observed baseline rate of deforestation within soy-suitable portions of the Amazon biome in each of the post-treatment years (2006–2016). We then added the estimated ATT (0.64 pp) to these deforestation rates to estimate the counterfactual trend in deforestation. Beginning with the area of ***forests*** observed in 2005 within soy-suitable portions of the Amazon biome, we projected total deforestation through 2016 using both the counterfactual and baseline deforestation rates. We estimated the amount of avoided deforestation attributed to the ASM as the difference in the area of ***forests*** remaining in 2016 under the baseline and no-ASM counterfactual conditions.

We believe that our triple-differences research design addresses multiple potential sources of confounding that could complicate causal inference in our setting. First, differencing across biomes using soy-suitable locations allows us to control for market changes that could have affected deforestation rates across all soy-suitable locations. For example, the decline in ***agricultural*** commodity prices in the late 2000s has been identified as one driver of the decline in deforestation for soy. The strength of our triple-differences estimator emerges because this market effect is unlikely to differ systematically across the Amazon biome boundary. Second, differencing across soy suitability classes within the Amazon biome allows us to control for economic and policy changes that would have affected all Amazon deforestation. For example, public attention and anti-deforestation enforcement was probably concentrated in the Amazon biome. Contrasts between soy-suitable and non-suitable ***forests*** within the biome can thus better isolate the effect of the ASM.

Mathematically, the basic triple-differences estimator without additional covariates can be expressed as a series of differences in post-treatment changes in mean deforestation rates. Let represent the mean deforestation rate for the portion of our sample falling within suitability class suit (S = soy suitable; N = not soy suitable), biome b (C = Cerrado; A = Amazon) and period t (pre- or post-ASM). The triple-differences estimator can be expressed using equation ().

Equation () can be partitioned into two terms that represent the estimator emerging from alternative difference-in-differences (DD) models. The soy-suitable difference-in-differences model captures post-ASM cross-biome divergence in deforestation rates on soy-suitable ***lands***. If the ASM was effective, one would expect this term to take a negative value. In contrast, the non-soy-suitable difference-in-differences model quantifies post-ASM cross-biome divergence in deforestation rates on non-soy-suitable ***lands***. Our assumption is that the ASM should not directly affect any of the terms in this second difference in differences since all terms measure deforestation on points that are unsuitable for soy production. As a result, our expectation is that this second difference in differences would be equal to 0 and could serve as a placebo test.

The terms in equation () can be re-arranged to yield two additional difference-in-differences estimators, as depicted in equation ():

Once again, the triple-differences estimator can be partitioned into coefficients that emerge from a difference-in-differences model assessing the impact of the ASM (Amazon DD) and a secondary difference-in-differences model (Cerrado DD) that is unlikely to be directly affected by the ASM.

We estimated each of the four difference-in-differences models motivated by equations () and () by modifying our primary specification (equation ()) by restricting our sample and dropping extraneous interaction terms. Both difference-in-differences models testing the impact of the ASM indicate a significant impact (Table , columns 1 and 3). The first placebo model finds an insignificant post-ASM decline in deforestation on non-soy-suitable locations within the Amazon biome (Table , column 2). However, the second placebo model indicates that soy-suitable locations in the Cerrado experienced a significant post-ASM decline in deforestation relative to other portions of the Cerrado (Table , column 4). This decline could be indicative of economic or political changes that differentially affected deforestation rates on soy-suitable ***lands*** throughout the Legal Amazon. For example, increased enforcement of deforestation restrictions that were implemented by the government could have had impacts across the entirety of the Legal Amazon. If these policies had a bigger effect on more capitalized soy producers than on cattle ranchers, this could lead to the significant negative coefficients observed in both difference-in-differences models illustrated in equation (). In light of this result, we rely on the triple-differences estimator as our primary specification since it ***removes*** the impact observed in the Cerrado from any estimate of the ASM’s impact in the Amazon biome. We provide a description of the key assumptions of this model below, and present a variety of robustness tests in the (for example, Supplementary Tables – and Supplementary Fig. ).

Parallel paths and time-varying treatment effects

A fundamental assumption of the difference-in-differences estimator is that, in the absence of treatment, both the control and treatment observations would have experienced parallel paths in the outcome variable. While it is impossible to test this assumption, we followed common practice by testing for parallel paths in the pre-treatment period,. To do so, we modified our primary model specification (equation ()) by replacing our Post-ASMt variable with a matrix of indicator variables for each year (Yeart), as depicted in equation ().

The vector of coefficients ϕt measures the annual deviation in deforestation experienced on soy-suitable portions of the Amazon biome. Significant pre-treatment differences between deforestation in these treated locations compared with control locations would indicate that the two groups do not follow parallel pre-treatment paths. In contrast, changes in post-treatment coefficients can help to identify time-varying treatment effects. The coefficient estimates from this model are presented in Fig. . We found no evidence to suggest significant pre-treatment differences in deforestation trends across the treatment and control. Furthermore, the absence of a pre-treatment relative increase in deforestation is consistent with our understanding that ASM adoption was unexpected and, as a result, there was little anticipatory change in deforestation behaviour.

Although parallel pre-treatment trends are suggestive of parallel trends across the study period, they are not proof that the assumption holds. In our setting, policies or economic conditions that change post-ASM deforestation rates on soy-suitable locations in the Amazon biome but do not affect non-soy-suitable locations in the Amazon biome nor soy-suitable locations in the Cerrado could lead to violations of this assumption. For example, a decline in soy prices localized within the Amazon biome and occurring after 2006 could result in a decline in deforestation within our treated units that would be falsely attributed to the ASM. However, we find no evidence to suggest that such effects would be localized in a way that would lead to violations of the parallel trends assumption. Furthermore, although many policies to reduce deforestation were adopted in the mid-2000s,,, these policies all would be anticipated to affect deforestation rates across both our treatment and control units. For example, the adoption of the PPCDAm would have affected deforestation in both the Cerrado and Amazon portions of the Legal Amazon, while the adoption of the zero-deforestation cattle agreements would have affected deforestation across both soy-suitable and non-suitable locations within the Amazon biome. As a result, we believe that the parallel trends assumption is reasonable in our empirical setting.

Leakage and the stable unit treatment value assumption (SUTVA)

The SUTVA is another important consideration for our study. For SUTVA to hold, the assignment of treatment to one set of units must not affect the outcomes observed in other units. However, multiple observers have raised concerns that the ASM might have induced leakage within affected farms,,, to farms in the Cerrado biome, or to cattle ranches. Since our control observations include all of these groups, such leakage dynamics could violate SUTVA and bias our estimates of the ASM’s impact upward.

To explore whether spillovers are likely to inflate our estimates of the ASM’s impacts, we developed a series of models that compare deforestation of untreated locations that are spatially or economically proximate to treated units with more remote locations. If, after adoption of the ASM, proximate locations experienced a significant increase in deforestation compared with more distant locations, this could be evidence of spillovers induced by the ASM. We use these models to explore four different leakage pathways: (1) leakage to the Cerrado; (2) indirect ***land*** use change; (3) evasion; and (4) on-farm leakage.

Leakage to the Cerrado

The ASM may have reduced deforestation for soy in the Amazon while increasing deforestation for soy in the Cerrado biome,,,. Since displaced farmers are likely to invest near their initially ***targeted*** location for expansion, we hypothesize that soy expansion that was displaced by the ASM would be concentrated in the portion of the Cerrado that is closest to the Amazon biome boundary. We explored the possibility of cross-biome leakage by contrasting deforestation trends in the soy-suitable portions of the Cerrado that are near the biome boundary with more distant portions of the Cerrado. We followed Moffette and Gibbs and used two different metrics to measure proximity: (1) proximity to the border, as measured by an inverse distance formula (equation ()); and (2) a binary variable indicating whether a location is within 100 km of the biome border. Models using both of these metrics show that soy-suitable locations in the Cerrado that were close to the Amazon biome boundary did not experience a significant, relative increase in deforestation when compared with more distant locations in the Legal Amazon portion of the Cerrado (Table , columns 2 and 3). Controlling for proximity among our control observations in our primary specification did not substantively change the primary results of our analysis (Table , column 1).It is worth noting that, in contrast with our null result, Moffette and Gibbs found evidence for deforestation leakage near the biome boundary. However, their study was limited to Mato Grosso state, whereas our study includes the entirety of the Amazon–Cerrado boundary. When we restricted our model to include only those points falling inside Mato Grosso, we also found a significant leakage effect (Supplementary Table , column 2). However, the rest of our sample exhibits a statistically insignificant decrease in deforestation near the biome boundary (Supplementary Table , column 3). After combining these samples, we found no evidence for spillovers to the proximate Cerrado (Supplementary Table , column 1).

It is also possible that the ASM accelerated soy-driven deforestation in portions of the Cerrado that are further from the biome boundary. For example, several studies have highlighted the growing share of soy-driven deforestation occurring in the Matopiba region,,. All locations within our study region would be exposed to such distant leakage and, as a result, it is difficult to identify specific locations that could serve as a clear control group to identify such leakage. Nevertheless, we can assess post-ASM changes in deforestation on soy-suitable locations compared with non-suitable locations in regions that may have experienced an anomalous increase in soy-driven deforestation. We ran this difference-in-differences model across a variety of Cerrado sub-regions (Supplementary Table ). We did not find any portions of the Cerrado that experienced a significant increase in soy-suitable deforestation after the adoption of the ASM.

Indirect ***land*** use change

The ASM may have encouraged expansion of soy into pastures, displacing production while simultaneously capitalizing ranchers and, as a result, indirectly increasing conversion of ***forests***. Given the costs associated with moving operations over long distances or managing multiple distant properties, indirect ***land*** use change caused by the ASM would probably be concentrated within the Amazon biome or close to the Amazon biome boundary. To explore this possibility, we ran additional analyses on the population of ***forested*** pixels that were not converted to soy by 2017, enabling us to track non-soy deforestation trends. We found no evidence of post-ASM relative increases in non-soy deforestation in the Amazon biome (Table , column 4) or the nearby portions of the Cerrado biome (Table , column 5). Interestingly, we found a marginally significant (P = 0.08) relative decline in non-soy deforestation within the Amazon biome after the adoption of the ASM. This could indicate that the ASM had secondary effects in discouraging speculative clearing in the Amazon.

Evasion

If farmers were aware of the spatial extent of GTS monitoring, unmonitored regions may have provided a tempting location for the expansion of soy. To test for this possibility, we contrasted deforestation trends on unmonitored, soy-suitable portions of the Amazon biome with deforestation trends in soy-suitable locations in the Cerrado biome (Table , column 6). Unmonitored locations in the Amazon biome experienced a statistically insignificant relative decline in deforestation compared with locations in the Cerrado.

On-farm leakage

The ASM only sanctions the production of soy on recently deforested ***lands***, allowing farmers to clear ***forests*** on their properties as long as they do not use this ***land*** for soy production. As a result, the ASM may encourage farmers to accelerate deforestation on their properties for other ***land*** uses, including corn or cattle production,,,. To test for this possibility, we explored deforestation dynamics for non-soy uses occurring on soy properties. We defined soy properties using two approaches: (1) CAR-registered properties that had any soy-suitable ***land***; and (2) CAR-registered properties that had planted soy by the year 2000. Restricting our sample to the population of points that fell within soy properties, we ran a difference-in-differences model exploring the post-ASM change in deforestation occurring in the Amazon’s soy properties, relative to soy properties in the Cerrado (Table , columns 7 and 9). Significant, negative treatment effects provide further evidence that the ASM reduced aggregate deforestation rates. We then further restricted our sample to the population of points that had not been converted to soy by the year 2017 and re-ran the models (Table , columns 8 and 10). Insignificant but precisely estimated null results indicate that the ASM has not induced widespread on-farm leakage of deforestation.

These empirical models cannot rule out more distant and diffuse forms of leakage, such as accelerated deforestation in other countries. Such distant leakage operates through regional or global markets, does not lend itself well for empirical estimation and might be better suited for analysis through general equilibrium modelling,. Nevertheless, we believe that our tests provide important evidence to allay concerns that our estimates of the ASM’s impact may be biased due to SUTVA violations. Our primary specification draws its controls from non-soy-suitable locations in the Amazon biome, as well as the proximate portions of the Cerrado biome that fall within the Legal Amazon. The fact that these locations have not experienced significant post-2006 increases in deforestation relative to more distant observations gives us greater confidence in our primary results. Indeed, negative signs on several of our potential leakage parameters indicate that our estimates may be more exposed to underestimation than overestimation.

Policy complementarities

Although the ASM nominally applies to the entirety of the Amazon biome, its monitoring through the GTS has been limited to areas that meet specific criteria (see , Supplementary Fig. ). In addition, the ASM has relied on public registries to enforce deforestation restrictions. To assess the overlapping impact of these policies, we identified which points i were ever registered with the CAR (CARi) or monitored by the GTS (GTSi). We then identified the years y in which those points were registered (CAR\_Nowit) or monitored (GTS\_Nowit). Finally, we added an indicator for observations located within the Amazon biome and representing years after the adoption of the ASM (ASM\_Nowit). Combining these terms, we developed a model that explored the individual and combined effects of the GTS, CAR and ASM. Since all GTS monitoring occurred within the Amazon biome after the adoption of the ASM, a full factorial design was not possible. The full model is presented in equation ().

Each of the ϕ coefficients measures an individual or interaction effect between the three treatments. We present the linear combinations of these coefficients to quantify the deviation in deforestation rates on points that are: (1) only exposed to the ASM; (2) only exposed to CAR registration; (3) exposed to both the ASM and GTS monitoring; (4) exposed to both the ASM and CAR registration; and (5) exposed to the ASM, GTS monitoring and CAR registration. The results from this regression are presented in Table .

**Acknowledgements**

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**Notes**

Supplementary informationis available for this paper at [*https://doi.org/10.1038/s43016-020-00194-5.Peer*](https://doi.org/10.1038/s43016-020-00194-5.Peer) review informationNature Food thanks Andrea Garcia and the other, anonymous, reviewers for their contribution to the peer review of this work.Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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[***A blueprint for business to transition to a nature-positive future***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60CB-C4N1-JDG9-Y425-00000-00&context=1516831)

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**Body**

Cologny: World Economic Forum has issued the following press release:

The COVID-19 crisis shows that nature-related business risks are intensifying. A new World Economic Forum report, The Future of Nature and Business, provides a blueprint for business action to safeguard nature. 15 nature-positive transitions by businesses could generate $10.1 trillion and 395 million jobs.

The average person today is 4.4 times richer and lives 25 years longer than in 1950.

The Great Acceleration, however, has been brought to a screeching halt by the COVID-19 pandemic.

It is clear that our economic and social structures are untenable without resilient nature. Scientists have warned that important biomes such as the Amazon are fast approaching the cusp of irreversible tipping points. Business-as-usual is no longer an option.

The disruption presents a chance to build a better future – to launch a Great Reset.Have you read?

Now is the time for a 'great reset'

The World Economic Forum’s New Nature Economy Reports provide pathways for business to play a key role in the transition to a nature-positive economy. The second report, The Future of Nature and Business, shows how 15 strategic transitions can halt nature loss by 2030.

Here’s what business needs to know about the report and how to support the transition.There is no future for business-as-usual.

As a result of COVID-19, more than half a million people have died worldwide, 305 million full-time jobs (and counting) are at risk and the IMF projects global growth to contract by 4.9% in 2020. With some of the world’s biggest economies still battling the pandemic, the outlook remains uncertain.

But the crisis and our response make two things crystal clear: we must urgently move away from business-as-usual, and we can do so with the speed required.

The need to move away from business-as-usual was evident even before the pandemic. May 2020 set new records for both temperature and CO2 concentrations. The 2019 IPBES report revealed that we are driving 1 million species towards extinction. Nature Risk Rising highlighted that $44 trillion – more than half of the global GDP – is at risk due to business’s dependence on nature.

The pandemic is an unprecedented clarion call – and opportunity – to fundamentally change how we live, eat, grow, work, build and power our lives.Have you read?

The COVID-19 pandemic is not a break for nature – let’s make sure there is one after the crisis

Tackling climate change is critical but not enough.

Combating climate change is vital but will not be sufficient to halt the nature crisis.

Climate change is currently responsible for 11-16% of biodiversity loss, a proportion expected to rise. But the remaining 85% is caused by other drivers – the most significant being ***land***, sea and ocean use conversion.

To prevent a collapse of the Earth systems upon which all economies depend, governments, businesses and citizens must tackle all major drivers of biodiversity loss, and collectively evaluate and optimise ***land*** use, especially for ***agriculture*** and urbanisation.Transforming three systems can transform our world.

Addressing the nature crisis requires a critical shift in three key socio-economic systems: food, ***land*** and ocean use; infrastructure and the built environment; and extractives and energy.

Together, these systems endanger almost 80% of the threatened and near-threatened species on the IUCN Red List. They also represent more than one-third of the global economy, generate up to two-thirds of all jobs and contribute the most in terms of business opportunity and profitability. Transforming these three systems would transform our world.

This transformation is essential. The global food, ***land*** and ocean use system represents around $10 trillion (12%) of global GDP, but the hidden costs of inefficient operation total $12 trillion. Animal products provide only 18% of calories but account for more than 80% of farmland and 58% of food-related GHG ***emissions***. More than 80% of wastewater is discharged untreated into watercourses. And almost half of all large mines are located in biodiversity-rich ***forests***; nickel mining alone has caused 10% of deforestation in the Amazon since 2000.15 transitions to halt nature loss by 2030

Fifteen systemic transitions could generate up to $10.1 trillion in business value and 395 million jobs by 2030. This pragmatic action agenda could pave the way to a nature-positive global economy more resilient to future shocks.15 transitions in three socio-economic systems could deliver $10.1 trillion of annual business opportunities and 395 million jobs by 203015 transitions could pave the way to a nature-positive global economy.Image: World Economic Forum

Transforming the food, ***land*** and ocean use system has the potential to create business opportunities worth almost $3.6 trillion and 191 million new jobs over the next 10 years. For example, if regenerative ocean farming was practiced across 5% of US waters, it could absorb 135 million tonnes of carbon. Expanding the model to just 1% of the global ocean could create 50 million jobs.

Five transitions across infrastructure and the built environment could generate $3 trillion and 117 million jobs by 2030. Capitalising on the COVID-driven surge in demand for flexible working models is a prime example. The Ellen MacArthur Foundation estimates that “sharing” office models could reduce urban sprawl in Europe by an area the size of Belgium.

The business opportunities linked to transforming the energy and extractives sector are immense. About $3.5 trillion and 87 million jobs could be generated by 2030. In the automotive sector, for example, circular models – maximizing reuse and recycling of materials – could save $870 billion a year by 2030.Turning business opportunity into nature-positive reality

It is time for businesses to lobby for nature and seize this unique moment of global disruption to make change. With governments facing severe budget constraints and the immediate impacts of COVID-19, it’s vital that business steps up more proactively.

To spearhead the transformation, business leaders should identify the transitions most relevant to their operations and the mix of enablers – including new capital investment and smart Fourth Industrial Revolution technologies – needed to unlock success.Have you read?

Nature is everyone’s business: a call for collective action to reverse nature loss

Policy with people and planet at the core

While businesses can bring leadership, innovation and capital, this shift can only be sustained with complementary policy and regulatory measures. Bold policy and decisive political leadership will send a signal that business-as-usual is no longer viable.

The nature-positive transformation requires $2.7 trillion in public-private investments by 2030 to catalyse change at the scale needed. That’s a lot of money – but compare that to the United States’ $2.2 trillion COVID-19 stimulus package, or the up to $3.3 trillion expected to be lost by the global tourism industry.

A global stimulus programme focusing on protecting and restoring nature, driving resource productivity and scaling up new, regenerative value chains could deliver jobs, economic growth, public health and societal equity.How does the World Economic Forum encourage biological diversity?How does the World Economic Forum encourage biological diversity?

In the last 100 years, more than 90 percent of crop varieties have disappeared from farmers’ fields, and all of the world’s 17 main fishing grounds are now being fished at or above their sustainable limits.

These trends have reduced diversity in our diets, which is directly linked to diseases or health risk factors, such as diabetes, obesity and malnutrition.

One initiative which is bringing a renewed focus on biological diversity is the Tropical ***Forest*** Alliance.

This global public-private partnership is working on ***removing*** deforestation from four global commodity supply chains – palm oil, beef, soy, and pulp and paper.

The Alliance includes businesses, governments, civil society, indigenous people and communities, and international organizations.

Enquire to become a member or partner of the Forum and help stop deforestation linked to supply chains.

This is a critical juncture for humanity. Our response will determine the health of our businesses, our societies and our planetary systems for decades. Ecological, societal and economic priorities should not be competing interests. COVID-19 – a zoonotic disease that spread through human society and brought the global economy into crisis – is a critical example of our interconnectedness.

Now, we need a bold vision for a more sustainable, inclusive, safer future – with business playing a leading role in the transition.

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[***A trillion dollars to fix the world***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6234-NTK1-JBPJ-70M3-00000-00&context=1516831)

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**Byline:** Rowan Hooper

**Rowan Hooper** is podcast editor at *New Scientist* and author of *How to Spend a Trillion Dollars* (Profile Books, 2021)

**Highlight:** Let's imagine you have inherited a fortune and want to solve humanity's most pressing problems. What is the best way to make a difference, asks Rowan Hooper

**Body**

MOST of us have had that conversation: what would you do if you won the lottery? Pay off the mortgage, quit your job, maybe start a small business doing something you have always dreamed of. But what if you acquired a truly vast fortune – not just a few million but a trillion dollars? And what if you had to spend it on [*making the world a better place?*](https://www.newscientist.com/article/mg24432590-400-altruism-2-0-how-to-use-science-to-make-charitable-acts-go-further/)

I know, a trillion dollars – a thousand billion dollars – sounds like a vast amount of money, especially during the twin crises of recession and [*pandemic*](https://www.newscientist.com/article-topic/coronavirus/). But in the grand scheme of things, it isn't. A trillion dollars is about 1 per cent of world GDP. It is what Jeff Bezos, the founder of Amazon, is on course to be worth by 2026. The world's richest 1 per cent together own $162 trillion in assets. And it's just one-twelfth of what governments around the world found in 2020 alone for economic stimulus packages in response to the new coronavirus.

What could you do with such a relatively modest sum, if charged to spend it on the world's biggest challenges? This is the central question of my book, *How to Spend a Trillion Dollars*, in which I choose 10 megaprojects (all things scientists are working on now) and explore what could be achieved if we showered them with money. Here we examine three of the most urgent of those challenges: solving world poverty, halting runaway [*climate change*](https://www.newscientist.com/article-topic/climate-change/) and curing all disease.

Perhaps the most important thing we could do for human welfare would be to alleviate poverty. According to the World Bank, about 10 per cent of the planet's population, or 760 million people, earn $1.90 or less per day. The hardship is such that the life expectancy of the world's poorest people is nearly 15 years lower than that of the richest.

The widespread policy of easing taxes on business and wealth with the expectation that money will "trickle down" [*hasn't helped the world's poorest*](https://eprints.lse.ac.uk/107919/1/Hope_economic_consequences_of_major_tax_cuts_published.pdf). So let's try something else. We will give everyone in extreme poverty a lump sum of up to $1000, or equivalent assets. One objection often raised against such proposals is that people will waste such gifts. However, a 2014 review of cash handouts by the World Bank found that this is hardly ever the case. [*People tend to use handouts wisely*](https://openknowledge.worldbank.org/handle/10986/18802). Even one-off cash and asset transfers seem to genuinely change people's lives.

In a trial in Bangladesh, for example, ultra-poor families were given assets in the form of livestock. Follow-ups showed that [*the handouts had sustainably changed their lives*](https://academic.oup.com/qje/article-abstract/132/2/811/3075123) and put them on a new trajectory out of extreme poverty.

Similar asset-transfer programmes have been rolled out in Ethiopia, Ghana, Honduras, India, Pakistan and Peru, involving a total of more than 10,000 people. After the second year of this project, families enrolled in the treatment groups had more assets, better diets, better physical and mental health, higher political engagement and increased female empowerment compared with control groups.

The evidence could hardly be clearer: [*a one-off investment gives ultra-poor people what they need to escape the poverty trap*](https://science.sciencemag.org/content/348/6236/1260799), very often permanently.

Most of the cash-transfer experiments done so far are on a scale of hundreds of thousands to millions of dollars. We don't know what might happen if we showered larger amounts on entire populations. Might people give up work? It is hard to say, but the little evidence that exists suggests not. In Alaska, for example, all residents receive a yearly dividend derived from oil revenue, and this has [*no negative effect on the rate of employment*](https://home.uchicago.edu/~j1s/Jones_Alaska.pdf). [*Nor do such cash transfers seem to have much impact on inflation*](https://www.nber.org/papers/w26600), judging by a study in Kenya.

A one-off payment gives ultra-poor people what they need to escape the poverty trap, often permanently

What we know for certain is that the benefits can be huge. In Brazil, a countrywide initiative called Bolsa Família introduced in 2003 helped to reduce financial inequality by 15 per cent, and the proportion of the population in extreme poverty shrank from 9.7 to 4.3 per cent. Cases of infant mortality caused by malnourishment also halved. Payments from the programme aren't universal: they are made only to families earning under a certain amount, but in 2015 that was still a quarter of the population, almost 52 million people.

Educational value

In Peru, there was a cash transfer scheme that came with conditions. In enrolled villages, the female head of households with children received the equivalent of $143 every two months if she had been sending the children to school, had obtained identity cards for them and had taken under 5s for health checks.

This hints at the kind of lasting change you can make if you simply give away money, albeit with the proviso that children are educated. The non-profit Brookings Institution in Washington DC discovered that [*a woman who has never been to school has around four to five more children than a woman with 12 years of education*](https://www.brookings.edu/opinions/want-to-save-the-planet-invest-in-girls-education). It also found that women who went to school earn more, are less likely to marry as children, are less likely to have HIV or malaria, and tend to farm more productive plots of ***land***, which results in better nourished families.

The United Nations estimates that just an extra $39 billion per year could ensure universal education in low and lower-middle income countries. (The UN currently spends $13 billion a year on international aid projects for education.) Universal education, for just $39 billion a year. It is a shockingly small amount to ensure a basic human right.

So that is one way to spend a trillion dollars: $600 billion up front to raise hundreds of millions of people out of the poverty trap, which leaves us enough to pay for universal education in low and lower-middle income countries for 10 years.

Climate change is a global tragedy unfolding in front of our eyes. If we don't keep temperatures from rising more than 1.5°C above pre-industrial levels, we could be locked into devastating sea level rise, droughts, famines and conflict. We urgently need to cut ***emissions***. That is the only way to stop the disaster getting worse. But we have available, right now, the means to cool the planet and ***remove*** carbon dioxide from the atmosphere.

We will want to invest in [*geoengineering,*](https://www.newscientist.com/article/2203085-could-geoengineering-really-help-us-solve-the-climate-crisis/) defined as any deliberate intervention of a nature and scale capable of counteracting human-made climate change and its knock-on effects. We will focus on one of the most promising ideas, solar geoengineering, comprising methods to screen out some of the sunlight reaching the surface of the planet and thereby cool global temperatures.

Let's imagine we stump up a few hundred million dollars for testing one such approach, that of seeding the skies with sulphate particles, which are considered the most plausible planetary sunscreen. After extensive trials, we find that it doesn't wreck the monsoon in South Asia, for example, and that [*the benefits of a temperature decrease aren't offset by a reduction in crop yields.*](https://www.nature.com/articles/s41586-018-0417-3)

Let's also imagine that our trials, scaling up each time, have garnered enough positive data and political and social support to drive the drawing up of a manifesto of responsibility and the agreement of an international treaty for a global solar geoengineering effort. We will need specially made aircraft that fly high in the stratosphere and release their sulphate payloads. Following [*research*](https://iopscience.iop.org/article/10.1088/1748-9326/aae98d) by Wake Smith at Yale University and Gernot Wagner at New York University, we will commission a fleet of autonomous drones with giant wingspans, capable of cruising in the stratosphere, steadily releasing their sulphur payload.

We need to extract carbon dioxide from the atmosphere on a massive scale

We will purchase an island, build a port to receive shipments of sulphur and a runway from which we can launch thousands of flights to seed the skies. We will allocate $6 billion for all this. That isn't much. The trouble is that if we started it, we couldn't stop. A sulphate shield only lasts a year or so because the particles drift slowly back to the surface. Only once we are capable of pulling huge amounts of carbon out of the atmosphere can we let the shield come down for good, which brings us to our next investment.

We have to ***remove*** a good chunk of the CO2 we have released into the atmosphere. Here I would fund two different approaches: technologies designed to suck up CO2 and good old-fashioned tree planting.

For all its world-changing power, CO2 is a trace gas, making up just 0.04 per cent of the atmosphere. That makes it difficult to extract. [*We can do it on a small-scale now*](https://www.newscientist.com/article/mg23731690-800-how-concrete-and-condoms-could-turn-a-greenhouse-gas-green/) but we need to do it on a planetary scale.

Carbon capture

Climeworks is a Swiss firm trialling a number of carbon-capture projects, the most ambitious of which is in Iceland. There, carbon-capture units running on the country's geothermal energy collect 50 tonnes of CO2 a year and pump it underground where it reacts with basalt and turns to stone. But 50 tonnes per year is nothing. In 2018 alone, humans emitted 37 gigatonnes of CO2. Climeworks says it wants to capture 1 per cent of global CO2 ***emissions*** by the mid-2020s, which would require gigantic and unprecedented growth. Other carbon-capture start-ups require similar expansion before we get to a capacity where it will make a global difference. So we will invest in this sector, let's say $100 billion or so, but save most of our money for the organic approach.

A trillion trees?

The method can be summarised in three words: grow more trees. Trees draw down CO2 and lock it up, at least for the lifetime of the tree. If you plant enough of them, you could [*suck out a lot of the CO2 in the atmosphere*](https://www.newscientist.com/article/mg24532640-800-planting-a-trillion-trees-really-can-help-us-fight-climate-change/). The problem is that we would need to do this on a gigantic scale, which brings multiple problems. Perhaps the biggest hurdle is the question of where they will all go. A team at ETH Zurich in Switzerland used data on ***forest*** cover from Google Earth and a machine-learning algorithm to [*predict which new areas could support* ***forests****.*](https://science.sciencemag.org/cgi/doi/10.1126/science.aax0848) There is enough ***land***, it seems, for 900 million hectares of ***forest***, an area about the size of the US.

Let's say we paid to plant around 500 billion new trees. According to the ETH Zurich analysis, once the trees are mature, that number might draw down and store 205 gigatonnes of CO2. Given that each part per million (ppm) of CO2 is equal to 2.13 gigatonnes, that would bring the ppm down to about 320, its level in the mid-1960s. Currently, we are at around 416 ppm.

This seems to be the best way to buy us some time at least. Of course, there are lots of details to work out. Simon Lewis at the University of Leeds, UK, who studies [*the interactions between* ***forests*** *and climate change*](https://www.newscientist.com/article/mg24732951-800-can-we-rely-on-tropical-forests-to-stop-runaway-climate-change/), thinks the 205 gigatonnes is an overestimate. It is also fair to say that there are many demands on "spare" ***land***, not least ***agriculture***, housing and recreation. But there does seem to be a lot of currently wasted ***land*** that we could redevelop in a massive tree-planting scheme. Allowing ***land*** to regenerate on its own can also be hugely effective, as can forestry management incentives aimed at locking away more carbon.

[*This epic afforestation is going to be expensive at roughly $400 billion per year*](https://www.newscientist.com/article/2261277-saving-forests-to-fight-climate-change-will-cost-393-billion-annually/), yet it would surely be a sound investment. A 2018 report from the Intergovernmental Panel on Climate Change found that [*keeping*](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf) us below 1.5°C of warming above pre-industrial levels would cost about $2.5 trillion per year until 2050 in investment in the energy sector, and $775 billion per year on measures to reduce energy demand. The financial cost of global warming above 1.5°C is so diabolical that the economic benefits of staying below this threshold are four or five times the size of the investment.

In 2016, Priscilla Chan took to the stage at a meeting in San Francisco and announced that her foundation would work to ensure that an entire generation of people would never get seriously ill. "We'll be investing in basic science research with the goal of curing disease," she said. To that end, Chan and her husband, Facebook CEO Mark Zuckerberg, put $3 billion into research aimed at preventing, managing or curing all diseases by the end of the 21st century. Tha isn't merely curing breast cancer or Alzheimer's or diabetes or strokes, but curing all disease. Oh, and increasing global life expectancy to 100.

Even by Silicon Valley standards, it is an ambitious goal. Even if Chan and Zuckerberg end up investing their entire fortune, currently around $60 billion, it would be a drop in the bucket when it comes to what is required to free humanity of all disease and extend everyone's lifespan. But what if we set our trillion dollars to the same goal? When I put this to Jeremy Farrar, head of Wellcome, one of the world's largest medical research charities, with an endowment of around £30 billion, he laughed. A trillion dollars is nowhere near enough money, he said.

When you look into what needs to be done, you get a better idea of the scale of the task. Much of the research and spending on public health work is siloed as a result of being directed at specific diseases. Take the global effort to eliminate [*malaria*](https://www.newscientist.com/article-topic/malaria/), which kills about 400,000 people each year, most of them children under 5, and mostly in sub-Saharan Africa. Around [*fulltext $4.3 billion per year is spent on malaria*](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(19)30165-3/). But it is just one of dozens of infectious diseases. And as well as ***targeting*** those, we would also need to spend globally on the other three main disease categories: heart disease, neurological disease and cancer.

We would burn through our trillion dollars and only make a fleeting impact on health and lifespan. If you want to make immense gains in public health on a global scale, and make them equitable and sustainable, there is one thing that needs to be implemented. It is difficult, complex and expensive, which might be why it isn't something that is much talked about or invested in by billionaires. It is universal healthcare (UHC): free healthcare, for everyone.

In 2013, an international *Lancet* commission put together an investment framework to achieve what it called a "grand convergence" in health by 2035. By this they meant reducing deaths from infectious disease, as well as child and maternal mortality, in low and middle-income countries to the levels seen in the best-performing middle-income countries. This, the framework predicts, [*fulltext could prevent more than 10 million deaths in 2035.*](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)62105-4/)

The commission found that UHC isn't only the most efficient, but also the only sustainable way to achieve a convergence in global health. Their framework was written before the coronavirus pandemic, but the response of countries like Singapore and South Korea, in contrast to that of the US, shows that UHC is a good protector for pandemics, too.

As Farrar says, a trillion dollars isn't enough to change the world's healthcare system, so here's another idea. We allocate some of our money to building a universal healthcare system in one country, which becomes a flagship, an advert to other countries of the benefits of UHC investment.

Universal health care is by far the best way to make immense gains on a global scale

Let's choose Ethiopia. With a population of more than 100 million, it has a large economy, but only about three doctors per 100,000 people. The UK has almost three doctors per 1000 people. Maternal and child mortality in Ethiopia are relatively high, mainly because most births take place at home, without the presence of a trained modern midwife. Our investment would make Ethiopia more like Ghana, where there are around five midwives per 1000 births and much lower maternal mortality rates. Ghana operates a universal service through its National Health Insurance Scheme.

So a sizeable chunk of our trillion goes on a demonstration of UHC. Another should go on vaccines. The development, testing and equitable distribution of a vaccine is a huge and costly undertaking – but one that could save millions of lives.

We will fund the Coalition for Epidemic Preparedness Innovations, a global partnership working on vaccines for many so-called emerging infectious diseases, including covid-19. We can help boost vaccination rates around the world, but we can also move the dial at the basic research level. As well as covid-19, effective vaccines against HIV, malaria and tuberculosis would be transformational. In all, 320 or so emerging infectious diseases have been identified since the 1940s. And if we can create a universal flu vaccine, we would be protected from what is still one of the greatest health threats to our species: a flu pandemic.

Jessica Metcalf, an infectious diseases biologist at Princeton University, has proposed a programme of sampling people's immune systems that would allow scientists to pick up signs of new pathogens as they emerge. The coronavirus won't be the last such threat. But Metcalf says her [*58989 Global Immunological Observatory*](https://elifesciences.org/articles/) would help "rapidly detect, define and defeat future pandemics".

Again then, this is money that could hardly be better spent – a sentiment that came up time and again as I was researching the book. The lesson I learned along the way was clear. A trillion dollars might sound like an immense amount, but the benefits of spending such a sum on these projects would pay back handsomely, and often quite quickly.

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[***Global bioenergy with carbon capture and storage potential is largely constrained by sustainable irrigation***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2M1-JCWX-C2GN-00000-00&context=1516831)

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**Body**

Main

To prevent dangerous anthropogenic interference with the climate system, the Paris Agreement set goals of limiting the global temperature increase to well below 2 °C and pursuing efforts to limit it to 1.5 °C (ref. ). To achieve such an ambitious temperature goal, ***removal*** of CO2 and other greenhouse gases from the atmosphere (also known as negative ***emission***) is considered inevitable–. Among the different negative ***emission*** technologies, large-scale deployment of bioenergy with carbon capture and storage (BECCS) has been considered one of the most promising methods in many stringent climate scenarios,–. For example, a comprehensive review showed that a median BECCS deployment of around 3.3 Gt C yr−1 in 2100 is needed in scenarios consistent with the 2 °C climate goal,9]. Large-scale BECCS deployment would require more ***land*** for bioenergy crop plantations. For example, a median range of 250–910 Mha of bioenergy cropland is needed across the different socioeconomic scenarios in representative concentration pathway (RCP) 2.6. However, without adequate, careful management for environmental sustainability, bioenergy crop plantations on such a large spatial scale would lead to adverse effects, such as water scarcity, diminished biodiversity, ***land*** degradation and desertification,–.

Reductions in the ***land*** area needed for bioenergy crop plantations could be achieved by enhancing biomass yields. Several studies have shown that irrigation can increase yields and thus reduce cropland area, but the global total irrigation water consumption would double or even triple,,– if water were limitlessly available at any location and time. Apparently, large-scale irrigation would further exacerbate the future water stress associated with the increasing demands of conventional water use (***agricultural***, industrial and municipal),–. For example, a recent study showed that irrigation would lead to severe water stress even exceeding the impact from climate change itself when increasing bioenergy crops productivity to the level consistent with the 1.5 °C goal. Without such prescribed external demand for productivity, where and to what extent irrigation can enhance the global BECCS potential remains unknown under sustainable water use, which we define as water use securing the local and downstream water availability for conventional water use and environmental flow requirements, suppressing nonrenewable water resources withdrawal and preventing additional water stress. A previous study considered water availability at grid-cell level, but the downstream water availability, nonrenewable water resources use and possible additional water stress were neither the focus nor included. In this article, we addressed these knowledge gaps by incorporating the concept of sustainable water use as defined in the preceding into the irrigation management of bioenergy crop plantations. This enabled us to determine the global BECCS potential constrained by sustainable irrigation.

To prevent adverse effects pertaining to biodiversity, food production, ***land***-use-change ***emission***, ***land*** degradation and desertification due to large-scale ***land*** conversion, we adopted protections for the areas protected for biodiversity, areas of cropland, ***forest*** and wetland, and areas under ***land*** degradation and desertification. Under this perquisition, two ***land*** scenarios were developed for plantations of the dedicated second-generation bioenergy crops, namely, Miscanthus and switchgrass. In the first scenario, pastureland is also protected (scenario PP). To consider the uncertainty of ***land***-use conversion and dietary change (for example, shifting toward less reliance on livestock products), we developed another scenario in which pastureland conversion (scenario PC) is allowed (Fig. and ). To reveal the irrigation water constraints for global bioenergy crop plantations, we investigated three distinct irrigation scenarios: no irrigation (rain fed; RF), irrigation of all bioenergy cropland without any water constraints (full irrigation; FI) and irrigation of some bioenergy cropland with constraints of water availability (sustainable irrigation; SI). In SI, we simulated the volume of water available for bioenergy crop irrigation as the reserve of the renewable water resources at the grid-cell level. Then, we assigned the irrigable bioenergy cropland within the availability of the reserved water on the basis of the bioenergy crop water consumption (Fig. and ). Simulations were conducted with the global hydrological model H08, which includes anthropogenic water use and management (). Model H08 specifies the source of water globally at a spatial resolution of 0.5° at daily time steps. Water sources are divided into surface water (river, aqueduct, reservoir, desalinated seawater, and non-local and nonrenewable surface water) and groundwater (renewable groundwater and nonrenewable groundwater). The environmental flow required to safeguard river ecosystems is considered. For the six scenario combinations, simulations were conducted for 2080–2099 using H08 (). On the basis of a series of simulations, we identified the spatial distribution and extent of the irrigable bioenergy cropland from the total bioenergy cropland, quantified the gain of the global BECCS potential due to sustainable irrigation, specified the sources of the additional irrigation withdrawal, analysed the water stress additionally imposed and conducted the sensitivity analysis.

Schematic figures showing the process used to develop the two ***land*** scenarios and the three distinct irrigation scenarios for bioenergy crop plantations.

a, The two ***land*** scenarios. b, The three distinct irrigation scenarios.

Results

Global BECCS potential

Under RF, the average global BECCS potential in 2090 was only 0.82 and 1.99 Gt C yr−1 in the PP and PC scenarios, respectively (Fig. ). The BECCS potential reached 1.32 and 3.42 Gt C yr−1 (60% and 71% increases compared with RF) under full irrigation (FI) in PP and PC, respectively, whereas under sustainable irrigation (SI), the BECCS potential was 0.88 and 2.09 Gt C yr−1 in PP and PC, respectively (5% and 6% increases compared with RF). This indicates that the gain in the BECSS potential is largely constrained if implementing sustainable irrigation management as we defined in SI. Note that the carbon capture rate and conversion efficiency are important parameters and have a large impact on the BECCS potential,. For example, with lower capture ratios, the BECCS potential could be reduced to 50% or 75% of current estimates (Supplementary Fig. ). Therefore, our estimates appear optimistic because the calculation was based on the assumption of converting the biomass into synthetic natural gas with a higher capture rate ().

The global BECCS potential, corresponding bioenergy ***land*** area and additional irrigation water withdrawal under each combined scenario in 2090 (average of 2080–2099).

a, Global BECCS potential. b, Corresponding bioenergy ***land*** area. c, Additional irrigation water withdrawal. NNS, non-local and nonrenewable surface water.

Global bioenergy plantation ***land*** and irrigated area

In total, 188 and 444 Mha were assigned to bioenergy crop plantations in the PP and PC scenarios, respectively (Fig. ). Although the ***land*** area under PP is smaller than that under PC, it is beneficial for reducing greenhouse gas ***emissions*** induced by ***land***-use change from pastureland. The respective areas irrigated under RF, SI and FI with the different irrigation scenarios were 0, 39 and 188 Mha in PP and 0, 64 and 444 Mha in PC, respectively. The ratio of irrigated ***land*** to total bioenergy plantation ***land*** under SI was small (21% and 14% in PP and PC, respectively). Spatially, the ***land*** available for bioenergy crop plantations was distributed mainly in Russia, South America, middle Africa and parts of Southeast Asia and the United States (Supplementary Fig. ), whereas the irrigated areas under SI were concentrated mainly in high-latitude areas in Russia and central Africa (Supplementary Fig. ).

Global additional irrigation water withdrawal

Sustainable irrigation resulted in little volume of additional water withdrawal (166–298 km3 yr−1) (Fig. ), corresponding to only 6–11% of the current ***agricultural*** water withdrawal (2,769 km3 in 2010). From the perspective of water sources, water was taken mainly from renewable sources under SI. The largest water source was rivers (73–76%), followed by renewable groundwater (5–6%). Only 16–20% of the water was sourced from non-sustainable water sources (non-local and nonrenewable surface water and nonrenewable groundwater). By contrast, under full irrigation, a large volume of irrigation water withdrawal (1,392–3,929 km3 yr−1) was additionally needed, and the lower and higher bounds of this range were comparable to the sum of current industrial and municipal water withdrawal (1,232 km3 in 2010) and the present total water withdrawal for all sectors (4,001 km3 in 2010), respectively. Moreover, water was taken mainly from non-sustainable water sources (73–78%) because streamflow or renewable groundwater is unavailable for most locations in arid or semiarid zones when it is needed in the daily interval simulation. Water taken from rivers accounted for only 16–19%, and that from renewable groundwater accounted for only 4%. This indicates that sustainable irrigation largely reduces the total amount of water withdrawal and the fraction of non-sustainable water withdrawal.

Note that the additional water withdrawal under sustainable irrigation was accompanied by very low additional water stress (Fig. and Supplementary Fig. ; Supplementary Table details the water stress categories), whereas it was accompanied by notable additional water stress under full irrigation in many regions, such as the southeastern South America, southern Africa, Northeast Brazil, East Africa, North Asia, West Africa, central North America, central Europe, West Asia, Central America, central Asia and East Asia, especially in the ***land*** scenario PC (Fig. and Supplementary Fig. ; see Supplementary Fig. for region details).

Additional water stress due to additional irrigation water withdrawal for bioenergy crop plantations under PP\_SI and PP\_FI.

a, PP\_SI. b, PP\_FI.

Sensitivity analysis

Theoretically, our simulation of SI was sensitive to two parameters: the water-use fraction (WUF; set at 10% under SI) and the reference flow (REF; set at Q95 () under SI). In this article, WUF is the fraction of the available water used for bioenergy crop irrigation, and REF is the streamflow rate to define the local available water resources; see for parameter details). Parameter combinations can enhance the BECCS potential via intensified irrigation (Fig. ), but there is a trade-off between additional irrigation water withdrawal and the corresponding BECCS potential. For example, in ***land*** scenario PP, if we set WUF = 50% or 90% and fix REF = Q95, the average irrigation water withdrawal and the non-sustainable water withdrawal would increase to 2.2 or 2.8 times and 5.3 or 8.4 times the original values (when WUF = 10% and REF = Q95), respectively (Fig. ). The findings were similar in ***land*** scenario PC. This indicates that increasing WUF allows more irrigation water withdrawal for bioenergy crops, but it eventually results in increased use of nonrenewable and non-local water resources. However, the increase in the corresponding BECCS potential was quite limited at 7% (from 0.88 to 0.94 Gt C yr−1) or 10% (from 0.88 to 0.97 Gt C yr−1) (Fig. ) because most of the increased irrigated area is concentrated in Russia and central Africa (Supplementary Fig. ), where the biomass yield is relatively high, even under the rain-fed condition, and irrigation has limited effects on the biomass yield. By comparison, in ***land*** scenario PP, if we fix WUF = 10% but set REF = Q10, the average irrigation water withdrawal and the non-sustainable water withdrawal would increase to 3.0 times and 9.6 times the original values (when WUF = 10% and REF = Q95), respectively (Fig. ). Similarly, the increase in the average BECCS potential would be quite limited at 11% (Fig. ). Our sensitivity test indicated that the BECCS potential could not reach the level under full irrigation even with the setting for the maximum water use (for example, when WUF = 90% and REF = Q10) because the irrigable area is constrained by the available water in the arid regions, especially in the PC scenario. Moreover, for the 10%, 50% and 90% WUFs, our results indicated that there are apparently nonlinear relationships between the reference flow and the irrigated area, irrigation water withdrawal and the non-sustainable irrigation withdrawal, with an inflection point at REF of Q50, above which the volumes of these three terms increase sharply (Fig. ). Note that the ranges shown in the shaded area represent the uncertainty, due mainly to the biomass source of Miscanthus or switchgrass. For example, the higher bound of the range of the BECCS potential is based on Miscanthus, while the lower bound is based on switchgrass (Supplementary Figs. and ).

Sensitivity tests for irrigated area, additional irrigation water withdrawal, non-sustainable water withdrawal and the BECCS potential with different WUFs and REFs.

a–c, Sensitivity tests for irrigated areas with WUF 10% (a), 50% (b) and 90% (c). d–f, Additional irrigation water withdrawal with WUF 10% (d), 50% (e) and 90% (f). g–i, Non-sustainable water withdrawal with WUF 10% (g), 50% (h) and 90% (i). j–l, BECCS potential with WUF 10% (j), 50% (k) and 90% (l). The solid and dashed lines are the mean values under PP and PC, respectively; the shaded areas show the minimum to maximum ranges across the scenarios and bioenergy crop types.

Implications and caveats

With increasing concerns about, and continuing discussion of, the feasibility and adverse effects of large-scale BECCS deployment, investigating the BECCS potential by considering sustainability constraints of water and ***land*** is critical,,,,–. Our study proposes a sustainable irrigation method for bioenergy crop plantations that does not impose additional water stress, adding insight to the continuing discussion of the future of BECCS. Our simulation of only 0.88 Gt C yr−1 under PP\_SI can be regarded as the maximum BECCS potential with strict consideration of water and ***land*** sustainability that would not lead to additional water stress, biodiversity loss or competition with food production. This relatively low volume of BECCS potential implies that climate mitigation scenarios that rely mainly on BECCS deployment may have difficulty or present risk in achieving the 2 °C or 1.5 °C climate goal, (for example, the median BECCS demand varied from 1.6 to 4.1 Gt C yr−1 in scenarios consistent with the 2 °C or 1.5 °C goal in 2100). This result is consistent with the opinion that BECCS might not be considered the dominant technology in Intergovernmental Panel on Climate Change and other scenarios aiming at the Paris climate goal. Our specification of the amounts and sources of additional irrigation water withdrawal for bioenergy crop plantations among the different irrigation scenarios elucidates the BECCS potential and irrigation water trade-offs, especially for distinguishing the sustainable and non-sustainable water sources, which are typically ignored in previous studies based on integrated assessment models, although they have more-explicit economic frameworks,. This also complements the studies, based on similar biophysically constrained models because such source-specific water withdrawal has not yet been reported.

Although we quantified the constraints of sustainable irrigation on the global BECCS potential, continued research is needed. First, involvement of field water management measures (for example, mulching, water collection and conservative tillage) as adopted in a previous study on the sustainable irrigation scheme can provide valuable complementary insights into the trade-offs between BECCS potential and additional water withdrawal. For example, there might be a considerable reduction of the additional water withdrawal due to the decrease of crop evapotranspiration or irrigation ***target*** although such measures might be hampered due to the large economic investments. Second, detailed combination of the sustainable irrigation scheme with a temporal evolution of the ***land***-use scenario that systematically considers the peak warming level, peak warming time and post-peak temperature change can further illustrate the nexus of water, BECCS potential and the climate goal in a temporally specific manner. Third, the bioenergy plantation ***land*** described here excludes current cropland, which means additional irrigation equipment would be needed; therefore, an explicit consideration of the cost and feasibility of the additional infrastructure implementation for bioenergy crop irrigation would provide a better understanding of the feasible BECCS potential. Finally, we acknowledge that the BECCS potential could be increased with an optimized plantation scheme that also includes woody biomass, although its yield is generally lower, and the harvest interval is much longer, than for the herbaceous biomass considered here. Similarly, including the feedstocks from the managed ***forest*** and ***agricultural*** residues could also increase the BECCS potential,.

Overall, our findings help to reveal the constraints of sustainable water management on irrigable area for bioenergy crop plantations and therefore the final global BECCS potential. Our study highlights the importance of determining the biophysically constrained BECCS potential when pursing the 2 °C or 1.5 °C climate goal.

Methods

To quantify the water availability constraints on the global BECCS potential explicitly, in this study, we used the global hydrological model H08, which allows the simultaneous simulation of the bioenergy crop growth, yields and corresponding irrigation water withdrawal and sources within a detailed spatiotemporal representation of the global hydrological cycle with major anthropogenic activities. With strict protections for natural protected areas, ***forest***, cropland, pastureland, wetland and so on, we developed two ***land*** scenarios for bioenergy crop plantations, treating one as a comparison to consider the ***land*** uncertainty. For each ***land*** scenario, we considered three distinct irrigation scenarios (no irrigation, full irrigation and sustainable irrigation). Finally, we estimated the average global BECCS potential and additional irrigation water withdrawal of the two bioenergy crops under each scenario for 2080–2099, with explicit consideration of climate and socioeconomic changes. The model, scenario, simulation and method used to calculate the BECCS potential are described in detail in the following sections.

Global hydrological model H08

H08 is a grid-cell-based global hydrological model that has the function of addressing the impacts of major human activities, such as irrigation and reservoir operation, on the global hydrological cycle. It has six sub-models: ***land*** surface hydrology, river routing, reservoir operation, crop growth, environmental flow and anthropogenic water withdrawal,. It was updated by the inclusion of groundwater recharge and abstraction, aqueduct water transfer, local reservoir, seawater desalination, and return flow and delivery loss schemes. These sub-models and schemes enable H08 to simulate natural and anthropogenic hydrological processes and crop growth at a spatial resolution of 0.5° and a daily interval.

Specifically, the ***land*** surface hydrology sub-model is a standard ***land*** surface model that solves the surface water and energy balance and simulate the main water cycle components, such as evapotranspiration and runoff. Streamflow is simulated by the river routing through the global digital river network. The simulation explicitly includes the flow regulation of 963 major world reservoirs. The crop growth sub-model is based on heat unit theory to accumulate the biomass and can simulate the cropping duration and crop yields for 18 traditional crops and 2 bioenergy crops (Miscanthus and switchgrass). Factors such as water and air temperature are regulated to constrain the biomass production. The simulated bioenergy crop yields for Miscanthus and switchgrass have been calibrated and validated through site-specific data globally, which agreed well with the observations. The simulated yield of Miscanthus was generally higher than that of switchgrass (Supplementary Figs. and ), for example, with respective mean values of 19.2 and 7.6 Mg ha−1 yr−1 under PP\_RF because Miscanthus has a higher radiation use efficiency and a longer cropping period. Sustainable irrigation increased the yield marginally; for example, the yield was increased by 15% and 16% under PP\_SI compared with 50% and 48% under PP\_FI for Miscanthus and switchgrass, respectively. A complete description of the model and its performance, including information on the bioenergy crop water consumption, water-use efficiency and irrigation effect among different climate zones can be found in Ai et al.. The environmental flow sub-model can estimate the streamflow that is needed to maintain the aquatic ecosystem. The anthropogenic water withdrawal sub-model can simulate the water requirements for irrigation (for both food and bioenergy), industry and municipalities, which are allocated to seven sources (rivers, aqueducts, local reservoirs, seawater, non-local and nonrenewable surface water, renewable groundwater and nonrenewable groundwater). Irrigation water demand is simulated by the difference in the soil moisture deficit (the discrepancy between the ***targeted*** and actual soil moisture) during crop- and site-specific cropping periods. The estimated major hydrological components (streamflow and total water withdrawal) have been validated in a series of previous studies,,. The simulated irrigation water demand by Miscanthus is generally higher than that by switchgrass (Supplementary Fig. ), varying from less than 200 mm yr−1 to over 1,000 mm yr−1 depending on the spatial variation in precipitation and crop water consumption.

Water withdrawal in H08

In H08, water withdrawal is designed to meet the water use of the municipal, industrial and irrigation sectors. To meet the entire water requirements, water is abstracted from both surface water and groundwater. Note that water is first abstracted to meet municipal use, then industrial use and finally irrigation use. The order of water abstraction from each source of surface water and groundwater follows. For surface water, water is first taken from river until it meets the requirements or the streamflow reaches the environmental flow requirements. If streamflow cannot meet the requirements, water is taken from an aqueduct, local reservoir, seawater (assumed for municipal and industrial uses only) and the so-called non-local and nonrenewable surface water. For groundwater, water is first taken from renewable groundwater and then from nonrenewable groundwater. A schematic figure is shown in Supplementary Fig. . Additional details are provided by Hanasaki.

Environmental flow requirements in H08

Environmental flow is the flow needed to maintain the river ecosystem. H08 uses Shirakawa’s model to estimate environmental flow. The mechanism is as follows: first, the ***land*** area is divided into the four climate categories of dry, wet, stable and variable on the basis of the monthly streamflow (q); then, the environmental flow requirements are calculated using different equations under each climate and specific condition (Supplementary Table ).

***Land*** and irrigation scenarios

In the standard H08, one grid cell is separated into four sub-cells (four mosaic ***land*** uses) for double-irrigated cropland, single-irrigated cropland, rain-fed cropland and other ***land*** uses. In this study, we added the two ***land*** uses for irrigated bioenergy crops and rain-fed bioenergy crops in each grid cell with explicit consideration of two bioenergy ***land*** scenarios and three irrigation scenarios. This enabled us to estimate soil moisture and other hydrological fluxes specific to bioenergy crops.

Two bioenergy ***land*** scenarios were developed (Fig. ). First, similar to a previous study, a whole grid cell was excluded from conversion to bioenergy ***land*** if it was in the World Database for Protected Areas (WDPA), a biodiversity-sensitive and ***land***-degraded area or a wetland. An entire grid was also excluded from conversion to bioenergy if the yield was less than or equal to 2 Mg ha−1 yr−1 or if it was covered by a desert climate. Then, the ***land***-use fractions for cropland, pastureland, ***forest*** (both managed and unmanaged) and built areas in each grid cell were excluded from conversion to bioenergy ***land*** under the pastureland protection (PP) scenario. By contrast, pastureland was not excluded under the pastureland conversion (PC) scenario to investigate the ***land*** uncertainty. Finally, the ***land*** fraction remaining in each grid cell refers to the fraction of the total bioenergy ***land***. Here, the fraction of pastureland, ***forest*** and built areas in each grid cell in 2090 under RCP 2.6 and Shared Socioeconomic Pathway (SSP) 1 (sustainability), SSP2 (middle of the road) and SSP5 (fossil-fuel development) that are compatible with the 2 °C climate goal are from AIM/Hub and AIM/PLUM outputs. The global areas for each ***land*** use are shown in Supplementary Fig. . To maintain the current cropland area, the fraction of cropland used here is from the default setting in H08 because the cropland areas from the AIM/Hub and AIM/PLUM outputs are lower than those in H08 (Supplementary Fig. ).

After determining the fraction of total bioenergy ***land*** in each grid cell, as shown in Fig. , we partitioned it into the fractions of irrigated and rain-fed bioenergy ***land***. In total, we considered three distinct irrigation scenarios (no irrigation, full irrigation and sustainable irrigation). For SI, the available water rate used for irrigating the bioenergy crop was estimated as the product of REF and WUF. Here, the REF (kg s−1) is the flow rate used to estimate the local water availability and is expressed as the different percentiles of the mean monthly streamflow (2080–2099) (for example, Q95 is the 95th percentile flow, while Q10 is the 10th percentile flow). This was then aggregated to annual values as the annual amount of the available irrigation water (kg yr−1) for bioenergy crops. To calculate a given percentile flow (Pth, for example, P is 95 for 95th percentile flow), the mean monthly flow was first arranged in a descending order. Then, the Pth percentile flow was obtained by taking the value from the ordered list that corresponds to the rank (calculated as ). In this sense, Q95 indicates a low flow rate, while Q10 indicates a high flow rate. That is, the amount of available irrigation water in a grid cell increases with the change in REF from Q95 to Q10. The WUF is the ratio of irrigation water withdrawal to the REF. These two parameters were set as Q95 and 10%, respectively. This ensures that the remaining 90% of the low flow can be for downstream water use (***agricultural***, industrial and municipal water withdrawal) in dry periods. To evaluate the variability of the two parameters, a sensitivity test was conducted by replacing the 10% WUF with 50% and 90%, as well as by replacing the Q95 flow with other Q values (Q90, Q80, Q70, Q60, Q50, Q40, Q30, Q20 and Q10). Then, the irrigated bioenergy area could be obtained by dividing the annual amount of available irrigation water (kg yr−1) by the annual water consumption per area (kg m−2 yr−1) for each bioenergy crop (Miscanthus and switchgrass). The fraction of irrigated bioenergy ***land*** was then calculated as the irrigated bioenergy area divided by the total ***land*** area in each grid cell. Finally, the fraction of rain-fed bioenergy ***land*** was obtained by calculating the difference between the fractions of total and irrigated bioenergy ***land*** in each grid cell. For RF, the bioenergy crop in a grid cell was all rain fed, with no irrigated fraction. For FI, the bioenergy crop in a grid cell was all irrigated, with no rain-fed fraction.

Simulations

A series of simulations was conducted with H08 for different purposes. First, the crop sub-model was used to obtain the annual yield and water consumption per area for each bioenergy crop, which were used in the process of making the bioenergy ***land*** mosaic. Second, the coupled model of H08 (without bioenergy) was used to obtain monthly discharge, which was used to calculate the REF. Third, the coupled model of H08 (with bioenergy) was used to obtain the main outputs, such as bioenergy crop yield and irrigation water withdrawal for each combined irrigation and ***land*** management scenario. Additional water withdrawal for bioenergy crops under full and sustainable irrigation conditions was determined by calculating the difference compared with that under the RF condition. Note that environmental flow was considered in each coupled model simulation. Future projections of water demand for domestic use and industry were used in each coupled simulation. With the goal of the 2 °C climate ***target***, we used ISIMIP2b data generated using the outputs from four bias-corrected general circulation models: GFDL-ESM2M, HadGEM2-ES, IPSL-CM5A-LR and MIROC5 under RCP 2.6. Daily gridded data (0.5°) for air temperature, wind speed, air pressure, specific humidity, rainfall, snowfall and downward short-wave and long-wave radiation for the period 2075–2099 were used as the climate forcing to H08. The simulations for the period 2080–2099 were used for the analyses, and the first five years (2075–2079) were used as spin-up.

BECCS potential calculation

BECCS potential was estimated as follows[9,:where Production is the bioenergy crop production obtained as the product of the bioenergy crop yield and the bioenergy ***land*** area, CE is the CCS capture efficiency, CR is the ratio of captured carbon to the carbon content per unit of produced biofuel, which depends on the scenario of the CO2 capture application, fcc is the carbon content of dry matter, and fbiosng is the fraction of carbon in synthetic natural gas relative to the carbon in biomass. Here, CE was set as 0.9, CR was set as 2.0, fcc was set as 0.4545 and fbiosng was set as 0.4 for the two bioenergy crops, as used in previous studies,.

Reporting Summary

Further information on research design is available in the linked to this article.

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**Notes**

Supplementary informationThe online version contains supplementary material available at [*https://doi.org/10.1038/s41893-021-00740-4.Peer*](https://doi.org/10.1038/s41893-021-00740-4.Peer) review InformationNature Sustainability thanks Vaibhav Chaturvedi and the other, anonymous, reviewer(s) for their contribution to the peer review of this work.Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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**End of Document**



[***Federal Register: Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly Pages 81813 - 81822 [FR DOC #2020-27523]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61JB-4TX1-F0YC-N3SG-00000-00&context=1516831)

Impact News Service

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R3-ES-2020-0103; FF09E21000 FXES11110900000 212]Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch ButterflyAGENCY: Fish and Wildlife Service, Interior.ACTION: Notice of 12-month finding.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the monarch butterfly (Danaus plexippus plexippus) as a threatened species under the Endangered Species Act of 1973, as amended. After a thorough review of the best available scientific and commercial information, we find that listing the monarch butterfly as an endangered or threatened species is warranted but precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants. We will develop a proposed rule to list the monarch butterfly as our priorities allow. However, we ask the public to submit to us any new information relevant to the status of the species or its habitat at any time.DATES: The finding in this document was made on December 17, 2020.ADDRESSES: A detailed description of the basis for this finding is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under docket number FWS-R3-ES-2020-0103. Supporting information used to prepare this finding is available for public inspection, by appointment, during normal business hours, by contacting the person specified under FOR FURTHER INFORMATION CONTACT. Please submit any new information, materials, comments, or questions concerning this finding to the person specified under FOR FURTHER INFORMATION CONTACT.FOR FURTHER INFORMATION CONTACT: Barbara Hosler, Regional Listing Coordinator, Ecological Services, Great Lakes Region, telephone: 517-351-6326, email: [*monarch@fws.gov*](mailto:monarch@fws.gov) If you use a telecommunications device for the deaf (TDD), please call the Federal Relay Service at 800-877-8339.SUPPLEMENTARY INFORMATION:Background Under section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended (Act; 16 U.S.C 1531 et seq.), we are required to make a finding whether or not a petitioned action is warranted within 12 months after receiving any petition that we have determined contains substantial scientific or commercial information indicating that the petitioned action may be warranted (``12-month finding''). We must make a finding that the petitioned action is (1) not warranted, (2) warranted, or (3) warranted but precluded. ``Warranted but precluded'' means that (a) the petitioned action is warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened species, and (b) expeditious progress is being made to add qualified species to the Lists of Endangered and Threatened Wildlife and Plants (Lists) and to ***remove*** from the Lists species for which the protections of the Act are no longer necessary. Section 4(b)(3)(C) of the Act requires that, when we find that a petitioned action is warranted but precluded, we treat the petition as though it is resubmitted on the date of such finding, that is, requiring that a subsequent finding be made within 12 months of that date. We must publish these 12-month findings in the Federal Register.Summary of Information Pertaining to the Five Factors Section 4 of the Act (16 U.S.C 1533) and the implementing regulations at part 424 of title 50 of the Code of Federal Regulations (50 CFR part 424) set forth procedures for adding species to, ***removing*** species from, or reclassifying species on the Lists (found in 50 CFR part 17). The Act defines ``endangered species'' as any species that is in danger of extinction throughout all or a significant portion of its range (16 U.S.C 1532(6)) and ``threatened species'' as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 U.S.C 1532(20)). Under section 4(a)(1) of the Act, a species may be determined to be an endangered species or a threatened species because of any of the following five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We use the term ``threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ``threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ``threat'' may encompass--either together or separately--the source of the action or condition or the action or condition itself. However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ``endangered species'' or a ``threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats--in light of those actions and conditions that will ameliorate the threats--on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ``endangered species'' or a ``threatened species'' only[[Page 81814]]after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future. The Act does not define the term ``foreseeable future,'' which appears in the statutory definition of ``threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term ``foreseeable future'' extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ``Reliable'' does not mean ``certain''; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions. It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors. In conducting our evaluation of the five factors provided in section 4(a)(1) of the Act to determine whether the monarch butterfly meets the definition of an ``endangered species'' or ``threatened species,'' we considered and thoroughly evaluated the best scientific and commercial information available regarding the past, present, and future threats to the species. We reviewed the petition, information available in our files, and other available published and unpublished information. This evaluation may include information from recognized experts; Federal, State, and Tribal governments; academic institutions; foreign governments; private entities; and other members of the public. The species assessment form for the monarch butterfly contains more detailed biological information, a thorough analysis of the listing factors, and an explanation of why we determined that this species meets the definition of an endangered species or a threatened species. This supporting information can be found on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under docket number FWS-R3-ES-2020-0103. The following is an informational summary of the finding in this document.Previous Federal Actions On August 26, 2014, we received a petition from the Center for Biological Diversity (CBD), Center for Food Safety (CFS), Xerces Society for Invertebrate Conservation, and Dr. Lincoln Brower, requesting that we list the monarch butterfly (Danaus plexippus plexippus) as a threatened species under the Act. On December 31, 2014, we published a 90-day finding that the petition presented substantial scientific or commercial information, indicating that listing the monarch butterfly may be warranted (79 FR 78775). On March 10, 2016, the CFS and CBD filed a complaint against the Service for not issuing a finding on the petition within the statutory timeframe, and on July 5, 2016, we entered a stipulated settlement agreement with CFS and CBD to submit the 12-month finding to the Federal Register by June 30, 2019. On May 24, 2019, the court granted an extension of this deadline to December 15, 2020.Summary of Finding The petition that the Service received in 2014 was for listing a subspecies of the monarch butterfly (Danaus plexippus plexippus) (Center for Biological Diversity et al., 2014, p. 4). The petition also requested a determination of whether any new North American subspecies of Danaus plexippus should be listed. After careful examination of the literature and consultation with experts, there is no clearly agreed upon definition of potential subspecies of Danaus plexippus or where the geographic borders between these subspecies might exist. Given these findings, we examined the entire range of Danaus plexippus. Monarch butterflies in eastern and western North America represent the ancestral origin for the species worldwide. They exhibit long-distance migration and overwinter as adults at ***forested*** locations in Mexico and California. These overwintering sites provide protection from the elements (for example, rain, wind, hail, and excessive radiation) and moderate temperatures, as well as nectar and clean water sources located nearby. Adult monarch butterflies feed on nectar from a wide variety of flowers. Reproduction is dependent on the presence of milkweed, the sole food source for larvae. Monarch butterflies are found in 90 countries, islands, or island groups. Monarch butterflies have become naturalized at most of these locations outside of North America since 1840. The populations outside of eastern and western North America (including southern Florida) do not exhibit long-distance migratory behavior. We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the monarch butterfly, and we evaluated all relevant factors under the five listing factors, including any regulatory mechanisms and conservation measures addressing these stressors. The primary threats to the monarch's biological status include loss and degradation of habitat from conversion of grasslands to ***agriculture***, widespread use of herbicides, logging/thinning at overwintering sites in Mexico, senescence and incompatible management of overwintering sites in California, urban development, and drought (Factor A); exposure to insecticides (Factor E); and effects of climate change (Factor E). Conservation efforts are addressing some of the threats from loss of milkweed and nectar resources across eastern and western North America and management at overwintering sites in California; however, these efforts and the existing regulatory mechanisms (Factor D) are not sufficient to protect the species from all of the threats. We found no evidence that the monarch butterfly is currently impacted at the population level by overutilization for commercial, recreational, scientific, or educational purposes (Factor B) or predation or disease (Factor C), nor did we find information to suggest that the species will be impacted by these factors in the future. Based on the past annual censuses, the eastern and western North American migratory populations have been generally declining over the last 20 years. The monarch butterfly is also known from 29 populations that are outside of the 2 migratory North American populations. At least 1 monarch butterfly has been observed in 25 of these populations since 2000, and these are considered extant. Monarch butterfly presence within the remaining four populations has not been confirmed since 2000, but they are presumed extant. We know little about population sizes or trends of most of the populations outside of the eastern and western North American populations (except for Australia, which has an estimate of just over 1 million monarch butterflies). We do not have information related to the threats acting on the populations outside of eastern and western North America; however, we[[Page 81815]]determined that 15 of the 29 populations, including the Australian population, are classified as being ``at risk'' due to sea-level rise or increasing temperatures, resulting from climate change. The North American migratory populations are the largest relative to the other rangewide populations, accounting for more than 90 percent of the worldwide number of monarch butterflies. For the two North American migratory populations, we estimated the probability of the population abundance reaching the point at which extinction is inevitable (pE) for each population. In its current condition, the eastern North American population has a pE less than 10 percent over the next 10 years. The western North American population has a much higher risk of extinction due to current threats, with a pE of 60-68 percent over the next 10 years. Looking across the range of future conditions that we can reasonably determine, the pE for the eastern population is estimated to be 24 percent to 46 percent in 30 years, and the pE for the western population is estimated to be 92 percent to 95 percent in 30 years. These pE estimates incorporate the primary factors that influence the populations' resiliency, including availability of milkweed and nectar resources (losses as well as gains from conservation efforts), loss and degradation of overwintering habitat, insecticides, and effects of climate change. Additionally, at the current and projected population numbers, both the eastern and western populations become more vulnerable to catastrophic events (for example, extreme storms at the overwintering habitat). Also, under different climate change scenarios, the number of days and the area in which monarch butterflies will be exposed to unsuitably high temperatures will increase markedly. The potential loss of the North American migratory populations from these identified threats would substantially reduce the species' resiliency, representation, and redundancy. To alleviate threats to the monarch butterfly, numerous conservation efforts have been developed and/or implemented since the species was petitioned in 2014, and these were considered in our assessment of the status of the species. Protection, restoration, enhancement and creation of habitat is a central aspect of recent monarch butterfly conservation strategies. In the breeding and migratory grounds, these habitat conservation strategies include the enhancement and creation of milkweed and nectar sources. Improved management at overwintering sites in California has been ***targeted*** to improve the status of western North American monarch butterflies. Major overarching landscape-level conservation plans and efforts include the Mid-America Monarch Conservation Strategy developed by the Midwest Association of Fish and Wildlife Agencies (MAFWA) and the Western Monarch Butterfly Conservation Plan developed by the Western Association of Fish and Wildlife Agencies (WAFWA). In early 2020, the Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation ***Lands*** (CCAA/CCA) was finalized and will contribute to meeting the MAFWA Strategy and WAFWA Plan goals. Under this agreement, energy and transportation entities will provide habitat for the species along energy and transportation rights-of-way corridors across the country, including a 100 foot extension of the right-of-way onto private ***agricultural*** ***lands***. Participants will carry out conservation measures to reduce or ***remove*** threats to the species and create and maintain habitat annually. In exchange for implementing voluntary conservation efforts and meeting specific requirements and criteria, those businesses and organizations enrolled in the CCAA will receive assurance from the Service that they will not have to implement additional conservation measures should the species be listed. The goal of the CCAA, which participants may continue to join until a final listing rule is published, is enrollment of up to 26 million acres of ***land*** in the agreement, providing over 300 million additional stems of milkweed. Many conservation efforts implemented under Federal, Tribal, State, or other programs, such as the Farm Service Agency's Conservation Reserve Program, the Natural Resource Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP), ***Agricultural*** Conservation Easement Program and Conservation Stewardship Program, and the Service's Partners For Fish and Wildlife Program, are expected to contribute to the overarching habitat and population goals of the MAFWA Strategy and WAFWA Plan. Smaller conservation efforts implemented by local governments, non-governmental organizations (NGOs), private businesses, and interested individuals will also play an important role in reaching habitat and population goals established in the MAFWA Strategy and WAFWA Plan. The Service developed the Monarch Conservation Database (MCD) to capture information about monarch butterfly conservation plans and efforts to inform the listing decision. As of June 1, 2020, there are 48,812 complete monarch butterfly conservation effort records in the MCD that have a status of completed, implemented, or planned since 2014, and 113 monarch butterfly conservation plans. Among the efforts included in the MCD are those provided by NRCS from EQIP, their program designed to provide financial and technical assistance to ***agricultural*** producers to address natural resource concerns. Across the 10 states that NRCS ***targeted*** for monarch butterfly conservation efforts through EQIP (Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Ohio, Oklahoma, Texas, and Wisconsin), efforts on 16,952 acres have already been implemented and NCRS anticipates conservation on an additional 31,322 acres through ongoing enrollment (see [*https://www.fws.gov/savethemonarch/mcd.html*](https://www.fws.gov/savethemonarch/mcd.html)). In addition to conservation of the breeding and migratory habitats, ***land*** managers in California are developing and implementing grove management strategies within the western population's overwintering sites as well. The monarch butterfly species assessment form and the Monarch Species Status Assessment report (Service 2020) provide additional details on the status of the monarch butterfly and the conservation efforts listed here (see ADDRESSES, above). On the basis of the best scientific and commercial information available, we find that the petitioned action to list the monarch butterfly under the Act is warranted. We will make a determination on the status of the species as threatened or endangered when we complete a proposed listing determination. When we complete a proposed listing determination, we will examine whether the species may be endangered or threatened throughout all of its range or whether the species may be endangered or threatened in a significant portion of its range. However, an immediate proposal of a regulation implementing this action is precluded by work on higher priority listing actions and final listing determinations. This work includes all the actions listed in the National Listing Workplan discussed below under Preclusion and in the tables below under Expeditious Progress, as well as other actions at various stages of completion, such as 90-day findings for new petitions.[[Page 81816]]Preclusion and Expeditious Progress To make a finding that a particular action is warranted but precluded, the Service must make two determinations: (1) That the immediate proposal and timely promulgation of a final regulation is precluded by pending proposals to determine whether any species is endangered or threatened; and (2) that expeditious progress is being made to add qualified species to either of the Lists and to ***remove*** species from the Lists (16 U.S.C 1533(b)(3)(B)(iii)).Preclusion A listing proposal is precluded if the Service does not have sufficient resources available to complete the proposal, because there are competing demands for those resources, and the relative priority of those competing demands is higher. Thus, in any given fiscal year (FY), multiple factors dictate whether it will be possible to undertake work on a proposed listing regulation or whether promulgation of such a proposal is precluded by higher priority listing actions--(1) The amount of resources available for completing the listing function, (2) the estimated cost of completing the proposed listing regulation, and (3) the Service's workload, along with the Service's prioritization of the proposed listing regulation in relation to other actions in its workload.Available Resources The resources available for listing actions are determined through the annual Congressional appropriations process. In FY 1998 and for each fiscal year since then, Congress has placed a statutory cap on funds that may be expended for the Listing Program (spending cap). This spending cap was designed to prevent the listing function from depleting funds needed for other functions under the Act (for example, recovery functions, such as ***removing*** species from the Lists) or for other Service programs (see House Report 105-163, 105th Congress, 1st Session, July 1, 1997). The funds within the spending cap are available to support work involving the following listing actions: Proposed and final rules to add species to the Lists or to change the status of species from threatened to endangered; 90-day and 12-month findings on petitions to add species to the Lists or to change the status of a species from threatened to endangered; annual ``resubmitted'' petition findings on prior warranted-but-precluded petition findings as required under section 4(b)(3)(C)(i) of the Act; critical habitat petition findings; proposed rules designating critical habitat or final critical habitat determinations; and litigation-related, administrative, and program-management functions (including preparing and allocating budgets, responding to Congressional and public inquiries, and conducting public outreach regarding listing and critical habitat). For more than two decades the size and cost of the workload in these categories of actions have far exceeded the amount of funding available to the Service under the spending cap for completing listing and critical habitat actions under the Act. Since we cannot exceed the spending cap without violating the Anti-Deficiency Act (31 U.S.C 1341(a)(1)(A)), each year we have been compelled to determine that work on at least some actions was precluded by work on higher priority actions. We make our determinations of preclusion on a nationwide basis to ensure that the species most in need of listing will be addressed first, and because we allocate our listing budget on a nationwide basis. Through the listing cap and the amount of funds needed to complete court-mandated actions within the cap, Congress and the courts have in effect determined the amount of money remaining (after completing court-mandated actions) for listing activities nationwide. Therefore, the funds that remain within the listing cap--after paying for work needed to comply with court orders or court-approved settlement agreements--set the framework within which we make our determinations of preclusion and expeditious progress. For FY 2019, through the Consolidated Appropriations Act of 2019 (Pub. L. 116-6, February 15, 2019), Congress appropriated the Service $18,318,000 under a consolidated cap for all domestic and foreign listing work, including status assessments, listings, domestic critical habitat determinations, and related activities. For FY 2020, through the Further Consolidated Appropriations Act, 2020 (Pub. L. 116-94, December 20, 2019), Congress appropriated $20,318,000 for all domestic and foreign listing work. The amount of funding Congress will appropriate in future years is uncertain.Costs of Listing Actions The work involved in preparing various listing documents can be extensive, and may include, but is not limited to: Gathering and assessing the best scientific and commercial data available and conducting analyses used as the basis for our decisions; writing and publishing documents; and obtaining, reviewing, and evaluating public comments and peer-review comments on proposed rules and incorporating relevant information from those comments into final rules. The number of listing actions that we can undertake in a given year also is influenced by the complexity of those listing actions; that is, more complex actions generally are more costly. Our practice of proposing to designate critical habitat concurrent with listing species requires additional coordination and an analysis of the economic impacts of the designation, and thus adds to the complexity and cost of our work. Since completing all of the work for outstanding listing and critical habitat actions has for so long required more funding than has been available within the spending cap, the Service has developed several ways to determine the relative priorities of the actions within its workload to identify the work it can complete with the funding it has available for listing and critical habitat actions each year.Prioritizing Listing Actions The Service's Listing Program workload is broadly composed of four types of actions, which the Service prioritizes as follows: (1) Compliance with court orders and court-approved settlement agreements requiring that petition findings or listing or critical habitat determinations be completed by a specific date; (2) essential litigation-related, administrative, and listing program-management functions; (3) section 4 (of the Act) listing and critical habitat actions with absolute statutory deadlines; and (4) section 4 listing actions that do not have absolute statutory deadlines. In previous years, the Service received many new petitions, including multiple petitions to list numerous species--a single petition even sought to list 404 domestic species. The emphasis that petitioners placed on seeking listing for hundreds of species at a time through the petition process significantly increased the number of actions within the third category of our workload--actions that have absolute statutory deadlines for making findings on those petitions. In addition, the necessity of dedicating all of the Listing Program funding towards determining the status of 251 candidate species and complying with other court-ordered requirements between 2011 and 2016 added to the number of petition findings awaiting action. Because we are not able to work on all of these at once, the Service's most recent effort to prioritize its workload focuses on addressing the backlog in petition findings that has resulted from the influx of large[[Page 81817]]multispecies petitions and the 5-year period in which the Service was compelled to suspend making 12-month findings for most of those petitions. The number of petitions that are awaiting status reviews and accompanying 12-month findings illustrates the considerable extent of this backlog. As a result of the outstanding petitions to list hundreds of species and our efforts to make initial petition findings within 90 days of receiving the petition to the maximum extent practicable, at the beginning of FY 2020, we had 422 12-month petition findings for domestic species yet to be initiated and completed. To determine the relative priorities of the outstanding 12-month petition findings, the Service developed a prioritization methodology (methodology) (81 FR 49248; July 27, 2016) after providing the public with notice and an opportunity to comment on the draft methodology (81 FR 2229; January 15, 2016). Under the methodology, we assign each 12-month finding to one of five priority bins: (1) The species is critically imperiled; (2) strong data are already available about the status of the species; (3) new science is underway that would inform key uncertainties about the status of the species; (4) conservation efforts are in development or underway and likely to address the status of the species; or (5) the available data on the species are limited. As a general rule, 12-month findings with a lower bin number have a higher priority than, and are scheduled before, 12-month findings with a higher bin number. However, we make some limited exceptions--for example, we may schedule a lower priority finding earlier if batching it with a higher priority finding would generate efficiencies. We may also consider where there are any special circumstances whereby an action should be bumped up (or down) in scheduling. One limitation that might result in divergence from priority order is when the current highest priorities are clustered in a geographic area, such that our scientific expertise at the field office level is fully occupied with their existing workload. We recognize that the geographic distribution of our scientific expertise will in some cases require us to balance workload across geographic areas. Since before Congress first established the spending cap for the Listing Program in 1998, the Listing Program workload has required considerably more resources than the amount of funds Congress has allowed for the Listing Program. Therefore, it is important that we be as efficient as possible in our listing process. In 2016, we assigned the 12-month finding for monarch butterfly to bin 4 due to the many conservation efforts underway to address threats facing the species. We determined that these efforts were likely to reduce threats from loss of breeding habitat for the eastern and western North American populations and overwintering habitat for the western North American population. However, due to the stipulated settlement agreement, we are completing the 12-month finding for monarch butterfly before other higher priority actions. After finalizing the prioritization methodology, we then applied that methodology to develop a multiyear National Listing Workplan (Workplan) for completing the outstanding status assessments and accompanying 12-month findings. The purpose of the Workplan is to provide transparency and predictability to the public about when the Service anticipates completing specific 12-month findings while allowing for flexibility to update the Workplan when new information changes the priorities. In May 2019, the Service released its updated Workplan for addressing the Act's domestic listing and critical habitat decisions over the subsequent 5 years. The updated Workplan identified the Service's schedule for addressing all domestic species on the candidate list and conducting 267 status reviews and accompanying 12-month findings by FY 2023 for domestic species that have been petitioned for Federal protections under the Act. As we implement our Workplan and work on proposed rules for the highest priority species, we increase efficiency by preparing multispecies proposals when appropriate, and these may include species with lower priority if they overlap geographically or have the same threats as one of the highest priority species. Overall, 161 species on the Workplan (64 percent) have a higher bin number than the monarch butterfly. Current funding levels would not be sufficient to complete all of those 12-month findings in FY 2020, and listing appropriations for FY 2021 are not determined yet. The National Listing Workplan is available online at [*https://www.fws.gov/endangered/what-we-do/listing-workplan.html*](https://www.fws.gov/endangered/what-we-do/listing-workplan.html). An additional way in which we determine relative priorities of outstanding actions in the section 4 program is application of the listing priority guidelines (48 FR 43098; September 21, 1983). Under those guidelines, which apply primarily to candidate species, we assign each candidate a listing priority number (LPN) of 1 to 12, depending on the magnitude of threats (high or moderate to low), immediacy of threats (imminent or nonimminent), and taxonomic status of the species (in order of priority: Monotypic genus (a species that is the sole member of a genus), a species, or a part of a species (subspecies or distinct population segment)). The lower the listing priority number, the higher the listing priority (that is, a species with an LPN of 1 would have the highest listing priority). A species with a higher LPN would generally be precluded from listing by species with lower LPNs, unless work on a proposed rule for the species with the higher LPN can be combined for efficiency with work on a proposed rule for other high-priority species. Based on our listing priority system, we are assigning an LPN of 8 for the monarch butterfly. This priority number indicates the magnitude of threats is moderate to low and those threats are imminent. The priority number also reflects that we are evaluating monarch butterflies at the species level. We will continue to monitor the threats to the monarch butterfly and the species' status on an annual basis, and should the magnitude or the imminence of the threats change, we will revisit our assessment of the LPN.Listing Program Workload The National Listing Workplan that the Service released in 2019 outlined work for domestic species over the period from 2019 to 2023. Tables 1 and 2 under Expeditious Progress, below, identify the higher priority listing actions that we completed through FY 2020 (September 30, 2020), as well as those we have been working on in FY 2020 but have not yet completed. For FY 2020, our National Listing Workplan includes 74 12-month findings or proposed listing actions that are at various stages of completion at the time of this finding. In addition to the actions scheduled in the National Listing Workplan, the overall Listing Program workload also includes the development and revision of listing regulations that are required by new court orders or settlement agreements, or to address the repercussions of any new court decisions, as well as proposed and final critical habitat designations or revisions for species that have already been listed. The Service's highest priorities for spending its funding in FY 2019 and FY 2020 are actions included in the Workplan and actions required to address court decisions. As described in[[Page 81818]]``Prioritizing Listing Actions,'' above, listing of the monarch butterfly is a lower priority action than these types of work. Therefore, these higher priority actions precluded immediate proposal of a regulation implementing the petitioned action in FY 2020, and the Service anticipates that they will continue to preclude work on listing the monarch butterfly in FY 2021 and the near future.Expeditious Progress As explained above, a determination that listing is warranted but precluded must also demonstrate that expeditious progress is being made to add and ***remove*** qualified species to and from the Lists. Please note that, in the Code of Federal Regulations, the ``Lists'' are grouped as one list of endangered and threatened wildlife (50 CFR 17.11(h)) and one list of endangered and threatened plants (50 CFR 17.12(h)). However, the ``Lists'' referred to in the Act mean one list of endangered species (wildlife and plants) and one list of threatened species (wildlife and plants). Therefore, under the Act, expeditious progress includes actions to reclassify species--that is, either ***remove*** them from the list of threatened species and add them to the list of endangered species, or ***remove*** them from the list of endangered species and add them to the list of threatened species. As with our ``precluded'' finding, the evaluation of whether expeditious progress is being made is a function of the resources available and the competing demands for those funds. As discussed earlier, the FY 2020 appropriations law included a spending cap of $20,318,000 for listing activities, and the FY 2019 appropriations law included a spending cap of $18,318,000 for listing activities. As discussed below, given the limited resources available for listing, the competing demands for those funds, and the completed work cataloged in the tables below, we find that we are making expeditious progress in adding qualified species to the Lists. The work of the Service's domestic listing program in FY 2019 and FY 2020 (as of September 30, 2020) includes all three of the steps necessary for adding species to the Lists: (1) Identifying species that may warrant listing (90-day petition findings); (2) undertaking an evaluation of the best available scientific data about those species and the threats they face to determine whether or not listing is warranted (a status review and accompanying 12-month finding); and (3) adding qualified species to the Lists (by publishing proposed and final listing rules). We explain in more detail how we are making expeditious progress in all three of the steps necessary for adding qualified species to the Lists (identifying, evaluating, and adding species). Subsequent to discussing our expeditious progress in adding qualified species to the List, we explain our expeditious progress in ***removing*** from the Lists species that no longer require the protections of the Act. First, we are making expeditious progress in identifying species that may warrant listing. In FY 2019 and FY 2020 (as of September 30, 2020), we completed 90-day findings on petitions to list 14 species. Second, we are making expeditious progress in evaluating the best scientific and commercial data available about species and threats they face (status reviews) to determine whether or not listing is warranted. In FY 2019 and FY 2020 (as of September 30, 2020), we completed 12-month findings for 69 species. In addition, we funded and worked on the development of 12-month findings for 34 species and proposed listing determinations for 9 candidates. Although we did not complete those actions during FY 2019 or FY 2020 (as of September 30, 2020), we made expeditious progress towards doing so by initiating and making progress on the status reviews to determine whether adding the species to the Lists is warranted. Third, we are making expeditious progress in adding qualified species to the Lists. In FY 2019 and FY 2020 (as of September 30, 2020), we published final listing rules for 7 species, including final critical habitat designations for 1 of those species and final protective regulations under section 4(d) of the Act for 2 of the species. In addition, we published proposed rules to list an additional 20 species (including concurrent proposed critical habitat designations for 13 species and concurrent protective regulations under the Act's section 4(d) for 14 species). As required by the Act, we are also making expeditious progress in ***removing*** species from the Lists that no longer require the protections of the Act. Specifically, we are making expeditious progress in ***removing*** (delisting) domestic species, as well as reclassifying endangered species to threatened species status (downlisting). This work is being completed under the Recovery program in light of the resources available for recovery actions, which are funded through the recovery line item in the budget of the Endangered Species Program. Because recovery actions are funded separately from listing actions, they do not factor into our assessment of preclusion; that is, work on recovery actions does not preclude the availability of resources for completing new listing work. However, work on recovery actions does count towards our assessment of making expeditious progress because the Act states that expeditious progress includes both adding qualified species to, and ***removing*** qualified species from, the Lists of Endangered and Threatened Wildlife and Plants. During FY 2019 and FY 2020 (as of September 30, 2020), we finalized downlisting of 1 species, finalized delisting rules for 7 species, proposed downlisting of 7 species, and proposed delisting of 11 species. The rate at which the Service has completed delisting and downlisting actions in FY 2019 and FY 2020 (as of September 30, 2020) is higher than any point in the history of the Act. The tables below catalog the Service's progress in FY 2019 and FY 2020 (as of September 30, 2020) as it pertains to our evaluation of making expeditious progress. Table 1 includes completed and published domestic listing actions; Table 2 includes domestic listing actions funded and initiated in previous fiscal years and in FY 2020 that are not yet complete as of September 30, 2020; and Table 3 includes completed and published proposed and final downlisting and delisting actions for domestic species.[[Page 81819]] Table 1--Completed Domestic Listing Actions in FY 2019 and FY 2020 [As of September 30]---------------------------------------------------------------------------------------------------------------- Federal Register Publication date Title Action(s) citation----------------------------------------------------------------------------------------------------------------10/9/2018................ Threatened Species Status for Proposed Listing--Threatened 83 FR 50574-50582. Coastal Distinct Population with Section 4(d) Rule and Segment of the Pacific 12-Month Petition Finding. Marten.10/9/2018................ Threatened Species Status for Proposed Listing--Threatened 83 FR 50560-50574. Black-Capped Petrel With a with Section 4(d) Rule and Section 4(d) Rule. 12-Month Petition Finding.10/9/2018................ 12-Month Petition Finding and Proposed Listing--Threatened 83 FR 50610-50630. Threatened Species Status with Section 4(d) Rule and for Eastern Black Rail With 12-Month Petition Finding. a Section 4(d) Rule.10/9/2018................ Threatened Species Status Proposed Listing--Threatened 83 FR 50582-50610. With Section 4(d) Rule and with Section 4(d) Rule and Critical Habitat Designation Critical Habitat and 12- for Slenderclaw Crayfish. Month Finding.10/11/2018............... Threatened Species Status Proposed Listing--Threatened 83 FR 51570-51609. With Section 4(d) Rule and with Section 4(d) Rule and Critical Habitat Designation Critical Habitat and 12- for Atlantic Pigtoe. Month Finding.11/21/2018............... Endangered Species Status for Final Listing--Endangered.... 83 FR 58747-58754. the Candy Darter.12/19/2018............... 12-Month Findings on 12-Month Petition Findings... 83 FR 65127-65134. Petitions to List 13 Species as Endangered or Threatened Species.12/28/2018............... Threatened Species Status for Final Listing--Threatened.... 83 FR 67131-67140. Trispot Darter.4/4/2019................. 12-Month Findings on 12-Month Petition Findings... 84 FR 13237-13242. Petitions to List Eight Species as Endangered or Threatened Species.4/4/2019................. 12-Month Petition Finding and Proposed Listing--Endangered 84 FR 13223-13237. Endangered Species Status and 12-Month Petition for the Missouri Distinct Finding. Population Segment of Eastern Hellbender.4/26/2019................ 90-Day Findings for Four 90-Day Petition Findings..... 84 FR 17768-17771. Species (3 domestic species and 1 foreign species) \*.5/22/2019................ Threatened Species Status Proposed Listings--Threatened 84 FR 23644-23691. with Section 4(d) Rule for Status with Section 4(d) Neuse River Waterdog and Rule with Critical Habitat; Endangered Species Status Endangered Status with for Carolina Madtom and Critical Habitat and 12- Proposed Designations of Month Petition Findings. Critical Habitat.8/13/2019................ Endangered Species Status for Proposed Listing--Endangered 84 FR 40006-40019. Franklin's Bumble Bee. and 12-Month Petition Finding.8/15/2019................ 12-Month Findings on 12-Month Petition Findings... 84 FR 41694-41699. Petitions to List Eight Species as Endangered or Threatened Species.8/15/2019................ 90-Day Findings for Three 90-Day Petition Findings..... 84 FR 41691-41694. Species.9/6/2019................. 90-Day Findings for Three 90-Day Petition Findings..... 84 FR 46927-46931. Species.10/07/2019............... Twelve Species Not Warranted 12-Month Petition Findings... 84 FR 53336-53343. for Listing as Endangered or Threatened Species.10/21/2019............... Endangered Species Status for Final Listing--Endangered.... 84 FR 56131-56136. Barrens Topminnow.11/08/2019............... 12-Month Finding for the 12-Month Petition Finding.... 84 FR 60371-60372. California Spotted Owl.11/21/2019............... Threatened Species Status for Final Listing--Threatened 84 FR 64210-64227. Meltwater Lednian Stonefly with Section 4(d) Rule. and Western Glacier Stonefly With a Section 4(d) Rule.12/06/2019............... Endangered Species Status for Proposed Listings--Endangered 84 FR 67060-67104. Beardless Chinchweed With with Critical Habitat; Designation of Critical Threatened with Section 4(d) Habitat, and Threatened Rule and 12-Month Petition Species Status for Bartram's Findings. Stonecrop With Section 4(d) Rule.12/19/2019............... Five Species Not Warranted 12-Month Petition Findings... 84 FR 69707-69712. for Listing as Endangered or Threatened Species.12/19/2019............... 90-Day Findings for Two 90-Day Petition Findings..... 84 FR 69713-69715. Species.01/08/2020............... Threatened Species Status for Proposed Listing--Threatened 85 FR 1018-1050. the Hermes Copper Butterfly with Section 4(d) Rule and With 4(d) Rule and Critical Habitat. Designation of Critical Habitat.01/08/2020............... Endangered Status for the Proposed Listing--Endangered. 85 FR 862-872. Sierra Nevada Distinct Population Segment of the Sierra Nevada Red Fox.05/05/2020............... Endangered Status for the Final Listing--Endangered 85 FR 26786-26820. Island Marble Butterfly and with Critical Habitat. Designation of Critical Habitat.05/15/2020............... Endangered Species Status for Final Listing--Endangered.... 85 FR 29532-29589. Southern Sierra Nevada Distinct Population Segment of Fisher.7/16/2020................ 90-Day Finding for the Dunes 90-Day Petition Finding...... 85 FR 43203-43204. Sagebrush Lizard.7/22/2020................ 90-Day Findings for Two 90-Day Petition Findings..... 85 FR 44265-44267. Species.7/23/2020................ Four Species Not Warranted 12-Month Petition Findings... 85 FR 44478-44483. for Listing as Endangered or Threatened Species.8/26/2020................ Endangered Species Status for Proposed Listing--Endangered 85 FR 52516-52540. Marron Bacora and with Critical Habitat and 12- Designation of Critical Month Petition Finding. Habitat.9/1/2020................. Two Species Not Warranted for 12-Month Petition Findings... 85 FR 54339-54342. Listing as Endangered or Threatened Species.[[Page 81820]] 9/16/2020................ Findings on a Petition To 12-Month Petition Finding.... 85 FR 57816-57818. Delist the Distinct Population Segment of the Western Yellow-Billed Cuckoo and a Petition To List the U.S Population of Northwestern Moose \*\*.9/17/2020................ Threatened Species Status for Proposed Listing--Threatened 85 FR 58224-58250. Chapin Mesa milkvetch and With Section 4(d) Rule and Section 4(d) Rule with Critical Habitat. Designation of Critical Habitat.9/17/2020................ Threatened Species Status for Proposed Listings--Threatened 85 FR 58192-58222. Big Creek crayfish and St. With Section 4(d) Rule and Francis River Crayfish and Critical Habitat. With Section 4(d) Rule with Designation of Critical Habitat.9/29/2020................ Threatened Species Status for Proposed Listings--Threatened 85 FR 61384-61458. longsolid and round With Section 4(d) Rule and hickorynut mussel and Critical Habitat; 12-Month Section 4(d) Rule With Petition Findings. Designation of Critical Habitat, Not Warranted 12- Month Finding for purple Lilliput.9/29/2020................ Threatened Species Status for Proposed Listing--Threatened 85 FR 61460-61498. Wright's Marsh Thistle and With Section (4) Rule and Section 4(d) Rule With Critical Habitat. Designation of Critical Habitat.----------------------------------------------------------------------------------------------------------------\* 90-Day finding batches may include findings regarding both domestic and foreign species. The total number of 90-day findings reported in this assessment of expeditious progress pertains to domestic species only.\*\* Batched 12-month findings may include findings regarding listing and delisting petitions. The total number of 12-month findings reported in this assessment of expeditious progress pertains to listing petitions only. Table 2--Domestic Listing Actions Funded and Initiated in Previous FYs and in FY 2020 That Are Not Yet Complete as of September 30, 2020------------------------------------------------------------------------ Species Action------------------------------------------------------------------------northern spotted owl................... 12-month finding.false spike............................ 12-month finding.Guadalupe fatmucket.................... 12-month finding.Guadalupe orb.......................... 12-month finding.Texas fatmucket........................ Proposed listing determination or not warranted finding.Texas fawnsfoot........................ Proposed listing determination or not warranted finding.Texas pimpleback....................... Proposed listing determination or not warranted finding.South Llano Springs moss............... 12-month finding.peppered chub.......................... 12-month finding.whitebark pine......................... Proposed listing determination or not warranted finding.Key ringneck snake..................... 12-month finding.Rimrock crowned snake.................. 12-month finding.Euphilotes ancilla cryptica............ 12-month finding.Euphilotes ancilla purpura............. 12-month finding.Hamlin Valley pyrg..................... 12-month finding.longitudinal gland pyrg................ 12-month finding.sub-globose snake pyrg................. 12-month finding.Louisiana pigtoe....................... 12-month finding.Texas heelsplitter..................... 12-month finding.triangle pigtoe........................ 12-month finding.prostrate milkweed..................... 12-month finding.alligator snapping turtle.............. 12-month finding.Black Creek crayfish................... 12-month finding.bracted twistflower.................... Proposed listing determination or not warranted finding.Canoe Creek clubshell.................. 12-month finding.Clear Lake hitch....................... 12-month finding.Doll's daisy........................... 12-month finding.frecklebelly madtom.................... 12-month finding.longfin smelt (San Francisco Bay-Delta Proposed listing determination DPS). or not warranted finding.magnificent Ramshorn................... Proposed listing determination or not warranted finding.Mt. Rainier white-tailed ptarmigan..... 12-month finding.Ocmulgee skullcap...................... 12-month finding.Penasco least chipmunk................. Proposed listing determination or not warranted finding.Puerto Rico harlequin butterfly........ Proposed listing determination or not warranted finding.Puget oregonian snail.................. 12-month finding.relict dace............................ 12-month finding.Rocky Mountain monkeyflower............ 12-month finding.sickle darter.......................... 12-month finding.southern elktoe........................ 12-month finding.southern white-tailed ptarmigan........ 12-month finding.tidewater amphipod..................... 12-month finding.[[Page 81821]] tufted puffin.......................... 12-month finding.western spadefoot...................... 12-month finding.------------------------------------------------------------------------ Table 3--Completed Domestic Recovery Actions (Proposed and Final Downlistings and Delistings) in FY 2019 and FY 2020 [As of September 30, 2020]---------------------------------------------------------------------------------------------------------------- Federal Register Publication date Title Action(s) Citation----------------------------------------------------------------------------------------------------------------10/18/2018........................ ***Removing*** Deseret Milkvetch Final Rule--Delisting..... 83 FR 52775-52786. (Astragalus desereticus) From the Federal List of Endangered and Threatened Plants.02/26/2019........................ ***Removing*** the Borax Lake Proposed Rule--Delisting.. 84 FR 6110-6126. Chub From the List of Endangered and Threatened Wildlife.03/15/2019........................ ***Removing*** the Gray Wolf Proposed Rule--Delisting.. 84 FR 9648-9687. (Canis lupus) From the List of Endangered and Threatened Wildlife.05/03/2019........................ Reclassifying the American Proposed Rule--Downlisting 84 FR 19013-19029. Burying Beetle From Endangered to Threatened on the Federal List of Endangered and Threatened Wildlife With a 4(d) Rule.08/27/2019........................ ***Removing*** Trifolium Proposed Rule--Delisting.. 84 FR 44832-44841. stoloniferum (Running Buffalo Clover) From the Federal List of Endangered and Threatened Plants.09/13/2019........................ ***Removing*** the Foskett Final Rule--Delisting..... 84 FR 48290-48308. Speckled Dace From the List of Endangered and Threatened Wildlife.10/03/2019........................ ***Removal*** of the Monito Final Rule--Delisting..... 84 FR 52791-52800. Gecko (Sphaerodactylus micropithecus) From the Federal List of Endangered and Threatened Wildlife.10/07/2019........................ ***Removal*** of Howellia Proposed Rule--Delisting.. 84 FR 53380-53397. aquatilis (Water Howellia) From the List of Endangered and Threatened Plants.10/09/2019........................ ***Removing*** the Kirtland's Final Rule--Delisting..... 84 FR 54436-54463. Warbler From the Federal List of Endangered and Threatened Wildlife.10/24/2019........................ ***Removal*** of the Interior Proposed Rule--Delisting.. 84 FR 56977-56991. Least Tern From the Federal List of Endangered and Threatened Wildlife.11/05/2019........................ ***Removing*** Oenothera Final Rule--Delisting..... 84 FR 59570-59588. coloradensis (Colorado Butterfly Plant) From the Federal List of Endangered and Threatened Plants.11/26/2019........................ ***Removing*** Bradshaw's Proposed Rule--Delisting.. 84 FR 65067-65080. Lomatium (Lomatium bradshawii) From the Federal List of Endangered and Threatened Plants.11/26/2019........................ Reclassification of the Proposed Rule--Downlisting 84 FR 65080-65098. Endangered June Sucker to Threatened With a Section 4(d) Rule.11/26/2019........................ ***Removal*** of the Nashville Proposed Rule--Delisting.. 84 FR 65098-65112. Crayfish From the Federal List of Endangered and Threatened Wildlife.12/19/2019........................ Reclassifying the Hawaiian Final Rule--Downlisting... 84 FR 69918-69947. Goose From Endangered to Threatened With a Section 4(d) Rule.01/02/2020........................ ***Removing*** the Hawaiian Hawk Final Rule--Delisting..... 85 FR 164-189. From the Federal List of Endangered and Threatened Wildlife.01/06/2020........................ ***Removing*** the Kanab Proposed Rule--Delisting.. 85 FR 487-492. Ambersnail From the List of Endangered and Threatened Wildlife.01/22/2020........................ Reclassification of the Proposed Rule--Downlisting 85 FR 3586-3601 Humpback Chub From Endangered to Threatened With a Section 4(d) Rule.03/10/2020........................ ***Removing*** Lepanthes Proposed Rule--Delisting.. 85 FR 13844-13856. eltoroensis From the Federal List of Endangered and Threatened Plants.[[Page 81822]] 4/27/2020......................... ***Removing*** Arenaria......... Proposed Rule--Delisting.. 85 FR 23302-23315. cumberlandensis (Cumberland Sandwort) From the Federal List of Endangered and Threatened Plants.06/01/2020........................ ***Removing*** San Benito Proposed Rule--Delisting.. 85 FR 33060-33078. Evening-Primrose (Camissonia benitensis) From the Federal List of Endangered and Threatened Plants.06/11/2020........................ ***Removing*** the Borax Lake Final Rule--Delisting..... 85 FR 35574-35594. Chub From the List of Endangered and Threatened Wildlife.07/24/2020........................ Reclassification of Morro Proposed Rule--Downlisting 85 FR 44821-44835. Shoulderband Snail (Helminthoglypta walkeriana) From Endangered to Threatened With a 4(d) Rule.08/19/2020........................ Reclassification of Proposed Rule--Downlisting 85 FR 50991-51006. Stephens' Kangaroo Rat From Endangered to Threatened With a Section 4(d) Rule.9/30/2020......................... Reclassification of Layia Proposed Rule--Downlisting 85 FR 61684-61700. carnosa (Beach Layia) From Endangered To Threatened Species Status With Section 4(d) Rule.9/30/2020......................... Reclassifying the Virgin Proposed Rule--Downlisting 85 FR 61700-61717. Islands Tree Boa From Endangered To Threatened With a Section 4(d) Rule.---------------------------------------------------------------------------------------------------------------- When a petitioned action is found to be warranted but precluded, the Service is required by the Act to treat the petition as resubmitted on an annual basis until a proposal or withdrawal is published. If the petitioned species is not already listed under the Act, the species becomes a ``candidate'' and is reviewed annually in the Candidate Notice of Review. The number of candidate species remaining in FY 2020 is the lowest it has been since 1975. For these species, we are working on developing a species status assessment, preparing proposed listing determinations, or preparing not-warranted 12-month findings. Another way that we have been expeditious in making progress in adding and ***removing*** qualified species to and from the Lists is that we have made our actions as efficient and timely as possible, given the requirements of the Act and regulations and constraints relating to workload and personnel. We are continually seeking ways to streamline processes or achieve economies of scale, such as batching related actions together for publication. Given our limited budget for implementing section 4 of the Act, these efforts also contribute toward our expeditious progress in adding and ***removing*** qualified species to and from the Lists. The monarch butterfly will be added to the candidate list, and we will continue to evaluate this species as new information becomes available. Continuing review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. A detailed discussion of the basis for this finding can be found in the monarch butterfly species assessment form and other supporting documents (see ADDRESSES, above).New Information We intend that any proposed listing rule for the monarch butterfly will be as accurate as possible. Therefore, we will continue to accept additional information and comments from all concerned governmental agencies, the scientific community, industry, or any other interested party concerning this finding. We request that you submit any new information concerning the taxonomy of, biology of, ecology of, status of, threats to, or conservation actions for the monarch butterfly to the person specified under FOR FURTHER INFORMATION CONTACT, whenever it becomes available. New information will help us monitor this species and make appropriate decisions about its conservation and status. We encourage all stakeholders to continue cooperative monitoring and conservation efforts.References Cited The list of the references cited in the petition finding is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under docket number FWS-R3-ES-2020-0103 and upon request from the person specified under FOR FURTHER INFORMATION CONTACT.Authors The primary authors of this document are the staff members of the Fish and Wildlife Service's Species Assessment Team.Authority The authority for this action is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C 1531 et seq.).Aurelia Skipwith,Director, U.S Fish and Wildlife Service.[FR Doc. 2020-27523 Filed 12-16-20; 8:45 am]BILLING CODE 4333-15-P

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[***Site condition report evaluation template: City Oils Limited***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62F8-M8G1-F0YC-N3NW-00000-00&context=1516831)

Impact News Service

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**Length:** 4434 words

**Body**

London: The Isle of Man Government has issued the following news release:

Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 1 of 11Application SCR evaluation template(To be completed by NPS, GWCL and EM/PPC officers).Name of activity, address and NGRCity Oils LimitedBow Biodiesel PlantVulcan WharfCooks RoadStratfordLondonE15 2PWTQ3786783195Document reference of application SCREPR/SP3330NY/S004 - Bow Biodiesel Plant Site Condition Report – Oct 2020SRAYMOND.vsoDate and version of application SCROctober 20201.0 Site detailsTo be completed by NPS(Source)Has the applicant provided the following information as required by the application SCR template?Response(Specify what information is needed from the applicant, if any)Site plans showing site layout, drainage, surfacing, receptors, sources of ***emissions***/releases and monitoring pointsSite location is provided in figure 1.1 – Bow Diesel Plant Site plan. Located in (Bow Biodiesel Plant Site Condition Report – Oct 2020)Original site boundary was varied in 2013 to increase the site to the area shown in figure 1.1 specified above. The original permit drainage system included no soakaways or interceptorsWithin the installation, with the only foul water drainage being provided for domestic sewers. Outside the installation, rainwater falling on the roof of the production building is stated to be lead away separately too communal surface water drains. Drainage plans have not been provided as part of the surrender application, but were submitted in 2015 as part of the variation application.Pete Smith.vsoSite was operated under a Low Impact status,No ***emission*** monitoring was set as part of the permit.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 2 of 112.0 Condition of the ***land*** at permit issueTo be completed by GWCL officers(Receptor)Has the applicant provided the following information as required by the application SCR template?Response(Specify what information is needed from the applicant, if any)a) Environmental setting including geology, hydrogeology and surface watersb) Pollution history including:• pollution incidents that may have affected ***land***• historical ***land***-uses and associated contaminants• visual/olfactory evidence of existing contamination• evidence of damage to existing pollution prevention measuresc) Evidence of historic contamination (i.e historical site investigation, assessment, remediation and verification reports (where available)d) Has the applicant chosen to collect baseline reference data?The Site Condition Report that accompanied the application for the permit at first issue was written on behalf of WJ Curley & Sons Ltd, Appendix A (Bow Biodiesel Plant Site Condition Report – Oct 2020) It features details of the ***land*** condition and assessment carried out before the issue of the permit, including, but not limited to:● Site Setting and Sources of Desk Study Research Information● Site Reconnaissance● Assessment of ***Land*** Pollution Potential● Polluting Substances and Relevant Activities● Assessment of the Likelihood of ***Land*** Pollution● Conceptual Site ModelHydrological - The boundary of the site is adjacent to western banks of Bow Back River and 32 metres from the River Lea, to the north. The site is within the Lower Lee catchment, which is predominantly urban, with a high population density.The site is also situated in a floodplain with medium risk to flooding (1-3.3% chance of flooding in a year). Since the granting of the permit, no flooding has occurred on site, including no overtopping of the sealed bund.Hydrogeological and geological - Underlying the site is a reinforced concrete raft which is half a metre of made ground supporting the industrial buildings at Vulcan Wharf. Beneath the made ground is drift alluvial material for approximately 7 to 9 metres. Below this is an impervious layer of London Clay of about 5 to 11 metres, and below that is 12 to 18 metres of Woolwich & Reading Beds (Lambeth Group), which sits upon about 10 metres of Thanet Sands, and 16-20 metres of Upper Chalk. The site lies above a highly vulnerable minor aquifer and overlying London Clay’ Bow Biodiesel Plant Site Condition Report – Oct 2020 – Appendix A.Ecological - The nearest designated habitats are greater than 4 kilometres from the site (the closest being Epping ***Forest*** SSSI,4km north east from the site).The original Site Condition Report (Bow Biodiesel Plant Site Condition Report – Oct 2020- Appendix A) explains that the site was utilised by Croda ***Agricultural***, who manufactured paint resins, before WJ Curley & Sons Ltd were lessees. It was likely Croda ***Agricultural*** stored methanol or similar substances on the site and no evidence found of historical pollution from the site during Croda ***Agricultural*** operation.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 3 of 112.0 Condition of the ***land*** at permit issueTo be completed by GWCL officers(Receptor)Has the applicant provided the following information as required by the application SCR template?Response(Specify what information is needed from the applicant, if any)The potentially polluting activities by WJ Curley & Sons Ltd (bio-diesel production) were carried out on a bunded concrete raft, the site’s primary protection against pollution of groundwater relied heavily on the integrity of this concrete. There were no records of any ***land*** pollution incidents or emergency responses for or in the vicinity of the site by WJ Curley & Sons Ltd before the permit was granted (in 2010).A site reconnaissance was undertaken by MEnv Ltd on behalf of WJ Curley & Sons Ltd on 26 July 2009 to inspect the site and surrounding area for indicators of potential ***land*** pollution. Site infrastructure was visually inspected to assess its competence and potential to cause or have caused releases to ***land***. The minor aquifer was assessed to establish whether any spills may have bypassed or penetrated the concrete raft, no such spills were reported. The site reconnaissance did not find an indication of potential areas of ***land*** pollution.3.0 Permitted activitiesTo be completed by NPS officers(Source)Has the applicant provided the following informationas required by the application SCR template?Response(Specify what information is needed from the applicant, if any)a) Permitted activitiesb) Non-permitted activities undertaken at the siteThe original Permit EPR/TP3938KQ, held by WJ Curley & Sons, authorised the ‘production of biodiesel from new and waste vegetable oils and rendered animal fat’. The permit was for a ‘Low Impact’ installation under Standard Rules SR2009 No 3.The permit was transferred to City Oils in 2013, and varied to increase the permit area, with a further variation to increase the throughput in 2015. Due to the reduced commercial demand for biodiesel, the operator expanded their operation to include processing used cooking oil (UCO) for supply to third-party biodiesel manufacturers. The site was previously permitted under a standard rules permit (SR2009No3 Low Impact Part A Installation for the production of Biodiesel). As a result of this variation the maximum throughput was increased to 10,000 tonnes per annum, meaning that the operation no longer complied with the standard rules set.All conditions under Standard Rules SR2009No3 were removed and the site operated as a Low Impact Installation (LII) for the manufacture of biodiesel. The permit also includes a waste activity for the physical and thermal treatment of waste (used cooking oil) to the dispatch off site of intermediate product for use in biofuel manufacture.The maximum amount of biodiesel manufactured was limited to three tonnes per day capacity of the site’s biodiesel process equipment.The installation continued to qualify for low impact status because it posed minimal environmental concern. There are no significant point source ***emissions*** to water, air or ***land***.S4.1A(1)(a)(ii) -Producing organic chemicals such as organic compounds containing oxygen, such as alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, peroxides, phenols, epoxy resinsDoc No 233\_06 Version 6 Last printed 07/04/2021 Page 4 of 113.0 Permitted activitiesTo be completed by NPS officers(Source)Has the applicant provided the following informationas required by the application SCR template?Response(Specify what information is needed from the applicant, if any)DAA – Storage and handling of intermediates, products, co-products and waste from biofuel manufactureDAA - Physical and thermal treatment of waste (used cooking oil) to produce an intermediate product.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 5 of 113.0(a) Environmental Risk AssessmentTo be completed by NPS officers(Source)The H1 environmental risk assessment should identify elements that could impact on ***land*** and waters, cross- referenced back to documents and plans provided as part of the wider permit application.The environmental risks of the activities were addressed in the Standard Rules’ Generic Risk Assessment.3.0(b) Will the pollution prevention measures protect ***land*** and groundwater?To be completed by EM/PPC officers(Conceptual model)Are the activities likely to result in pollution of ***land***?(Information on pollution prevention measures will be in another part of the application – Part B)If Yes, specify what additional controls/checks may be necessaryFor dangerous and/or hazardous substances only, are the pollution prevention measures for the relevant activities to a standard that is likely to prevent pollution of ***land***?(If the answer is no, briefly explain how you arrive at your conclusion)(This may consist of improved infrastructure, ***targeted*** surveillance monitoring by the operator and/or inspections by compliance teams)Application SCR decision summaryTo be completed by GWCL officer and returned to NPSTick relevant decisionSufficient information has been supplied to describe the condition of the site at permit issue; orInformation is missing- the following information must be obtained from the applicant.(Advise the permitting team on what additional information is needed)Pollution of ***land*** and water is unlikely; or(Pollution prevention measures just need to be reviewed during operation of the site)Pollution of ***land*** and water is likely(Advise the permitting team on what additional controls/checks may be necessary)Historical contamination is present- advise operator that collection of background data may be appropriateDate and name of reviewerDoc No 233\_06 Version 6 Last printed 07/04/2021 Page 6 of 11Operational phase SCR evaluation template(To be completed by EM/PPC and GWCL officers).Sections 4.0 to 7.0 may be completed annually in line with normal record checks.4.0 Changes to the activitiesTo be completed by EM/PPC officers(Source)Have there been any changes to the following during the operation of the site?Response(Specify what information is needed from the applicant, if any)a) Activity boundariesb) Permitted activitiesc) “Dangerous substances” used or producedThe original Permit EPR/TP3938KQ, held by WJ Curley & Sons, authorised the ‘production of biodiesel from new and waste vegetable oils and rendered animal fat’. The permit was for a ‘Low Impact’ installation under Standard Rules SR2009 No 3.The permitted site boundary changed on the issue of EPR/SP3330NY/V002 in 2013 for Low Impact Part A Installation Standard Rules (see Figure 1.1 Bow Biodiesel Plant Site Condition Report – Oct 2020), following the transfer of the permit to City Oils Limited (EPR/SP3330NY/T001). No changes to their environmental risks and mitigation measures, where identified as a result of the permit changes.The change in boundary was not accompanied by an updated SCR, therefore a review of changes to the environmental setting from permit issue is provided below by the site:• The hydrological setting remains as at permit issue. The Lee (Tottenham Locks to Bow Locks/Three Mills Locks) has a Water Framework Directive 2019 classification of Bad (‘bad’ ecological status and ‘fail’ chemical status). Surface water in the area flows to the south.• The hydrogeological and geological setting remains as at permit issue. The site is underlain by Alluvium (Secondary undifferentiated aquifer), River Terrace Deposits (Secondary A aquifer) and the London Clay Formation (Unproductive strata), with the Lambeth Group (Secondary A aquifer), Thanet Formation (Secondary A aquifer) and Chalk (Principal aquifer) at depth.• The ecological setting remains as at permit issue. There are no sensitive designations within 4km of the site.• The surrounding ***land*** uses include a regional waste recycling centre 65m to the north-west, 132V and 400V substations 125m north-west, and a grounds maintenance depot for the Olympic Park 120m to the north. Significant construction works have been undertaken in the area since the permit was issued, including across Cook’s Road adjacent to the north.EPR/SP3330NY/V003 issued in 2015 changed the permit from Low Impact Part A Installation Standard Rules to Bespoke installation permit, increasing the annual throughput to 10,000 tonnes and included the addition of the following waste operations:Physical and thermal treatment of waste (used cooking oil) to produce an intermediate product.● R3: Recycling/reclamation of organic substances which are not used as solvents (including composting and other biological transformation processes)● R13: Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 7 of 114.0 Changes to the activitiesTo be completed by EM/PPC officers(Source)Have there been any changes to the following during the operation of the site?Response(Specify what information is needed from the applicant, if any)The introductory note of the permit states the installation retained its low impact status since it poses ‘minimal environmental concern’. No changes to pollution prevention measures were required and soil and groundwater monitoring remained unnecessary.No additional dangerous substances have been used or produced as a result of the permitted activities since the first issue of the permit.5.0 Measures taken to protect landTo be completed by EM/PPC officers(Pathway)Has the applicant provided evidence from records collated during the lifetime of the permit, to show that the pollution prevention measures have worked?Site advised that the following measures were in place during the operation of the permit:• Adequate bunding of all potentially contaminative liquids that were used, stored or manufactured on the site.• Inspection of the site, tanks, valves and other points of potential leaks were regularly carried out, with replacement as required.• Hardstanding areas and the bund were maintained, including replacement of a section of hardstanding that was noted to be cracked during an inspection. It should be noted that the crack was not in an area of operation. (see CAR report below and site response)JBASHAM.vso JBasham.vso• All tanks were sealed and all pumps situated within a sealed cabinet to reduce risks from pollution associated with any site flooding.• Standard operating procedures to follow in the event of spillages, including used cooking oils and mixed fuels, were in place during the operation of the facility that all staff working on site were required to follow. These defined the required actions to be taken in the event of spills occurring both within, and outside of, bunded areas. These procedures were in place, and adhered to, in order to protect the environment and minimise any potential impacts to ground or water from activities on the site. Despite this, the risk of spills occurring outside the bund was low because the handling and storage of waste oils occurred within the bunded area of the site.• Leaks were given a high priority to be repaired immediately, which would prevent a build-up of deposits, and where any deposits were found, these were cleared promptly.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 8 of 116.0 Pollution incidents that may have impacted on ***land*** and their remediationTo be completed by EM/PPC officers(Sources)Has the applicant provided evidence to show that any pollution incidents which have taken place during the life of the permit and which may have impacted on ***land*** or water have been investigated and remediated (where necessary)?An incident logbook was kept for the site to record pollution incidents and remediation actions. Site advised that no pollution incidents have occurred since the issue of the permit.Replacement of a section of hardstanding in a non-operational area was required when it was noted that a crack had formed during routine inspection. This was included within a Compliance Assessment Report (CAR). Corrective actions were then taken to resolve the issue, which involved the ***removal*** of the cracked section of hardstanding, and replacement with new concrete, whilst ensuring that joints between the old and new hardstanding sections were sealed so no water ingress could occur. The operator has confirmed that an officer from the Environment Agency visited the site to check on the remedial works and no further action was required. (Although no evidence or date of this has been provided.)7.0 Soil gas and water quality monitoring (where relevant)To be completed by GWCL officersWhere soil gas and/or water quality monitoring has been undertaken, does this demonstrate that there has been no change in the condition of the ***land***? Has any change that has occurred been investigated and remediated?No geo-environmental samples were collected during the operation of the site, as no requirements were stipulated within the permit. Therefore, site have stated that no quantitative assessment can be conducted to prove no change in condition. Permitted activities were undertaken in line with the pollution prevention measures listed in Section 2.2 of the site condition report.The site is also covered by hardstanding which provides protection to the underlying soils and groundwater, whilst surface waters are protected from any uncontrolled runoff by the bund surrounding the site and established site drainage.One incident of cracked hardstanding was identified and action was taken to resolve the issue. Site advise that there was a low possibility that contaminated liquids were able to enter the environment through this crack, and have advised that based on other factors, such as the measures in place to minimise the presence of any contaminative products on the hardstanding, the crack being outside of the operational area, and the organic and biodegradable nature of any contaminants that did infiltrate, the impacts from this incident are likely to be minimal and short lived. The operator has confirmed that to their knowledge, no releases to the environment, through accidental spills or leaks, are known to have occurred.The geological setting of the site limits downward migration of fluids in the natural deposits, due to the predominantly clay consistency of the Alluvium, and the very low permeability of the London Clay Formation, which will provide protection to the sensitive deeper aquifers. British Geological Survey borehole records indicate that the made ground in the area has inclusions of ash, and other anthropogenic materials, which may naturally decrease groundwater quality through the release of leachable contamination, which would in turn impact surface water that is in connectivity with it. As the site is covered with maintained hardstanding, the volume of leachate generated under the site would be low.Site have confirmed that with no known sources of contamination emanating on the site, no further deterioration of ground or water condition is believed to have occurred as a result of the operation of the permit.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 9 of 11Surrender SCR Evaluation TemplateIf you haven’t already completed previous sections 4.0 to 7.0, do so now before assessing the surrender.8.0 Decommissioning and ***removal*** of pollution riskTo be completed by EM/PPC officersHas the applicant demonstrated that decommissioning works have been undertaken and that all pollution risks associated with the site have been removed? Has any contamination of ***land*** that has occurred during these activities been investigated and remediated?The six main external UCO processing tanks were flushed through with clean water with the liquid being captured in Intermediate Bulk Containers (IBCs). The tank pipework was then removed. The tanks which were mounted above ground in the bunded area on plinths were lifted on to a low loader using a Hiab, and everything was transported to the Gray’s site (EPR/ RP3838JA) for recommissioning. The waste liquid stored in IBCs was also transported to Gray’s and reprocessed when the new site became operational.The following equipment, each posing a pollution risk primarily through the leaking of pollutants, has been confirmed as removed from site:● Generator● Above ground bulk and operation tanks (Table 3.1)● Ion Exchange Filters● Pump box● All used cooking oil, drums, tins and cans from the storage areaTable 3.1 (List of bulk tanks and their condition at the time of ***removal*** from site) is located in Bow Biodiesel Plant Site Condition Report – Oct 2020.Site have confirmed that no pollution incidents, such as spills, occurred during the decommissioning activities on the site, and that the 20cm high bund surrounding the Production Building remains in good condition with no breaches present, no pollution escaped this bund to prompt remedial actions for outside the bund.The site was cleared of litter and removed for appropriate treatment or disposal off-site. Photographs of the site after decommissioning are shown in Appendix B of in Bow Biodiesel Plant Site Condition Report – Oct 2020. Area have not undertaken a final site visit to confirm all equipment has been removed, however this is being arranged.10.0 Statement of site conditionTo be completed by EM/PPC officersHas the applicant provided a statement, backed up with evidence, confirming that the permitted activities have ceased, decommissioning works are complete and that pollution risk has been removed and that the ***land*** and waters at the site are in a satisfactory state?Site have confirmed that following decommissioning, the site has been cleared of infrastructure which could act as a source of contamination. No staining or deteriorated hardstanding was noted to be present which would indicate the release of contaminants during operation, or a pathway through which contamination could reach the environment. All potentially contaminative liquids, including wash waters were collected and removed, ensuring that these could not act as a source of pollution.Site have confirmed that they therefore considered that all sources of contamination have been removed from the site, and that there are no potential on-going sources in the ground underlying the site as a result of the operational or decommissioning phases.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 10 of 119.0 Reference data and remediation (where relevant)To be completed by GWCL officersHas the applicant provided details of any surrender reference data that they have collected and any remediation that they have undertaken?(Reference data for soils must meet the requirements of policy 307\_03 Chemical test data on contaminated soils – quantification requirements). If the surrender reference data shows that the condition of the ***land*** has changed as a result of the permitted activities, the applicant will need to undertake remediation to return the condition of the ***land*** back to that at permit issue. You should not require remediation of historic contamination or contamination arising from non-permitted activities as part of the permit surrender.No reference data provided.10.0 Statement of site conditionTo be completed by GWCL officersHas the applicant provided a statement, backed up with evidence, confirming that the permitted activities have ceased, decommissioning works are complete and that pollution risk has been removed and that the ***land*** and waters at the site are in a satisfactory state?CommentsIt should be noted that the site location has a low sensitivity with respect to controlled waters. The geology is Superficial (undifferentiated) alluvium going onto a large thickness of Unproductive London Clay bedrock. The site is also not within a Source Protection Zone.The site has operated as a low impact installation throughout its lifetime, and thus there has been no obligation to undertake periodic groundwater monitoring. Similarly there was no groundwater monitoring for the application of the original permit (EPR/TP3938KQ). Therefore I have based my decision on the SCR, the CAR assessments undertaken throughout the permit lifetime, and the actions undertaken by Cityoils in response.The site inspection undertaken on 03/12/2020 outlined a number of issues, including tanks, pipework etc. still remaining on site. In response the operator removed this infrastructure, as well as deep cleaning site surfacing and disposing of the resultant wastewater. This removed the main potential contaminant sources from the site.The follow-up inspection undertaken on 25/03/2021 identified some pooled liquid on the site surfacing, which was subsequently pumped off-site. The fact that this liquid was pooled gives confidence that the site surfacing in this area is appropriate and doesn’t represent a pathway to the underlying superficial aquifer. The final verification photos provided by the operator shows the site is clean and clear of most infrastructure.Given that the site infrastructure has been removed, the site cleaned and standing water pumped, the remaining risk to groundwater is low. Therefore I am comfortable supporting site surrender at this time.Doc No 233\_06 Version 6 Last printed 07/04/2021 Page 11 of 11Surrender SCR decision summaryTo be completed by GWCL officers and returned to NPSTick relevant decisionSufficient information has been supplied to show that pollution risk has been removed and that the site is in a satisfactory state – accept the application to surrender the permit; orXInsufficient information has been supplied to show that pollution risk has been removed or that the site is in a satisfactory state – do not accept the application to surrender the permit. The following information must to be obtained from the applicant before the permit is determined:Date and name of reviewerAlex Coates 31/03/2021

**Load-Date:** April 14, 2021

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[***What can we all do to slow the speed of climate change?***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62PC-2031-JBNF-W07M-00000-00&context=1516831)

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**Section:** SPECIAL FEATURES; Version:1

**Length:** 2230 words

**Byline:** By, Russ Taylerson

**Highlight:** Three sustainability experts answer your questions on making changes for the better #TogetherForOurPlanet #cop26 #racetozero

**Body**

As we all know, just over a year ago the world changed. It began with news reports of a virus in the city of Wuhan, in China, that soon became a global pandemic. The Covid crisis led to lockdowns across the world as governments battled to contain the spread. Being at home all the time has led to all sorts of changes to our habits which we wouldn't have imagined a year ago.

It's been clear to see the short term impact that lockdowns have had on the environment, with reductions in CO2 ***emissions*** across the world. But as we emerge from the pandemic those ***emissions*** will start to rise again. So it's the ideal time to look at how we can minimise our impact on the environment by living, working and moving in smarter ways.

The prime minister recently announced plans to cut the UK's carbon ***emissions*** by 78 per cent by 2035 -a hugely ambitious ***target*** that would put the country three-quarters of the way to reaching net-zero by 2050. It would mean changes to the way Britain powers its homes, cars and factories, how it feeds its people and what it does to dispose of carbon dioxide.

In the US, President Joe Biden hosted a virtual climate summit, where he announced new stiffer ***emissions*** ***targets*** for the States and called on the world's major economies to join him in taking action to slash greenhouse gas ***emissions***.

Later this year, Glasgow will host the 26th UN Climate Change Conference COP26 where nations from across the globe will gather to discuss how world leaders can influence environmental change for everyone.

But it takes more than governments to make a change and we all have a part to play as individuals and businesses.

With this in mind, through its Climate Accelerator programme and as an official sponsorship of COP26, Nat West has brought together a team of experts to answer questions on climate change and what we, as individuals, can do to help.

First up is work life, something that has changed in ways we wouldn't have considered 12 months ago.

Is working from home here to stay and what impact do you think it will have on the environment

"It's a bit of a mixed picture, working from home will definitely continue, a recent survey of 800 corporate executives revealed more than 38 per cent will work remotely one or two days a week," said Rishi Madlani, a sustainable finance expert from Nat West.

"The key is to think about using new technologies to reduce business travel."

Caty Batten, the co-founder of Intaconnected, whose mission is to help businesses play their part in the fight against climate change, agrees.

"The conversations we're having with companies and employees is that it's not going to be anytime soon that we'll back to work full time in the place of work that we were."

The key says Matthew Isaacs of My ***Emissions***, a firm that helps businesses calculate and reduce their carbon footprint, is to keep talking.

"I think it's to keep conversations going, speaking about the impact these measures can have, how connected we can be in this virtual world and how we can continue working and meeting people and conduct business deals virtually," he said.

Carbon credits are available to help both businesses and individuals reduce their impact on the planet but what are they and how do they work

"In terms of our carbon footprint as either a business or as an individual, there are numerous apps that can help you understand what your own carbon footprint is. Companies can incentivise employees to use these to help measure their impact on the environment," said Caty.

Rishi agrees: "We all need to do certain things for our work, see where your impacts are and use some of the tools out there. We have partnered with CoGo to help Nat West customers measure their ***emissions***. I would say take a look at what your ***emissions*** are and take a step to reduce them."

Caty continued: "Once you understand the size of your footprint you can offset that, which means you can choose a variety of different projects that are able to absorb that same equivalent of carbon dioxide.

"One of the best ways we can be absorbing carbon dioxide out of the atmosphere is through nature-based solutions, such as tree planting, mangrove restoration and the seagrass meadows around our coastlines, they are all absorbing carbon dioxide. This is where you offset your own carbon footprint into those solutions."

Is there anything we can do at home to help, whether that's recycling more or changing our diets

Matthew feels there is work to be done. "There's so much that people can do. In terms of food, there's a huge opportunity. Currently, food is responsible for 25% of all greenhouse gas ***emissions***. So we could massively reduce that if we moved towards lower carbon foods and making more sustainable choices.

"If we all went meat-free for one day a week, it would make a massive dent in not just your personal greenhouse gas ***emissions*** but also global ***emissions***. But even if you don't want to change your diet, there are really simple things you can do that will also save you money.

"Another big problem is food waste. Currently, food waste is estimated to be responsible for 6% of all greenhouse gas ***emissions***, which's more than the entire aviation industry combined.

"So if everyone just made sure they cut out as much of food waste as possible, that's a really important thing we could all do to make a difference on climate change."

Caty believes that being conscious is key.

"It's important that everyone takes ownership of their choices, so understanding what to look for in the ingredients of the food you buy.

Deforestation is another contributing factor to the ***emissions*** crisis as swathes of ***forest*** across the globe are felled to make way for ***agriculture***.

"We can make those choices that avoid consuming the products that are contributing to the ***removal*** of those critical eco-systems that would otherwise protect us, said Caty,

"By selecting sustainable ingredients we can incentivise producers to switch or to take more action to ensure that the way they are producing those foods is more responsible.

"As for recycling, ensuring that the packaging you place in the recycling bin can actually be recycled is important and sharing that knowledge with others is really important."

Realistically, how much of a difference can shopping locally make

"One of the biggest benefits of shopping locally and purchasing food that's grown locally is you can actually get to understand how your items are made," said Matthew.

"There's a misconception that transportation of goods is the leading emitter. This makes up a small percentage of the overall carbon footprint of a product. It's more important to understand how food is farmed and made rather than how it's transported.

"We're working on a labelling project that should make it easier for consumers to understand the carbon cost of the products they buy. The more information you have on the products you buy the better choices you can make and, of course, shopping locally gives that opportunity.

Do you think habits are changing and people are becoming more aware of where their food comes from

"Because of the pandemic, people have more time to grow a garden or be there to water their plants. Many people got chickens last summer as they were at home and could and have their own eggs, but all eggs purchased in stores have a stamp, which you can use to find out where the chicken that laid it lives and whether that looks like a cool place to grow up as a chicken or not," said Caty.

"The pandemic has given us all time to think about nature and appreciate what we have around us and our place in that."

Matthew feels we could do more: "One of the real trends that have come up is the rise of plant-based milk alternatives.

"And it's simple to make your own oat milk for example and finding options like that means we don't have to be so reliant on goods you can buy in the supermarket.

"There are so many options out there that living sustainably is much more affordable."

Clothing should also be considered a sustainable option thinks Matthew.

"And with clothing, the most sustainable items are the ones you already own. So if you can find ways of repurposing them it extends their life then that's a great way to save money and one of the most environmentally friendly things we can all do to help reduce global ***emissions***."

"The point Matthew made around fashion is critical and fast fashion is a huge issue," said Caty.

"From the way the garments are made and transported and materials used, we buy them cheaply and throw them away."

"High fashion even is becoming much more affordable and renting clothes is an option. And then there's charity clothes shopping -it's become the cool thing to do. Wear it for a year then return it to the pot for someone else to use.

"If we could have that mentally for every choice we make as a consumer you're also encouraging business to change as they respond to you."

But we all need to think about small changes. "The key thing for me is to encourage anyone to think about what can you do, said Rishi. "Some things you can't change, but change the things you can. In your home, can you change your lifestyle "Whether, for example, it's turning the heating down a couple of degrees, think about all the measures you can do.

"Secondly, think about how you travel, can you walk, cycle, use public transport instead of using a car.

"We all need to do certain things for our work, see where our impacts are and use some of the tools out there. We have partnered with CoGo to help Nat West customers measure their ***emissions***. I would say take a look at what your ***emissions*** are and take the next step," said Rishi.

Do you think there should be clearer labels on products so people understand more about their purchases

"One of the problems is just how complicated the whole life cycle and supply chain of different foods and products are, you don't have information on a label about whether a product has been shipped, driven in a van or flown, you don't what energy has been used at the factory, notes Matthew.

"There's a big difference if you're buying an item of clothing that's been produced in a factory that's run on renewable energy in the UK rather than one that's powered by coal-fired energy from the other side of the world.

"In that sense carbon labelling is hugely important, distanced travelled is just one aspect of a product's lifecycle and what we're trying to do with MY ***Emissions*** is look at the impact across its whole lifecycle. A good example of this is tomatoes grown out of season.

"Tomatoes grown in the UK in season will have a really low carbon footprint, but growing tomatoes out of season in the UK is really difficult.

"The energy required to heat the greenhouses is higher than the energy used to import tomatoes that, for example, have been grown in Spain. So in the winter months, it's more sustainable to eat tomatoes imported from countries where they've been grown seasonally. This is why labelling is so crucial."

Do you think awareness months and days work, for example, Veganuary

"Awareness is critical, events such as International Women's Day brings a lot of awareness. People have busy lives and championing a particular cause like Veganuary means people are starting to see in social media feeds and from friends and colleagues why they took a certain action for one month and that brings up conversation and debate, which are powerful tools to change," comments Caty.

Nat West has hugely ambitious ***targets***, they're planning to be climate positive by 2025, what are your thoughts about that

"It's tough but we have no choice, we've all see the BBC and Netflix documentaries, there's too much at risk here and we have to act now," said Rishi.

"The proof point for me is the pace we've de-carbonised the UK electricity supply. We've seen a huge deployment of renewables and that clarity of government policy and their long-term plan around this continues to accelerate. We're Nat West delighted to be one of the largest financiers of UK renewables. In the last 10 years, we've been the leading lender in that space."

Finally, we all have to take responsibility for the climate, but will change happen someday soon, or ever

"So I'd say one of the big changes in the last 12 months is just how more climate change is part of the conversation and that is leading to significant changes, The government has brought forward its commitment to climate change," said Matthew.

"We've got the COP26 summit later this year and suddenly climate change is on the front pages of so many publications and at the forefront of everyone's mind.

"And fundamentally, that's almost the first step and the biggest step in seeing change happening and everyone has an opportunity no matter how big or small to make difference.

If you would like to find out more about the work Nat West is doing to improve sustainability in business from investing in off-shore wind farms to reducing its involvement in the production of fossil fuels you can visit their website.

**Load-Date:** May 17, 2021

**End of Document**



[***Endangered and Threatened Species: 12-Month Finding for the Monarch Butterfly***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61JR-T7D1-F0YC-N48K-00000-00&context=1516831)

Impact News Service

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**Body**

Washington, DC: This Rule document was issued by the Fish and Wildlife Service (FWS)

Action

Notice of 12-month finding.Summary

We, the U.S Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the monarch butterfly (Danaus plexippus plexippus) as a threatened species under the Endangered Species Act of 1973, as amended. After a thorough review of the best available scientific and commercial information, we find that listing the monarch butterfly as an endangered or threatened species is warranted but precluded by higher priority actions to amend the Lists of Endangered and Threatened Wildlife and Plants. We will develop a proposed rule to list the monarch butterfly as our priorities allow. However, we ask the public to submit to us any new information relevant to the status of the species or its habitat at any time.Dates

The finding in this document was made on December 17, 2020.Addresses

A detailed description of the basis for this finding is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under docket number FWS-R3-ES-2020-0103.

Supporting information used to prepare this finding is available for public inspection, by appointment, during normal business hours, by contacting the person specified under FOR FURTHER INFORMATION CONTACT. Please submit any new information, materials, comments, or questions concerning this finding to the person specified under FOR FURTHER INFORMATION CONTACT.For Further Information Contact

Barbara Hosler, Regional Listing Coordinator, Ecological Services, Great Lakes Region, telephone: 517-351-6326, email: [*monarch@fws.gov*](mailto:monarch@fws.gov) If you use a telecommunications device for the deaf (TDD), please call the Federal Relay Service at 800-877-8339.Supplementary InformationBackground

Under section 4(b)(3)(B) of the Endangered Species Act of 1973, as amended (Act; 16 U.S.C 1531 et seq.), we are required to make a finding whether or not a petitioned action is warranted within 12 months after receiving any petition that we have determined contains substantial scientific or commercial information indicating that the petitioned action may be warranted (“12-month finding”). We must make a finding that the petitioned action is (1) not warranted, (2) warranted, or (3) warranted but precluded. “Warranted but precluded” means that (a) the petitioned action is warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are endangered or threatened species, and (b) expeditious progress is being made to add qualified species to the Lists of Endangered and Threatened Wildlife and Plants (Lists) and to ***remove*** from the Lists species for which the protections of the Act are no longer necessary. Section 4(b)(3)(C) of the Act requires that, when we find that a petitioned action is warranted but precluded, we treat the petition as though it is resubmitted on the date of such finding, that is, requiring that a subsequent finding be made within 12 months of that date. We must publish these 12-month findings in the Federal Register.Summary of Information Pertaining to the Five Factors

Section 4 of the Act (16 U.S.C 1533) and the implementing regulations at part 424 of title 50 of the Code of Federal Regulations (50 CFR part 424) set forth procedures for adding species to, ***removing*** species from, or reclassifying species on the Lists (found in 50 CFR part 17). The Act defines “endangered species” as any species that is in danger of extinction throughout all or a significant portion of its range (16 U.S.C 1532(6)) and “threatened species” as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (16 U.S.C 1532(20)). Under section 4(a)(1) of the Act, a species may be determined to be an endangered species or a threatened species because of any of the following five factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species. ” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species. ” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term “foreseeable future” extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

In conducting our evaluation of the five factors provided in section 4(a)(1) of the Act to determine whether the monarch butterfly meets the definition of an “endangered species” or “threatened species,” we considered and thoroughly evaluated the best scientific and commercial information available regarding the past, present, and future threats to the species. We reviewed the petition, information available in our files, and other available published and unpublished information. This evaluation may include information from recognized experts; Federal, State, and Tribal governments; academic institutions; foreign governments; private entities; and other members of the public.

The species assessment form for the monarch butterfly contains more detailed biological information, a thorough analysis of the listing factors, and an explanation of why we determined that this species meets the definition of an endangered species or a threatened species. This supporting information can be found on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under docket number FWS-R3-ES-2020-0103. The following is an informational summary of the finding in this document.Previous Federal Actions

On August 26, 2014, we received a petition from the Center for Biological Diversity (CBD), Center for Food Safety (CFS), Xerces Society for Invertebrate Conservation, and Dr. Lincoln Brower, requesting that we list the monarch butterfly (Danaus plexippus plexippus) as a threatened species under the Act. On December 31, 2014, we published a 90-day finding that the petition presented substantial scientific or commercial information, indicating that listing the monarch butterfly may be warranted (79 FR 78775). On March 10, 2016, the CFS and CBD filed a complaint against the Service for not issuing a finding on the petition within the statutory timeframe, and on July 5, 2016, we entered a stipulated settlement agreement with CFS and CBD to submit the 12-month finding to the Federal Register by June 30, 2019. On May 24, 2019, the court granted an extension of this deadline to December 15, 2020.Summary of Finding

The petition that the Service received in 2014 was for listing a subspecies of the monarch butterfly (Danaus plexippus plexippus) (Center for Biological Diversity et al., 2014, p. 4). The petition also requested a determination of whether any new North American subspecies of Danaus plexippus should be listed. After careful examination of the literature and consultation with experts, there is no clearly agreed upon definition of potential subspecies of Danaus plexippus or where the geographic borders between these subspecies might exist. Given these findings, we examined the entire range of Danaus plexippus.

Monarch butterflies in eastern and western North America represent the ancestral origin for the species worldwide. They exhibit long-distance migration and overwinter as adults at ***forested*** locations in Mexico and California. These overwintering sites provide protection from the elements (for example, rain, wind, hail, and excessive radiation) and moderate temperatures, as well as nectar and clean water sources located nearby. Adult monarch butterflies feed on nectar from a wide variety of flowers. Reproduction is dependent on the presence of milkweed, the sole food source for larvae. Monarch butterflies are found in 90 countries, islands, or island groups. Monarch butterflies have become naturalized at most of these locations outside of North America since 1840. The populations outside of eastern and western North America (including southern Florida) do not exhibit long-distance migratory behavior.

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the monarch butterfly, and we evaluated all relevant factors under the five listing factors, including any regulatory mechanisms and conservation measures addressing these stressors. The primary threats to the monarch's biological status include loss and degradation of habitat from conversion of grasslands to ***agriculture***, widespread use of herbicides, logging/thinning at overwintering sites in Mexico, senescence and incompatible management of overwintering sites in California, urban development, and drought (Factor A); exposure to insecticides (Factor E); and effects of climate change (Factor E). Conservation efforts are addressing some of the threats from loss of milkweed and nectar resources across eastern and western North America and management at overwintering sites in California; however, these efforts and the existing regulatory mechanisms (Factor D) are not sufficient to protect the species from all of the threats. We found no evidence that the monarch butterfly is currently impacted at the population level by overutilization for commercial, recreational, scientific, or educational purposes (Factor B) or predation or disease (Factor C), nor did we find information to suggest that the species will be impacted by these factors in the future.

Based on the past annual censuses, the eastern and western North American migratory populations have been generally declining over the last 20 years. The monarch butterfly is also known from 29 populations that are outside of the 2 migratory North American populations. At least 1 monarch butterfly has been observed in 25 of these populations since 2000, and these are considered extant. Monarch butterfly presence within the remaining four populations has not been confirmed since 2000, but they are presumed extant. We know little about population sizes or trends of most of the populations outside of the eastern and western North American populations (except for Australia, which has an estimate of just over 1 million monarch butterflies). We do not have information related to the threats acting on the populations outside of eastern and western North America; however, we determined that 15 of the 29 populations, including the Australian population, are classified as being “at risk” due to sea-level rise or increasing temperatures, resulting from climate change.

The North American migratory populations are the largest relative to the other rangewide populations, accounting for more than 90 percent of the worldwide number of monarch butterflies. For the two North American migratory populations, we estimated the probability of the population abundance reaching the point at which extinction is inevitable (pE) for each population. In its current condition, the eastern North American population has a pE less than 10 percent over the next 10 years. The western North American population has a much higher risk of extinction due to current threats, with a pE of 60-68 percent over the next 10 years. Looking across the range of future conditions that we can reasonably determine, the pE for the eastern population is estimated to be 24 percent to 46 percent in 30 years, and the pE for the western population is estimated to be 92 percent to 95 percent in 30 years. These pE estimates incorporate the primary factors that influence the populations' resiliency, including availability of milkweed and nectar resources (losses as well as gains from conservation efforts), loss and degradation of overwintering habitat, insecticides, and effects of climate change. Additionally, at the current and projected population numbers, both the eastern and western populations become more vulnerable to catastrophic events (for example, extreme storms at the overwintering habitat). Also, under different climate change scenarios, the number of days and the area in which monarch butterflies will be exposed to unsuitably high temperatures will increase markedly. The potential loss of the North American migratory populations from these identified threats would substantially reduce the species' resiliency, representation, and redundancy.

To alleviate threats to the monarch butterfly, numerous conservation efforts have been developed and/or implemented since the species was petitioned in 2014, and these were considered in our assessment of the status of the species. Protection, restoration, enhancement and creation of habitat is a central aspect of recent monarch butterfly conservation strategies. In the breeding and migratory grounds, these habitat conservation strategies include the enhancement and creation of milkweed and nectar sources. Improved management at overwintering sites in California has been ***targeted*** to improve the status of western North American monarch butterflies. Major overarching landscape-level conservation plans and efforts include the Mid-America Monarch Conservation Strategy developed by the Midwest Association of Fish and Wildlife Agencies (MAFWA) and the Western Monarch Butterfly Conservation Plan developed by the Western Association of Fish and Wildlife Agencies (WAFWA). In early 2020, the Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation ***Lands*** (CCAA/CCA) was finalized and will contribute to meeting the MAFWA Strategy and WAFWA Plan goals. Under this agreement, energy and transportation entities will provide habitat for the species along energy and transportation rights-of-way corridors across the country, including a 100 foot extension of the right-of-way onto private ***agricultural*** ***lands***. Participants will carry out conservation measures to reduce or ***remove*** threats to the species and create and maintain habitat annually. In exchange for implementing voluntary conservation efforts and meeting specific requirements and criteria, those businesses and organizations enrolled in the CCAA will receive assurance from the Service that they will not have to implement additional conservation measures should the species be listed. The goal of the CCAA, which participants may continue to join until a final listing rule is published, is enrollment of up to 26 million acres of ***land*** in the agreement, providing over 300 million additional stems of milkweed.

Many conservation efforts implemented under Federal, Tribal, State, or other programs, such as the Farm Service Agency's Conservation Reserve Program, the Natural Resource Conservation Service's (NRCS) Environmental Quality Incentives Program (EQIP), ***Agricultural*** Conservation Easement Program and Conservation Stewardship Program, and the Service's Partners For Fish and Wildlife Program, are expected to contribute to the overarching habitat and population goals of the MAFWA Strategy and WAFWA Plan. Smaller conservation efforts implemented by local governments, non-governmental organizations (NGOs), private businesses, and interested individuals will also play an important role in reaching habitat and population goals established in the MAFWA Strategy and WAFWA Plan. The Service developed the Monarch Conservation Database (MCD) to capture information about monarch butterfly conservation plans and efforts to inform the listing decision. As of June 1, 2020, there are 48,812 complete monarch butterfly conservation effort records in the MCD that have a status of completed, implemented, or planned since 2014, and 113 monarch butterfly conservation plans. Among the efforts included in the MCD are those provided by NRCS from EQIP, their program designed to provide financial and technical assistance to ***agricultural*** producers to address natural resource concerns. Across the 10 states that NRCS ***targeted*** for monarch butterfly conservation efforts through EQIP (Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Ohio, Oklahoma, Texas, and Wisconsin), efforts on 16,952 acres have already been implemented and NCRS anticipates conservation on an additional 31,322 acres through ongoing enrollment (see [*https://www.fws.gov/savethemonarch/mcd.html*](https://www.fws.gov/savethemonarch/mcd.html)). In addition to conservation of the breeding and migratory habitats, ***land*** managers in California are developing and implementing grove management strategies within the western population's overwintering sites as well.

The monarch butterfly species assessment form and the Monarch Species Status Assessment report (Service 2020) provide additional details on the status of the monarch butterfly and the conservation efforts listed here (see ADDRESSES, above).

On the basis of the best scientific and commercial information available, we find that the petitioned action to list the monarch butterfly under the Act is warranted. We will make a determination on the status of the species as threatened or endangered when we complete a proposed listing determination. When we complete a proposed listing determination, we will examine whether the species may be endangered or threatened throughout all of its range or whether the species may be endangered or threatened in a significant portion of its range. However, an immediate proposal of a regulation implementing this action is precluded by work on higher priority listing actions and final listing determinations. This work includes all the actions listed in the National Listing Workplan discussed below under Preclusion and in the tables below under Expeditious Progress, as well as other actions at various stages of completion, such as 90-day findings for new petitions.Preclusion and Expeditious Progress

To make a finding that a particular action is warranted but precluded, the Service must make two determinations: (1) That the immediate proposal and timely promulgation of a final regulation is precluded by pending proposals to determine whether any species is endangered or threatened; and (2) that expeditious progress is being made to add qualified species to either of the Lists and to ***remove*** species from the Lists (16 U.S.C 1533(b)(3)(B)(iii)).Preclusion

A listing proposal is precluded if the Service does not have sufficient resources available to complete the proposal, because there are competing demands for those resources, and the relative priority of those competing demands is higher. Thus, in any given fiscal year (FY), multiple factors dictate whether it will be possible to undertake work on a proposed listing regulation or whether promulgation of such a proposal is precluded by higher priority listing actions—(1) The amount of resources available for completing the listing function, (2) the estimated cost of completing the proposed listing regulation, and (3) the Service's workload, along with the Service's prioritization of the proposed listing regulation in relation to other actions in its workload.Available Resources

The resources available for listing actions are determined through the annual Congressional appropriations process. In FY 1998 and for each fiscal year since then, Congress has placed a statutory cap on funds that may be expended for the Listing Program (spending cap). This spending cap was designed to prevent the listing function from depleting funds needed for other functions under the Act (for example, recovery functions, such as ***removing*** species from the Lists) or for other Service programs (see House Report 105-163, 105th Congress, 1st Session, July 1, 1997). The funds within the spending cap are available to support work involving the following listing actions: Proposed and final rules to add species to the Lists or to change the status of species from threatened to endangered; 90-day and 12-month findings on petitions to add species to the Lists or to change the status of a species from threatened to endangered; annual “resubmitted” petition findings on prior warranted-but-precluded petition findings as required under section 4(b)(3)(C)(i) of the Act; critical habitat petition findings; proposed rules designating critical habitat or final critical habitat determinations; and litigation-related, administrative, and program-management functions (including preparing and allocating budgets, responding to Congressional and public inquiries, and conducting public outreach regarding listing and critical habitat).

For more than two decades the size and cost of the workload in these categories of actions have far exceeded the amount of funding available to the Service under the spending cap for completing listing and critical habitat actions under the Act. Since we cannot exceed the spending cap without violating the Anti-Deficiency Act (31 U.S.C 1341(a)(1)(A)), each year we have been compelled to determine that work on at least some actions was precluded by work on higher priority actions. We make our determinations of preclusion on a nationwide basis to ensure that the species most in need of listing will be addressed first, and because we allocate our listing budget on a nationwide basis. Through the listing cap and the amount of funds needed to complete court-mandated actions within the cap, Congress and the courts have in effect determined the amount of money remaining (after completing court-mandated actions) for listing activities nationwide. Therefore, the funds that remain within the listing cap—after paying for work needed to comply with court orders or court-approved settlement agreements—set the framework within which we make our determinations of preclusion and expeditious progress.

For FY 2019, through the Consolidated Appropriations Act of 2019 (Pub. L. 116-6, February 15, 2019), Congress appropriated the Service $18,318,000 under a consolidated cap for all domestic and foreign listing work, including status assessments, listings, domestic critical habitat determinations, and related activities. For FY 2020, through the Further Consolidated Appropriations Act, 2020 (Pub. L. 116-94, December 20, 2019), Congress appropriated $20,318,000 for all domestic and foreign listing work. The amount of funding Congress will appropriate in future years is uncertain.Costs of Listing Actions

The work involved in preparing various listing documents can be extensive, and may include, but is not limited to: Gathering and assessing the best scientific and commercial data available and conducting analyses used as the basis for our decisions; writing and publishing documents; and obtaining, reviewing, and evaluating public comments and peer-review comments on proposed rules and incorporating relevant information from those comments into final rules. The number of listing actions that we can undertake in a given year also is influenced by the complexity of those listing actions; that is, more complex actions generally are more costly. Our practice of proposing to designate critical habitat concurrent with listing species requires additional coordination and an analysis of the economic impacts of the designation, and thus adds to the complexity and cost of our work. Since completing all of the work for outstanding listing and critical habitat actions has for so long required more funding than has been available within the spending cap, the Service has developed several ways to determine the relative priorities of the actions within its workload to identify the work it can complete with the funding it has available for listing and critical habitat actions each year.Prioritizing Listing Actions

The Service's Listing Program workload is broadly composed of four types of actions, which the Service prioritizes as follows: (1) Compliance with court orders and court-approved settlement agreements requiring that petition findings or listing or critical habitat determinations be completed by a specific date; (2) essential litigation-related, administrative, and listing program-management functions; (3) section 4 (of the Act) listing and critical habitat actions with absolute statutory deadlines; and (4) section 4 listing actions that do not have absolute statutory deadlines.

In previous years, the Service received many new petitions, including multiple petitions to list numerous species—a single petition even sought to list 404 domestic species. The emphasis that petitioners placed on seeking listing for hundreds of species at a time through the petition process significantly increased the number of actions within the third category of our workload—actions that have absolute statutory deadlines for making findings on those petitions. In addition, the necessity of dedicating all of the Listing Program funding towards determining the status of 251 candidate species and complying with other court-ordered requirements between 2011 and 2016 added to the number of petition findings awaiting action. Because we are not able to work on all of these at once, the Service's most recent effort to prioritize its workload focuses on addressing the backlog in petition findings that has resulted from the influx of large multispecies petitions and the 5-year period in which the Service was compelled to suspend making 12-month findings for most of those petitions. The number of petitions that are awaiting status reviews and accompanying 12-month findings illustrates the considerable extent of this backlog. As a result of the outstanding petitions to list hundreds of species and our efforts to make initial petition findings within 90 days of receiving the petition to the maximum extent practicable, at the beginning of FY 2020, we had 422 12-month petition findings for domestic species yet to be initiated and completed.

To determine the relative priorities of the outstanding 12-month petition findings, the Service developed a prioritization methodology (methodology) (81 FR 49248; July 27, 2016) after providing the public with notice and an opportunity to comment on the draft methodology (81 FR 2229; January 15, 2016). Under the methodology, we assign each 12-month finding to one of five priority bins: (1) The species is critically imperiled; (2) strong data are already available about the status of the species; (3) new science is underway that would inform key uncertainties about the status of the species; (4) conservation efforts are in development or underway and likely to address the status of the species; or (5) the available data on the species are limited. As a general rule, 12-month findings with a lower bin number have a higher priority than, and are scheduled before, 12-month findings with a higher bin number. However, we make some limited exceptions—for example, we may schedule a lower priority finding earlier if batching it with a higher priority finding would generate efficiencies. We may also consider where there are any special circumstances whereby an action should be bumped up (or down) in scheduling. One limitation that might result in divergence from priority order is when the current highest priorities are clustered in a geographic area, such that our scientific expertise at the field office level is fully occupied with their existing workload. We recognize that the geographic distribution of our scientific expertise will in some cases require us to balance workload across geographic areas. Since before Congress first established the spending cap for the Listing Program in 1998, the Listing Program workload has required considerably more resources than the amount of funds Congress has allowed for the Listing Program. Therefore, it is important that we be as efficient as possible in our listing process.

In 2016, we assigned the 12-month finding for monarch butterfly to bin 4 due to the many conservation efforts underway to address threats facing the species. We determined that these efforts were likely to reduce threats from loss of breeding habitat for the eastern and western North American populations and overwintering habitat for the western North American population. However, due to the stipulated settlement agreement, we are completing the 12-month finding for monarch butterfly before other higher priority actions.

After finalizing the prioritization methodology, we then applied that methodology to develop a multiyear National Listing Workplan (Workplan) for completing the outstanding status assessments and accompanying 12-month findings. The purpose of the Workplan is to provide transparency and predictability to the public about when the Service anticipates completing specific 12-month findings while allowing for flexibility to update the Workplan when new information changes the priorities. In May 2019, the Service released its updated Workplan for addressing the Act's domestic listing and critical habitat decisions over the subsequent 5 years. The updated Workplan identified the Service's schedule for addressing all domestic species on the candidate list and conducting 267 status reviews and accompanying 12-month findings by FY 2023 for domestic species that have been petitioned for Federal protections under the Act. As we implement our Workplan and work on proposed rules for the highest priority species, we increase efficiency by preparing multispecies proposals when appropriate, and these may include species with lower priority if they overlap geographically or have the same threats as one of the highest priority species.

Overall, 161 species on the Workplan (64 percent) have a higher bin number than the monarch butterfly. Current funding levels would not be sufficient to complete all of those 12-month findings in FY 2020, and listing appropriations for FY 2021 are not determined yet. The National Listing Workplan is available online at [*https://www.fws.gov/endangered/what-we-do/listing-workplan.html*](https://www.fws.gov/endangered/what-we-do/listing-workplan.html)

An additional way in which we determine relative priorities of outstanding actions in the section 4 program is application of the listing priority guidelines (48 FR 43098; September 21, 1983). Under those guidelines, which apply primarily to candidate species, we assign each candidate a listing priority number (LPN) of 1 to 12, depending on the magnitude of threats (high or moderate to low), immediacy of threats (imminent or nonimminent), and taxonomic status of the species (in order of priority: Monotypic genus (a species that is the sole member of a genus), a species, or a part of a species (subspecies or distinct population segment)). The lower the listing priority number, the higher the listing priority (that is, a species with an LPN of 1 would have the highest listing priority). A species with a higher LPN would generally be precluded from listing by species with lower LPNs, unless work on a proposed rule for the species with the higher LPN can be combined for efficiency with work on a proposed rule for other high-priority species.

Based on our listing priority system, we are assigning an LPN of 8 for the monarch butterfly. This priority number indicates the magnitude of threats is moderate to low and those threats are imminent. The priority number also reflects that we are evaluating monarch butterflies at the species level. We will continue to monitor the threats to the monarch butterfly and the species' status on an annual basis, and should the magnitude or the imminence of the threats change, we will revisit our assessment of the LPN.Listing Program Workload

The National Listing Workplan that the Service released in 2019 outlined work for domestic species over the period from 2019 to 2023. Tables 1 and 2 under Expeditious Progress, below, identify the higher priority listing actions that we completed through FY 2020 (September 30, 2020), as well as those we have been working on in FY 2020 but have not yet completed. For FY 2020, our National Listing Workplan includes 74 12-month findings or proposed listing actions that are at various stages of completion at the time of this finding. In addition to the actions scheduled in the National Listing Workplan, the overall Listing Program workload also includes the development and revision of listing regulations that are required by new court orders or settlement agreements, or to address the repercussions of any new court decisions, as well as proposed and final critical habitat designations or revisions for species that have already been listed. The Service's highest priorities for spending its funding in FY 2019 and FY 2020 are actions included in the Workplan and actions required to address court decisions. As described in “Prioritizing Listing Actions,” above, listing of the monarch butterfly is a lower priority action than these types of work. Therefore, these higher priority actions precluded immediate proposal of a regulation implementing the petitioned action in FY 2020, and the Service anticipates that they will continue to preclude work on listing the monarch butterfly in FY 2021 and the near future.Expeditious Progress

As explained above, a determination that listing is warranted but precluded must also demonstrate that expeditious progress is being made to add and ***remove*** qualified species to and from the Lists. Please note that, in the Code of Federal Regulations, the “Lists” are grouped as one list of endangered and threatened wildlife (50 CFR 17.11(h)) and one list of endangered and threatened plants (50 CFR 17.12(h)). However, the “Lists” referred to in the Act mean one list of endangered species (wildlife and plants) and one list of threatened species (wildlife and plants). Therefore, under the Act, expeditious progress includes actions to reclassify species—that is, either ***remove*** them from the list of threatened species and add them to the list of endangered species, or ***remove*** them from the list of endangered species and add them to the list of threatened species.

As with our “precluded” finding, the evaluation of whether expeditious progress is being made is a function of the resources available and the competing demands for those funds. As discussed earlier, the FY 2020 appropriations law included a spending cap of $20,318,000 for listing activities, and the FY 2019 appropriations law included a spending cap of $18,318,000 for listing activities.

As discussed below, given the limited resources available for listing, the competing demands for those funds, and the completed work cataloged in the tables below, we find that we are making expeditious progress in adding qualified species to the Lists.

The work of the Service's domestic listing program in FY 2019 and FY 2020 (as of September 30, 2020) includes all three of the steps necessary for adding species to the Lists: (1) Identifying species that may warrant listing (90-day petition findings); (2) undertaking an evaluation of the best available scientific data about those species and the threats they face to determine whether or not listing is warranted (a status review and accompanying 12-month finding); and (3) adding qualified species to the Lists (by publishing proposed and final listing rules). We explain in more detail how we are making expeditious progress in all three of the steps necessary for adding qualified species to the Lists (identifying, evaluating, and adding species). Subsequent to discussing our expeditious progress in adding qualified species to the List, we explain our expeditious progress in ***removing*** from the Lists species that no longer require the protections of the Act.

First, we are making expeditious progress in identifying species that may warrant listing. In FY 2019 and FY 2020 (as of September 30, 2020), we completed 90-day findings on petitions to list 14 species.

Second, we are making expeditious progress in evaluating the best scientific and commercial data available about species and threats they face (status reviews) to determine whether or not listing is warranted. In FY 2019 and FY 2020 (as of September 30, 2020), we completed 12-month findings for 69 species. In addition, we funded and worked on the development of 12-month findings for 34 species and proposed listing determinations for 9 candidates. Although we did not complete those actions during FY 2019 or FY 2020 (as of September 30, 2020), we made expeditious progress towards doing so by initiating and making progress on the status reviews to determine whether adding the species to the Lists is warranted.

Third, we are making expeditious progress in adding qualified species to the Lists. In FY 2019 and FY 2020 (as of September 30, 2020), we published final listing rules for 7 species, including final critical habitat designations for 1 of those species and final protective regulations under section 4(d) of the Act for 2 of the species. In addition, we published proposed rules to list an additional 20 species (including concurrent proposed critical habitat designations for 13 species and concurrent protective regulations under the Act's section 4(d) for 14 species).

As required by the Act, we are also making expeditious progress in ***removing*** species from the Lists that no longer require the protections of the Act. Specifically, we are making expeditious progress in ***removing*** (delisting) domestic species, as well as reclassifying endangered species to threatened species status (downlisting). This work is being completed under the Recovery program in light of the resources available for recovery actions, which are funded through the recovery line item in the budget of the Endangered Species Program. Because recovery actions are funded separately from listing actions, they do not factor into our assessment of preclusion; that is, work on recovery actions does not preclude the availability of resources for completing new listing work. However, work on recovery actions does count towards our assessment of making expeditious progress because the Act states that expeditious progress includes both adding qualified species to, and ***removing*** qualified species from, the Lists of Endangered and Threatened Wildlife and Plants. During FY 2019 and FY 2020 (as of September 30, 2020), we finalized downlisting of 1 species, finalized delisting rules for 7 species, proposed downlisting of 7 species, and proposed delisting of 11 species. The rate at which the Service has completed delisting and downlisting actions in FY 2019 and FY 2020 (as of September 30, 2020) is higher than any point in the history of the Act.

The tables below catalog the Service's progress in FY 2019 and FY 2020 (as of September 30, 2020) as it pertains to our evaluation of making expeditious progress. Table 1 includes completed and published domestic listing actions; Table 2 includes domestic listing actions funded and initiated in previous fiscal years and in FY 2020 that are not yet complete as of September 30, 2020; and Table 3 includes completed and published proposed and final downlisting and delisting actions for domestic species.Table 1—Completed Domestic Listing Actions in FY 2019 and FY 2020 Publication date Title Action(s) Federal Registercitation10/9/2018 Threatened Species Status for Coastal Distinct Population Segment of the Pacific Marten Proposed Listing—Threatened with Section 4(d) Rule and 12-Month Petition Finding 83 FR 50574-50582.10/9/2018 Threatened Species Status for Black-Capped Petrel With a Section 4(d) Rule Proposed Listing—Threatened with Section 4(d) Rule and 12-Month Petition Finding 83 FR 50560-50574.10/9/2018 12-Month Petition Finding and Threatened Species Status for Eastern Black Rail With a Section 4(d) Rule Proposed Listing—Threatened with Section 4(d) Rule and 12-Month Petition Finding 83 FR 50610-50630.10/9/2018 Threatened Species Status With Section 4(d) Rule and Critical Habitat Designation for Slenderclaw Crayfish Proposed Listing—Threatened with Section 4(d) Rule and Critical Habitat and 12-Month Finding 83 FR 50582-50610.10/11/2018 Threatened Species Status With Section 4(d) Rule and Critical Habitat Designation for Atlantic Pigtoe Proposed Listing—Threatened with Section 4(d) Rule and Critical Habitat and 12-Month Finding 83 FR 51570-51609.11/21/2018 Endangered Species Status for the Candy Darter Final Listing—Endangered 83 FR 58747-58754.12/19/2018 12-Month Findings on Petitions to List 13 Species as Endangered or Threatened Species 12-Month Petition Findings 83 FR 65127-65134.12/28/2018 Threatened Species Status for Trispot Darter Final Listing—Threatened 83 FR 67131-67140.4/4/2019 12-Month Findings on Petitions to List Eight Species as Endangered or Threatened Species 12-Month Petition Findings 84 FR 13237-13242.4/4/2019 12-Month Petition Finding and Endangered Species Status for the Missouri Distinct Population Segment of Eastern Hellbender Proposed Listing—Endangered and 12-Month Petition Finding 84 FR 13223-13237.4/26/2019 90-Day Findings for Four Species (3 domestic species and 1 foreign species) \* 90-Day Petition Findings 84 FR 17768-17771.5/22/2019 Threatened Species Status with Section 4(d) Rule for Neuse River Waterdog and Endangered Species Status for Carolina Madtom and Proposed Designations of Critical Habitat Proposed Listings—Threatened Status with Section 4(d) Rule with Critical Habitat; Endangered Status with Critical Habitat and 12-Month Petition Findings 84 FR 23644-23691.8/13/2019 Endangered Species Status for Franklin's Bumble Bee Proposed Listing—Endangered and 12-Month Petition Finding 84 FR 40006-40019.8/15/2019 12-Month Findings on Petitions to List Eight Species as Endangered or Threatened Species 12-Month Petition Findings 84 FR 41694-41699.8/15/2019 90-Day Findings for Three Species 90-Day Petition Findings 84 FR 41691-41694.9/6/2019 90-Day Findings for Three Species 90-Day Petition Findings 84 FR 46927-46931.10/07/2019 Twelve Species Not Warranted for Listing as Endangered or Threatened Species 12-Month Petition Findings 84 FR 53336-53343.10/21/2019 Endangered Species Status for Barrens Topminnow Final Listing—Endangered 84 FR 56131-56136.11/08/2019 12-Month Finding for the California Spotted Owl 12-Month Petition Finding 84 FR 60371-60372.11/21/2019 Threatened Species Status for Meltwater Lednian Stonefly and Western Glacier Stonefly With a Section 4(d) Rule Final Listing—Threatened with Section 4(d) Rule 84 FR 64210-64227.12/06/2019 Endangered Species Status for Beardless Chinchweed With Designation of Critical Habitat, and Threatened Species Status for Bartram's Stonecrop With Section 4(d) Rule Proposed Listings—Endangered with Critical Habitat; Threatened with Section 4(d) Rule and 12-Month Petition Findings 84 FR 67060-67104.12/19/2019 Five Species Not Warranted for Listing as Endangered or Threatened Species 12-Month Petition Findings 84 FR 69707-69712.12/19/2019 90-Day Findings for Two Species 90-Day Petition Findings 84 FR 69713-69715.01/08/2020 Threatened Species Status for the Hermes Copper Butterfly With 4(d) Rule and Designation of Critical Habitat Proposed Listing—Threatened with Section 4(d) Rule and Critical Habitat 85 FR 1018-1050.01/08/2020 Endangered Status for the Sierra Nevada Distinct Population Segment of the Sierra Nevada Red Fox Proposed Listing—Endangered 85 FR 862-872.05/05/2020 Endangered Status for the Island Marble Butterfly and Designation of Critical Habitat Final Listing—Endangered with Critical Habitat 85 FR 26786-26820.05/15/2020 Endangered Species Status for Southern Sierra Nevada Distinct Population Segment of Fisher Final Listing—Endangered 85 FR 29532-29589.7/16/2020 90-Day Finding for the Dunes Sagebrush Lizard 90-Day Petition Finding 85 FR 43203-43204.7/22/2020 90-Day Findings for Two Species 90-Day Petition Findings 85 FR 44265-44267.7/23/2020 Four Species Not Warranted for Listing as Endangered or Threatened Species 12-Month Petition Findings 85 FR 44478-44483.8/26/2020 Endangered Species Status for Marron Bacora and Designation of Critical Habitat Proposed Listing—Endangered with Critical Habitat and 12-Month Petition Finding 85 FR 52516-52540.9/1/2020 Two Species Not Warranted for Listing as Endangered or Threatened Species 12-Month Petition Findings 85 FR 54339-54342.9/16/2020 Findings on a Petition To Delist the Distinct Population Segment of the Western Yellow-Billed Cuckoo and a Petition To List the U.S Population of Northwestern Moose \*\* 12-Month Petition Finding 85 FR 57816-57818.9/17/2020 Threatened Species Status for Chapin Mesa milkvetch and Section 4(d) Rule with Designation of Critical Habitat Proposed Listing—Threatened With Section 4(d) Rule and Critical Habitat 85 FR 58224-58250.9/17/2020 Threatened Species Status for Big Creek crayfish and St. Francis River Crayfish and With Section 4(d) Rule with Designation of Critical Habitat Proposed Listings—Threatened With Section 4(d) Rule and Critical Habitat 85 FR 58192-58222.9/29/2020 Threatened Species Status for longsolid and round hickorynut mussel and Section 4(d) Rule With Designation of Critical Habitat, Not Warranted 12-Month Finding for purple Lilliput Proposed Listings—Threatened With Section 4(d) Rule and Critical Habitat; 12-Month Petition Findings 85 FR 61384-61458.9/29/2020 Threatened Species Status for Wright's Marsh Thistle and Section 4(d) Rule With Designation of Critical Habitat Proposed Listing—Threatened With Section (4) Rule and Critical Habitat 85 FR 61460-61498.Table 2—Domestic Listing Actions Funded and Initiated in Previous FYs and in FY 2020 That Are Not Yet Complete as of September 30, 2020 Species Actionnorthern spotted owl 12-month finding.false spike 12-month finding.Guadalupe fatmucket 12-month finding.Guadalupe orb 12-month finding.Texas fatmucket Proposed listing determination or not warranted finding.Texas fawnsfoot Proposed listing determination or not warranted finding.Texas pimpleback Proposed listing determination or not warranted finding.South Llano Springs moss 12-month finding.peppered chub 12-month finding.whitebark pine Proposed listing determination or not warranted finding.Key ringneck snake 12-month finding.Rimrock crowned snake 12-month finding.Euphilotes ancilla cryptica 12-month finding.Euphilotes ancilla purpura 12-month finding.Hamlin Valley pyrg 12-month finding.longitudinal gland pyrg 12-month finding.sub-globose snake pyrg 12-month finding.Louisiana pigtoe 12-month finding.Texas heelsplitter 12-month finding.triangle pigtoe 12-month finding.prostrate milkweed 12-month finding.alligator snapping turtle 12-month finding.Black Creek crayfish 12-month finding.bracted twistflower Proposed listing determination or not warranted finding.Canoe Creek clubshell 12-month finding.Clear Lake hitch 12-month finding.Doll's daisy 12-month finding.frecklebelly madtom 12-month finding.longfin smelt (San Francisco Bay-Delta DPS) Proposed listing determination or not warranted finding.magnificent Ramshorn Proposed listing determination or not warranted finding.Mt. Rainier white-tailed ptarmigan 12-month finding.Ocmulgee skullcap 12-month finding.Penasco least chipmunk Proposed listing determination or not warranted finding.Puerto Rico harlequin butterfly Proposed listing determination or not warranted finding.Puget oregonian snail 12-month finding.relict dace 12-month finding.Rocky Mountain monkeyflower 12-month finding.sickle darter 12-month finding.southern elktoe 12-month finding.southern white-tailed ptarmigan 12-month finding.tidewater amphipod 12-month finding.tufted puffin 12-month finding.western spadefoot 12-month finding.Table 3—Completed Domestic Recovery Actions (Proposed and Final Downlistings and Delistings) in FY 2019 and FY 2020 Publication date Title Action(s) Federal RegisterCitation10/18/2018 ***Removing*** Deseret Milkvetch (Astragalus desereticus) From the Federal List of Endangered and Threatened Plants Final Rule—Delisting 83 FR 52775-52786.02/26/2019 ***Removing*** the Borax Lake Chub From the List of Endangered and Threatened Wildlife Proposed Rule—Delisting 84 FR 6110-6126.03/15/2019 ***Removing*** the Gray Wolf (Canis lupus) From the List of Endangered and Threatened Wildlife Proposed Rule—Delisting 84 FR 9648-9687.05/03/2019 Reclassifying the American Burying Beetle From Endangered to Threatened on the Federal List of Endangered and Threatened Wildlife With a 4(d) Rule Proposed Rule—Downlisting 84 FR 19013-19029.08/27/2019 ***Removing*** Trifolium stoloniferum (Running Buffalo Clover) From the Federal List of Endangered and Threatened Plants Proposed Rule—Delisting 84 FR 44832-44841.09/13/2019 ***Removing*** the Foskett Speckled Dace From the List of Endangered and Threatened Wildlife Final Rule—Delisting 84 FR 48290-48308.10/03/2019 ***Removal*** of the Monito Gecko (Sphaerodactylus micropithecus) From the Federal List of Endangered and Threatened Wildlife Final Rule—Delisting 84 FR 52791-52800.10/07/2019 ***Removal*** of Howellia aquatilis (Water Howellia) From the List of Endangered and Threatened Plants Proposed Rule—Delisting 84 FR 53380-53397.10/09/2019 ***Removing*** the Kirtland's Warbler From the Federal List of Endangered and Threatened Wildlife Final Rule—Delisting 84 FR 54436-54463.10/24/2019 ***Removal*** of the Interior Least Tern From the Federal List of Endangered and Threatened Wildlife Proposed Rule—Delisting 84 FR 56977-56991.11/05/2019 ***Removing*** Oenothera coloradensis (Colorado Butterfly Plant) From the Federal List of Endangered and Threatened Plants Final Rule—Delisting 84 FR 59570-59588.11/26/2019 ***Removing*** Bradshaw's Lomatium (Lomatium bradshawii) From the Federal List of Endangered and Threatened Plants Proposed Rule—Delisting 84 FR 65067-65080.11/26/2019 Reclassification of the Endangered June Sucker to Threatened With a Section 4(d) Rule Proposed Rule—Downlisting 84 FR 65080-65098.11/26/2019 ***Removal*** of the Nashville Crayfish From the Federal List of Endangered and Threatened Wildlife Proposed Rule—Delisting 84 FR 65098-65112.12/19/2019 Reclassifying the Hawaiian Goose From Endangered to Threatened With a Section 4(d) Rule Final Rule—Downlisting 84 FR 69918-69947.01/02/2020 ***Removing*** the Hawaiian Hawk From the Federal List of Endangered and Threatened Wildlife Final Rule—Delisting 85 FR 164-189.01/06/2020 ***Removing*** the Kanab Ambersnail From the List of Endangered and Threatened Wildlife Proposed Rule—Delisting 85 FR 487-492.01/22/2020 Reclassification of the Humpback Chub From Endangered to Threatened With a Section 4(d) Rule Proposed Rule—Downlisting 85 FR 3586-360103/10/2020 ***Removing*** Lepanthes eltoroensis From the Federal List of Endangered and Threatened Plants Proposed Rule—Delisting 85 FR 13844-13856.4/27/2020 ***Removing*** Arenaria cumberlandensis (Cumberland Sandwort) From the Federal List of Endangered and Threatened Plants Proposed Rule—Delisting 85 FR 23302-23315.06/01/2020 ***Removing*** San Benito Evening-Primrose (Camissonia benitensis) From the Federal List of Endangered and Threatened Plants Proposed Rule—Delisting 85 FR 33060-33078.06/11/2020 ***Removing*** the Borax Lake Chub From the List of Endangered and Threatened Wildlife Final Rule—Delisting 85 FR 35574-35594.07/24/2020 Reclassification of Morro Shoulderband Snail (Helminthoglypta walkeriana) From Endangered to Threatened With a 4(d) Rule Proposed Rule—Downlisting 85 FR 44821-44835.08/19/2020 Reclassification of Stephens' Kangaroo Rat From Endangered to Threatened With a Section 4(d) Rule Proposed Rule—Downlisting 85 FR 50991-51006.9/30/2020 Reclassification of Layia carnosa (Beach Layia) From Endangered To Threatened Species Status With Section 4(d) Rule Proposed Rule—Downlisting 85 FR 61684-61700.9/30/2020 Reclassifying the Virgin Islands Tree Boa From Endangered To Threatened With a Section 4(d) Rule Proposed Rule—Downlisting 85 FR 61700-61717.

When a petitioned action is found to be warranted but precluded, the Service is required by the Act to treat the petition as resubmitted on an annual basis until a proposal or withdrawal is published. If the petitioned species is not already listed under the Act, the species becomes a “candidate” and is reviewed annually in the Candidate Notice of Review. The number of candidate species remaining in FY 2020 is the lowest it has been since 1975. For these species, we are working on developing a species status assessment, preparing proposed listing determinations, or preparing not-warranted 12-month findings.

Another way that we have been expeditious in making progress in adding and ***removing*** qualified species to and from the Lists is that we have made our actions as efficient and timely as possible, given the requirements of the Act and regulations and constraints relating to workload and personnel. We are continually seeking ways to streamline processes or achieve economies of scale, such as batching related actions together for publication. Given our limited budget for implementing section 4 of the Act, these efforts also contribute toward our expeditious progress in adding and ***removing*** qualified species to and from the Lists.

The monarch butterfly will be added to the candidate list, and we will continue to evaluate this species as new information becomes available. Continuing review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

A detailed discussion of the basis for this finding can be found in the monarch butterfly species assessment form and other supporting documents (see ADDRESSES, above).New Information

We intend that any proposed listing rule for the monarch butterfly will be as accurate as possible. Therefore, we will continue to accept additional information and comments from all concerned governmental agencies, the scientific community, industry, or any other interested party concerning this finding. We request that you submit any new information concerning the taxonomy of, biology of, ecology of, status of, threats to, or conservation actions for the monarch butterfly to the person specified under FOR FURTHER INFORMATION CONTACT, whenever it becomes available. New information will help us monitor this species and make appropriate decisions about its conservation and status. We encourage all stakeholders to continue cooperative monitoring and conservation efforts.References Cited

The list of the references cited in the petition finding is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under docket number FWS-R3-ES-2020-0103 and upon request from the person specified under FOR FURTHER INFORMATION CONTACT.Authors

The primary authors of this document are the staff members of the Fish and Wildlife Service's Species Assessment Team.Authority

The authority for this action is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C 1531 et seq.).Aurelia Skipwith,Director, U.S Fish and Wildlife Service.[FR Doc. 2020-27523 Filed 12-16-20; 8:45 am]BILLING CODE 4333-15-P

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**Highlight:** Three sustainability experts answer your questions on making changes for the better #TogetherForOurPlanet #cop26 #racetozero

**Body**

As we all know, just over a year ago the world changed. It began with news reports of a virus in the city of Wuhan, in China, that soon became a global pandemic. The Covid crisis led to lockdowns across the world as governments battled to contain the spread. Being at home all the time has led to all sorts of changes to our habits which we wouldn't have imagined a year ago.

It's been clear to see the short term impact that lockdowns have had on the environment, with reductions in CO2 ***emissions*** across the world. But as we emerge from the pandemic those ***emissions*** will start to rise again. So it's the ideal time to look at how we can minimise our impact on the environment by living, working and moving in smarter ways.

The prime minister recently announced plans to cut the UK's carbon ***emissions*** by 78 per cent by 2035 -a hugely ambitious ***target*** that would put the country three-quarters of the way to reaching net-zero by 2050. It would mean changes to the way Britain powers its homes, cars and factories, how it feeds its people and what it does to dispose of carbon dioxide.

In the US, President Joe Biden hosted a virtual climate summit, where he announced new stiffer ***emissions*** ***targets*** for the States and called on the world's major economies to join him in taking action to slash greenhouse gas ***emissions***.

Later this year, Glasgow will host the 26th UN Climate Change Conference COP26 where nations from across the globe will gather to discuss how world leaders can influence environmental change for everyone.

But it takes more than governments to make a change and we all have a part to play as individuals and businesses.

With this in mind, through its Climate Accelerator programme and as an official sponsorship of COP26, Nat West has brought together a team of experts to answer questions on climate change and what we, as individuals, can do to help.

First up is work life, something that has changed in ways we wouldn't have considered 12 months ago.

Is working from home here to stay and what impact do you think it will have on the environment

"It's a bit of a mixed picture, working from home will definitely continue, a recent survey of 800 corporate executives revealed more than 38 per cent will work remotely one or two days a week," said Rishi Madlani, a sustainable finance expert from Nat West.

"The key is to think about using new technologies to reduce business travel."

Caty Batten, the co-founder of Intaconnected, whose mission is to help businesses play their part in the fight against climate change, agrees.

"The conversations we're having with companies and employees is that it's not going to be anytime soon that we'll back to work full time in the place of work that we were."

The key says Matthew Isaacs of My ***Emissions***, a firm that helps businesses calculate and reduce their carbon footprint, is to keep talking.

"I think it's to keep conversations going, speaking about the impact these measures can have, how connected we can be in this virtual world and how we can continue working and meeting people and conduct business deals virtually," he said.

Carbon credits are available to help both businesses and individuals reduce their impact on the planet but what are they and how do they work

"In terms of our carbon footprint as either a business or as an individual, there are numerous apps that can help you understand what your own carbon footprint is. Companies can incentivise employees to use these to help measure their impact on the environment," said Caty.

Rishi agrees: "We all need to do certain things for our work, see where your impacts are and use some of the tools out there. We have partnered with CoGo to help Nat West customers measure their ***emissions***. I would say take a look at what your ***emissions*** are and take a step to reduce them."

Caty continued: "Once you understand the size of your footprint you can offset that, which means you can choose a variety of different projects that are able to absorb that same equivalent of carbon dioxide.

"One of the best ways we can be absorbing carbon dioxide out of the atmosphere is through nature-based solutions, such as tree planting, mangrove restoration and the seagrass meadows around our coastlines, they are all absorbing carbon dioxide. This is where you offset your own carbon footprint into those solutions."

Is there anything we can do at home to help, whether that's recycling more or changing our diets

Matthew feels there is work to be done. "There's so much that people can do. In terms of food, there's a huge opportunity. Currently, food is responsible for 25% of all greenhouse gas ***emissions***. So we could massively reduce that if we moved towards lower carbon foods and making more sustainable choices.

"If we all went meat-free for one day a week, it would make a massive dent in not just your personal greenhouse gas ***emissions*** but also global ***emissions***. But even if you don't want to change your diet, there are really simple things you can do that will also save you money.

"Another big problem is food waste. Currently, food waste is estimated to be responsible for 6% of all greenhouse gas ***emissions***, which's more than the entire aviation industry combined.

"So if everyone just made sure they cut out as much of food waste as possible, that's a really important thing we could all do to make a difference on climate change."

Caty believes that being conscious is key.

"It's important that everyone takes ownership of their choices, so understanding what to look for in the ingredients of the food you buy.

Deforestation is another contributing factor to the ***emissions*** crisis as swathes of ***forest*** across the globe are felled to make way for ***agriculture***.

"We can make those choices that avoid consuming the products that are contributing to the ***removal*** of those critical eco-systems that would otherwise protect us, said Caty,

"By selecting sustainable ingredients we can incentivise producers to switch or to take more action to ensure that the way they are producing those foods is more responsible.

"As for recycling, ensuring that the packaging you place in the recycling bin can actually be recycled is important and sharing that knowledge with others is really important."

Realistically, how much of a difference can shopping locally make

"One of the biggest benefits of shopping locally and purchasing food that's grown locally is you can actually get to understand how your items are made," said Matthew.

"There's a misconception that transportation of goods is the leading emitter. This makes up a small percentage of the overall carbon footprint of a product. It's more important to understand how food is farmed and made rather than how it's transported.

"We're working on a labelling project that should make it easier for consumers to understand the carbon cost of the products they buy. The more information you have on the products you buy the better choices you can make and, of course, shopping locally gives that opportunity.

Do you think habits are changing and people are becoming more aware of where their food comes from

"Because of the pandemic, people have more time to grow a garden or be there to water their plants. Many people got chickens last summer as they were at home and could and have their own eggs, but all eggs purchased in stores have a stamp, which you can use to find out where the chicken that laid it lives and whether that looks like a cool place to grow up as a chicken or not," said Caty.

"The pandemic has given us all time to think about nature and appreciate what we have around us and our place in that."

Matthew feels we could do more: "One of the real trends that have come up is the rise of plant-based milk alternatives.

"And it's simple to make your own oat milk for example and finding options like that means we don't have to be so reliant on goods you can buy in the supermarket.

"There are so many options out there that living sustainably is much more affordable."

Clothing should also be considered a sustainable option thinks Matthew.

"And with clothing, the most sustainable items are the ones you already own. So if you can find ways of repurposing them it extends their life then that's a great way to save money and one of the most environmentally friendly things we can all do to help reduce global ***emissions***."

"The point Matthew made around fashion is critical and fast fashion is a huge issue," said Caty.

"From the way the garments are made and transported and materials used, we buy them cheaply and throw them away."

"High fashion even is becoming much more affordable and renting clothes is an option. And then there's charity clothes shopping -it's become the cool thing to do. Wear it for a year then return it to the pot for someone else to use.

"If we could have that mentally for every choice we make as a consumer you're also encouraging business to change as they respond to you."

But we all need to think about small changes. "The key thing for me is to encourage anyone to think about what can you do, said Rishi. "Some things you can't change, but change the things you can. In your home, can you change your lifestyle "Whether, for example, it's turning the heating down a couple of degrees, think about all the measures you can do.

"Secondly, think about how you travel, can you walk, cycle, use public transport instead of using a car.

"We all need to do certain things for our work, see where our impacts are and use some of the tools out there. We have partnered with CoGo to help Nat West customers measure their ***emissions***. I would say take a look at what your ***emissions*** are and take the next step," said Rishi.

Do you think there should be clearer labels on products so people understand more about their purchases

"One of the problems is just how complicated the whole life cycle and supply chain of different foods and products are, you don't have information on a label about whether a product has been shipped, driven in a van or flown, you don't what energy has been used at the factory, notes Matthew.

"There's a big difference if you're buying an item of clothing that's been produced in a factory that's run on renewable energy in the UK rather than one that's powered by coal-fired energy from the other side of the world.

"In that sense carbon labelling is hugely important, distanced travelled is just one aspect of a product's lifecycle and what we're trying to do with MY ***Emissions*** is look at the impact across its whole lifecycle. A good example of this is tomatoes grown out of season.

"Tomatoes grown in the UK in season will have a really low carbon footprint, but growing tomatoes out of season in the UK is really difficult.

"The energy required to heat the greenhouses is higher than the energy used to import tomatoes that, for example, have been grown in Spain. So in the winter months, it's more sustainable to eat tomatoes imported from countries where they've been grown seasonally. This is why labelling is so crucial."

Do you think awareness months and days work, for example, Veganuary

"Awareness is critical, events such as International Women's Day brings a lot of awareness. People have busy lives and championing a particular cause like Veganuary means people are starting to see in social media feeds and from friends and colleagues why they took a certain action for one month and that brings up conversation and debate, which are powerful tools to change," comments Caty.

Nat West has hugely ambitious ***targets***, they're planning to be climate positive by 2025, what are your thoughts about that

"It's tough but we have no choice, we've all see the BBC and Netflix documentaries, there's too much at risk here and we have to act now," said Rishi.

"The proof point for me is the pace we've de-carbonised the UK electricity supply. We've seen a huge deployment of renewables and that clarity of government policy and their long-term plan around this continues to accelerate. We're Nat West delighted to be one of the largest financiers of UK renewables. In the last 10 years, we've been the leading lender in that space."

Finally, we all have to take responsibility for the climate, but will change happen someday soon, or ever

"So I'd say one of the big changes in the last 12 months is just how more climate change is part of the conversation and that is leading to significant changes, The government has brought forward its commitment to climate change," said Matthew.

"We've got the COP26 summit later this year and suddenly climate change is on the front pages of so many publications and at the forefront of everyone's mind.

"And fundamentally, that's almost the first step and the biggest step in seeing change happening and everyone has an opportunity no matter how big or small to make difference.

If you would like to find out more about the work Nat West is doing to improve sustainability in business from investing in off-shore wind farms to reducing its involvement in the production of fossil fuels you can visit their website.

**Load-Date:** May 17, 2021

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[***Readout of the Third National Climate Task Force Meeting***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62GV-W171-JDG9-Y1XY-00000-00&context=1516831)

Impact News Service

April 21, 2021 Wednesday

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**Length:** 1066 words

**Body**

Washington: White House Administration has issued the following news release:

Today, ahead of the Leaders Summit on Climate, National Climate Advisor Gina McCarthy convened the third National Climate Task Force. Cabinet members and White House leaders discussed pathways that will significantly reduce greenhouse gases while growing the economy, creating good-paying, union jobs, and cutting pollution on a sector-by-sector basis, consistent with direction from President Biden to develop a 2030 greenhouse gas ***target*** as part fulfilling his promise to re-enter the Paris Agreement.

Another key focus of the virtual meeting was to discuss the severe drought that is gripping the western United States. The Task Force was briefed by Commerce Secretary Gina Raimondo and NOAA scientist Dr. Roger Pulwalty on the severity of the drought. In areas like the Klamath Basin in southern Oregon and northern California, lake levels today are lower than occurred during the Dust Bowl. As has been shown in previous years, severe drought conditions can set the stage for worsening wildfire seasons, which in 2020 alone caused $16.6 billion in damages. The early, severe drought situation is just the latest manifestation of the pervasive and pernicious impacts that climate change is having on American communities.

In response, National Climate Advisor McCarthy, as Chair of the National Climate Task Force, requested that the Secretary of ***Agriculture*** Tom Vilsack and the Secretary of the Interior Deb Haaland form an Interagency Working Group to address the needs of drought impacted communities. The Working Group also will explore opportunities to improve our nation’s resilience to droughts and other severe climate impacts that are upending Americans’ lives and economic livelihoods.

The National Climate Task Force also discussed how investing in conservation can fight against climate change by enabling ***forests***, range ***lands***, and farm ***lands*** to ***remove*** and sequester additional volumes of carbon from the atmosphere – while strengthening the resilience of these ***lands*** to drought, wildfire, and other climate impacts.

In line with this theme, several cabinet secretaries announced important conservation initiatives that will help fight against climate change by increasing carbon stocks in conserved ***lands*** while strengthening the ***lands***’ abilities to withstand drought and other adverse climate impacts. In particular:

***Agriculture*** Secretary Tom Vilsack announced that USDA will open enrollment in the Conservation Reserve Program (CRP) with higher payment rates, new incentives, and a more ***targeted*** focus on the program’s role in climate change mitigation – devoting $300 million or more annually to the effort.

CRP is one of the world’s largest voluntary conservation programs with a long track record of preserving topsoil, sequestering carbon, and reducing nitrogen runoff, as well providing healthy habitat for wildlife. CRP is a powerful tool when it comes to climate mitigation, and acres currently enrolled in the program mitigate more than 12 million metric tons of carbon dioxide equivalent (CO2e). If USDA reaches its goal of enrolling an additional 4 million acres into the program, it will mitigate an additional 3 million metric tons of CO2 equivalent and prevent 90 million pounds of nitrogen and 33 million tons of sediment from running into our waterways each year.

USDA also announced investments in partnerships to increase climate-smart ***agriculture***, including $330 million in 85 Regional Conservation Partnership Program (RCPP) projects and $25 million for On-Farm Conservation Innovation Trials. Secretary Vilsack chose to make the announcement at White House National Climate Task Force meeting to demonstrate USDA’s commitment to putting American ***agriculture*** and forestry at the center of climate-smart solutions to address climate change.

2. Interior Secretary Deb Haaland announced that $78 million in grants have been approved by the Migratory Bird Conservation Commission, which will provide the U.S Fish and Wildlife Service and its partners the ability to help conserve or restore nearly 500,000 acres of wetland and associated upland habitats for waterfowl, shorebirds and other birds across North America – including Canada and Mexico. The grants, made through the North American Wetlands Conservation Act (NAWCA), will be matched by more than $120 million in partner funds. Partners in NAWCA projects include private landowners, states, local governments, conservation organizations, sportsmen’s groups, Tribes, ***land*** trusts and corporations.

3. Separately, the Commerce Department’s National Oceanic and Atmospheric Administration, the National Fish and Wildlife Foundation, and additional governmental and private partners announced that they will provide $34 million for nature-based approaches through the National Coastal Resilience Fund. These projects will advance restoration or enhancement of natural features, such as coastal wetlands, dunes, and coral reefs, to protect coastal communities and infrastructure from flooding, while also improving habitat for fish and wildlife.

As outlined by President Biden’s January 27 executive order on tackling the climate, the Task Force is chaired by the National Climate Advisor and includes Cabinet-level leaders from 21 federal agencies and senior White House officials to mobilize the Biden-Harris Administration’s implementation of a whole-of-government approach.

Task Force membership is comprised of the following government officials:

National Climate Advisor (Chair) Secretary of the Treasury Secretary of Defense Attorney General Secretary of the Interior Secretary of ***Agriculture*** Secretary of Commerce Secretary of Education Secretary of Labor Secretary of Health and Human Services Secretary of Housing and Urban Development Secretary of Transportation Secretary of Energy Secretary of Homeland Security Administrator of General Services Chair of the Council on Environmental Quality Administrator of the Environmental Protection Agency Administrator of the National Aeronautics and Space Administration Director of the Office of Management and Budget Director of the Office of Science and Technology Policy Assistant to the President for Domestic Policy Assistant to the President for National Security Affairs Assistant to the President for Homeland Security and Counterterrorism Assistant to the President for Economic Policy

**Load-Date:** April 21, 2021

**End of Document**



[***A breath of fresh air in the field; Agriculture should produce CO2-free. No furrows, a better soil structure. All this is expensive. It could be financed with the recipes of the energy turnaround***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6312-28S1-DY2B-S2KR-00000-00&context=1516831)

Die Welt am Sonntag (English)

June 27, 2021 Sunday

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**Byline:** Daniel Wetzel

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**Body**

If there's one company that doesn't have to worry about its eco-image, it's probably Wasa. The crispbread world market leader from Sweden is part of the Italian Barilla Group. Its product is widely recognized as healthy, natural and sustainable.

The two Wasa bakeries in Filipstad, Sweden, and Celle, Germany, are powered by green electricity. Loads of crispbread all over the world are shipped as cleanly as possible by rail. Nevertheless, Wasa is responsible for the ***emission*** of 98,500 tons of carbon dioxide per year: that's roughly how much would be produced if you circled the globe 16,400 times by car. For the Knäcke baker from Greta Thunberg's home country, this is an untenable situation.

Wasa and some of its rye suppliers have therefore committed themselves to a new form of ***agriculture***: "carbon farming ". This type of organic farming is not only about minimizing pesticides and artificial fertilizers, but also about binding as much climate-damaging carbon dioxide as possible in the soil. Following the example of the energy industry, monetary and tradable "CO2 certificates" for farmers are intended to make the decarbonisation of ***agriculture*** an attractive business.

Wasa's partners in this project include Günther Graf von der Schulenburg, owner of the Nordsteimke manor near Wolfsburg, along with extensive estates and ***forests***. "Instead of waiting for regulation, I'm in favor of getting things moving in the right direction myself early on," says von der Schulenburg. "Then we farmers can meet politics at eye level. "

This attitude has made the Count one of the first major "carbon farmers": together with Wasa, he is taking part in a pilot project run by the technology company Indigo ***Agriculture***: part of his ***land*** is being farmed in such a way that as much greenhouse gas CO2 as possible is bound in the soil. The trial will last three years.

Once the grain has been harvested, deep-rooted catch crops are used to build up the carbon-containing humus. Satellite-supported "precision ***agriculture***" minimizes the use of fertilizers and pesticides. The plough stays in the barn. This saves von der Schulenburg the diesel costs for the effort involved in pulling a furrow in the ground. This reduces CO2 ***emissions*** twice over: no exhaust gases, and no broken up clods from which CO2 escapes.

The humus build-up is also said to increase soil quality, improve water absorption and thus help to survive droughts. However, not using conventional farming methods can mean a loss of yield. Indigo ***Agriculture*** therefore wants to establish a system that financially rewards farmers' climate performance, enriches their soils with carbon and, with more fertility, also leads to higher yields.

Indigo experts measure humus build-up, soil carbon content and operational CO2 savings. Independent certifiers verify that the effect is permanent. For this climate protection performance, the US company wants to issue CO2 certificates to farmers, which they can turn into cash. "This new funding opportunity accelerates the adoption of farming practices that are proven to reduce ***emissions***, ***remove*** carbon dioxide from the atmosphere and replenish an important natural carbon store: the soil," says Indigo European CEO Georg Goeres. The test is based on existing quality criteria for reduction and soil sequestration of CO2.

This process could make an "important contribution to climate protection ", says Ana Frelih-Larsen, an expert on "carbon farming" at the Ecologic Institute in Berlin. However, the measurement methods are fraught with uncertainties, and the potential could vary depending on the location. As long as "robust" methods are lacking, low-carbon farming should not be used at the expense of proven climate technologies.

Despite such admonitions, the idea is spreading rapidly. US banks such as JP Morgan and Barclays have agreed to buy ***agricultural*** CO2 certificates from Indigo at around $20 a tonne. The hope behind this is that these credits will soon be included in the European ***emissions*** trading system. So far, it only applies to industrial plants and power stations. The potential is there: with a humus build-up of 0.4 percent per year, six gigatons of CO2 could be taken out of the atmosphere every year in Europe, market participants calculate. This corresponds to almost the total CO2 budget that Germany is still allowed to emit according to the Federal Constitutional Court.

So far, there are hardly any other climate protection strategies in ***agriculture***, although the sector accounts for almost ten percent of CO2 ***emissions***. Carbon farming would be a relatively close-to-market method of transforming the ***agricultural*** sector in a climate-friendly way without bans.

Indigo has just added Beiselen GmbH, a leading ***agricultural*** trader, to the programme. And there are similar initiatives. In addition to the German "CarboCert ", Bioland now also wants to get involved in "carbon farming". Bayer is even planning to announce a large-scale European programme involving farmers and companies from the entire value chain next week. And the EU Commission is planning to make carbon farming a Europe-wide project for its "Green Deal" as well.

In addition, there are other ideas. "Sustainable Food Law ", or NLG for short, is the name of a project backed by the Öko-Institut, the Bioland growers' association and the Research Institute of Organic ***Agriculture*** (FiBL). The three partners want to transfer the Renewable Energy Sources Act (EEG) and thus a key instrument of the energy transition to ***agriculture***. The idea: a kind of feed-in tariff for sustainably produced food.

"Important goals such as climate protection, animal welfare and biodiversity incur high costs for farmers, but these are not covered on the market by the proceeds for their products," says Margarethe Scheffler of the Öko-Institut.

It could look like this: Farmers who plant flower strips at the edge of their fields, create breeding sites or establish particularly high animal welfare standards receive money from the general public, collected via a levy on all products in the food trade. "This money is used to compensate for the cost difference between production costs for implementing a measure and current producer prices," says ***agricultural*** engineer Axel Wirz of FiBL.

Large sums are involved. The Öko-Institut estimates the additional costs for greater animal welfare at around five billion euros, for biodiversity at three billion euros and for adaptation to climate change at around one billion euros - annually. Accordingly, little has happened so far on the part of farmers, says institute representative Scheffler.

However, the three partners have found an open ear in politics with the idea of applying the Green Electricity Promotion Act (EEG) to food and ***agriculture*** as well. The Federal Ministry of Education and Research is funding the conceptual work with a five-figure sum, and a further 600,000 euros are also in the pipeline. If the scientists receive the money, they want to develop a bill within three years, otherwise there is only a simple technical publication. A decision is expected to be made in July. The Öko-Institut promises not to ignore the problems that the EEG has caused for green electricity - over-subsidisation and high costs for end consumers.

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Document original

**Graphic**

***Agriculture*** should also produce CO2-free

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**End of Document**



[***Less talk, more action: 5 things the most successful partnerships share***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60XG-GB61-F0YC-N1NB-00000-00&context=1516831)

Impact News Service

September 25, 2020 Friday

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**Length:** 2252 words

**Body**

Cologny: World Economic Forum has issued the following press release:

Public-private partnerships are key to achieving the Great Reset and meeting the sustainability ***targets***. Successful collaborations require multiple, sometimes unlikely partners, to come together. Partnerships achieving the most impact share five elements.

If COVID-19 has taught us one thing, it is that the world is entirely interconnected and that change can only happen in concert. History echoes this lesson. The Marshall Plan was an early standout example of a multistakeholder alliance that brought diverse parties together to build markets and infrastructure, and stimulated investment and jobs across Europe as it recovered from an earlier profound shock, World War II.

The Marshall Plan was considered to be highly successful – contributing to a significant rise in GDP for those western European countries involved, and it contributed to the renewal of the western European chemical, engineering and steel industries.

Multistakeholder collaborations like the Marshall Plan often require unlikely partners to come together – which can be challenging – but such partnerships carry more impact. Single-issue based political pathways have their limits, as multiple parts of the economy and society need to be engaged in innovation and investment at the same time. Those who stand to lose out or who may feel neglected by a certain focus on one given issue, such as tackling climate change, may push back on any effort that is perceived to overlook their anxieties about, for example, a lack of jobs or new economic opportunities.Have you read?

Why a multistakeholder approach is essential to our risk resiliency We can meet the SDGs using the wisdom of crowds. Here's how

The reverse also holds true. A political push on policy, institutions, technology and finance to create new industrial jobs for some, will be resisted by others if they think these jobs are at the expense of tackling other pressing issues such as climate change. Confronting a lack of cohesion and the sustainability challenge, therefore, go hand-in-hand to achieve true political transformation.

The private sector has a compelling role to play. Forward-minded leaders can often mobilize resources, innovation and action, and influence a wide network, that many in governments and civil society cannot do on their own. There is a growing space for corporate leadership to drive political confidence and the opportunity to act.

As we gather for the Sustainable Development Impact Summit in an increasingly resource-constrained world, grappling with a major global development setback, impactful solutions are critical to making informed decisions about the best use of those limited resources. Collaborations and alliances between public and private sectors and new combinations and applications of policy, technology and finance provide a compelling approach to delivering the Great Reset.

If change-making is a team sport, what then defines the winning teams? Here are five examples of elements shared by some current partnerships which are achieving impact:

1. Trust

Meaningful engagement and trust between stakeholders, who manage to integrate unique perspectives and expertise.

The Global Alliance for Trade Facilitation is working with government and business partners to ensure cross border trade is simple, fast and cost-effective, creating new business opportunities, generating employment, enabling greater economic and social development and reducing poverty. In the first completed project in Colombia, the Alliance worked with the Colombian National Institute for Food and Drug Surveillance (Invima) and business, to introduce a risk management system for food, beverages, medicines and medical devices, allowing inspectors to focus their resources on high-risk shipments without jeopardising safety and security. The collaboration has fostered greater trust between government and business, reduced the number of physical inspections and stripped hundreds of hours of delays out of the border clearance process, saving business $8.8m in just 18 months.What is the World Economic Forum doing on trade facilitation?

The Global Alliance for Trade Facilitation is a collaboration of international organisations, governments and businesses led by the Center for International Private Enterprise, the International Chamber of Commerce and the World Economic Forum, in cooperation with Gesellschaft für Internationale Zusammenarbeit.

It aims to help governments in developing and least developed countries implement the World Trade Organization’s Trade Facilitation Agreement by bringing together governments and businesses to identify opportunities to address delays and unnecessary red-tape at borders.Global Alliance for Trade Facilitation Benefits of Trade

For example, in Colombia, the Alliance worked with the National Food and Drug Surveillance Institute and business to introduce a risk management system that can facilitate trade while protecting public health, cutting the average rate of physical inspections of food and beverages by 30% and delivering $8.8 million in savings for importers in the first 18 months of operation.

2. Macro vision with micro application

A broad constituent group that combines diversity and breadth, with a common purpose that focuses on specific projects with achievable objectives.

Grow Asia is building Better Business by bringing together government, business, civil society organizations and farmer groups, to help scale up inclusive ***agriculture*** value chains across key commodities such as palm oil, rubber, coconut, rice and coffee – significant contributors to exports in South East Asia.

With many successes in the region, the Vietnam Coffee Story stands out, where partnerships were established to improve the sustainability of Robusta coffee in Vietnam, the world’s second largest coffee producer. Despite high levels of productivity, Vietnam is susceptible to climate threats and ageing farms, leading to declining yields. Through a National Committee formed by the by the Ministry of ***Agriculture*** and Rural Development, the Coffee Task Force of Grow Asia’s Vietnam chapter and public-private partnerships at the district and province level, an initial successful pilot was scaled up, to train 18% (around 100,000) of coffee farmer households in a national curriculum in sustainable practices.

These farmers have seen increased yields and improvements in the quality of yields. They have made progress in adapting to climate change, lowering greenhouse gas ***emissions*** by 40,000 tonnes annually (the equivalent of taking over 8,640 passenger vehicles off the road for one year), reducing water usage by 21 million m3 annually as well as fertilizer use. All this translates into $12.3 million of savings annually for farmers.

3. Empowering other change-makers

If other people or organizations have greater potential to create change, empower them.

Through the Communities partnerships, the Schwab Foundation for Social Entrepreneurship is building Shared Prosperity and advancing the world’s leading models of sustainable social innovation. Since its founding 20 years ago, the Foundation has helped its 400 social entrepreneurs and innovators to amplify their impact by raising their visibility and inclusion at global events; through education programmes, peer learning and through strengthened global networks.

The impact of the social entrepreneurs and innovators on their communities has been significant. Around 622 million people have been directly affected by the operations and activities of this group. More than $6.7 billion has been distributed to people in communities through loans, or from the sale of products which have created value and enhanced livelihoods. Through their initiatives, 192 million tonnes of greenhouse gas ***emissions*** have been mitigated – the equivalent of taking more than 40.7 million passenger vehicles off the road for a year.Two Decades of Impact 2020 Report: Collective Impact of Schwab Foundation Community (numbers are indicative aggregates of diverse activities in many contexts)Two Decades of Impact 2020 Report: Collective Impact of Schwab Foundation Community (numbers are indicative aggregates of diverse activities in many contexts)Image: World Economic Forum

The Schwab Foundation has recently set up the COVID Response Alliance for Social Entrepreneurs, an unprecedented collaboration between 60 global organizations, representing over 50,000 social entrepreneurs globally, to pool knowledge, experience, and support responses for social entrepreneurs in their work to alleviate suffering and advance new models of change for a more inclusive, equitable, and sustainable world. The Alliance released its COVID Social Enterprise Action Agenda on 16 September, 25 concrete interventions calling on key stakeholders to join Alliance members in increasing their commitments to support social entrepreneurs during COVID-19.What is the COVID Response Alliance for Social Entrepreneurship?

The COVID Response Alliance for Social Entrepreneurship is hosted by the Schwab Foundation for Social Entrepreneurship, with the support of Yunus Social Business and GHR Foundation and integrates the perspectives of social entrepreneurs through a strategic partnership with Catalyst 2030.

It identifies five principles that should lie at the heart of any COVID-19 response effort:

Make the voices of social entrepreneurs and their communities heard Prepare to respond, recover and reset – taking the opportunity to “shape a new tomorrow” Collaborate across sectors in recognition of the complexity and scale of the crisis Look beyond healthcare, given that COVID-19 touches all areas of people’s lives Support the shovel-ready solutions that grassroots organizations are already able to provide today

The Alliance has released a COVID Social Enterprise Action Agenda, outlining 25 concrete recommendations for key stakeholder groups to support social entrepreneurs during COVID-19. These align around the following streams:

1. Intermediaries and networks to surface the needs of the social entrepreneurs they serve on the ground and provide them with fitting support2. (Impact) investors to adapt their investment priorities and processes, and provide flexible capital and must-have technical assistance3. Corporations to stand with the social entrepreneurs in their supply chains and ecosystems, and join forces with them to “shape a new tomorrow”4. Funders and philanthropists to expand and expedite their financial support to social entrepreneurs and intermediaries, taking risks reflective of today’s unprecedented times5. Government institutions at all levels to recognize social entrepreneurs as a driving force in safeguarding jobs and in building a greener and equitable society, and to back them accordingly

4. Global ambition

If the issue is universal – the objectives can be expansive.

The Tropical ***Forest*** Alliance (TFA) is supporting a Liveable Planet. Established in 20120 to catalyse collective action towards deforestation-free supply chains for commodities such as soy, palm oil, cocoa, beef, and paper and pulp, its official partners now include more than 160 key companies, government agencies, civil society and multi-lateral organizations, which TFA convenes through ‘Action Platforms’ in key tropical ***forest*** countries.

With the support of TFA, the Consumer Goods Forum has officially launched the ***Forest*** Positive Coalition of Action, which includes 17 global consumer goods companies with a collective market value of US$1.8 trillion working together to accelerate systemic efforts to ***remove*** deforestation, ***forest*** degradation and conversion from the key commodity supply chains of palm oil, soy, and paper, pulp and fibre-based packaging, and drive transformative change across the industry.

By promoting an innovative and integrated collective action large-scale approach, TFA is working to ensure that commodity production realizes maximum economic gain to local communities, smallholders and large-scale producers, while minimizing the impacts on tropical ***forests***, on which 1.6 billion people worldwide depend. The result is an exciting new way of doing business sustainably - one that will drive achievement of the Sustainable Development Goals.

5. Multi-sector buy-in

Big issues affect many different sectors in different ways. Change only happens when all sectors – public and private – see the benefit.

Diverse and dynamic partnerships form the backbone of Friends of Ocean Action, a unique group of over 55 leaders from a wide range of sectors, who are committed to fast-tracking systemic solutions to the most pressing challenges facing the ocean. Launched in 2018, the Friends of Ocean Action platform pools knowledge, means and influence to help the international community take the urgent steps needed to conserve and sustainably use the ocean for equitable development.

The Global Tuna Alliance for example, is an independent group of retailers and supply-chain companies for whom tuna is one of the top three seafood product groups, together representing 90% of this market’s total imports from developing countries. Members are improving environmental sustainability and traceability within global tuna fisheries, working to ensure tuna is sourced sustainably and is fully traceable, that human rights are safeguarded, and modern slavery is eliminated. Such partnerships and communities can help to achieve shared prosperity, fairer and greener business, and a more liveable planet.

**Load-Date:** September 25, 2020

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[***Reductions in the deposition of sulfur and selenium to agricultural soils pose risk of future nutrient deficiencies***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2K1-JCWX-C0PR-00000-00&context=1516831)

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**Body**

Introduction

In addition to pressures from an increasing population and climate change, a fundamental challenge for intensive ***agriculture*** is ensuring an adequate supply of nutrients–. Sulfur (S) availability is central to food security, as it is an essential macro-nutrient for crop health and yield,. While selenium (Se), which is positioned below S on the periodic table and shares many chemical properties with S, is not thought to be required for plant growth, it is an essential dietary element for humans and livestock,. In many regions, low Se in crops can cause micronutrient deficiencies, with an estimated 0.5–1 billion people worldwide having inadequate Se intake. Atmospheric deposition acts as a major source of S and Se to ***agricultural*** soils,. Sulfur and Se are emitted to the atmosphere by natural sources, including volcanoes and the marine and terrestrial biosphere, and anthropogenic activities, such as fossil fuel combustion, metal smelting, and manufacturing,. Until the 1990s, high levels of atmospheric S deposition in industrialized countries caused acidification of aquatic systems, decline of fish populations, and degradation of ***forests***,. Over the last few decades, improvements in air pollution control and reductions in coal combustion in North America and Europe have reduced S ***emissions*** and deposition, decreased concentrations of fine particulate matter in the air, and enabled recovery of ecosystems damaged by acid rain,,. Shifts away from coal energy generation are also essential for meeting the climate change mitigation goals of the Paris Agreement.

However, from an ***agricultural*** perspective, the decreases in deposition have raised questions about future deficiencies of S and Se.

Natural processes that replenish nutrients in ***agricultural*** soils are generally slower than the anthropogenic ***removal*** of nutrients through crop harvest, leading to a decline of soil nutrients,. Although this issue has been well studied for macronutrients such as nitrogen (N) and phosphorus (P), attention has only been recently drawn toward the mass balances of S and Se in ***agricultural*** soils,,. Previous work has highlighted the increasing prevalence of S deficiency in ***agricultural*** soils in the USA and, consequently, growing demand for S fertilizers, as anthropogenic S ***emissions*** decline,,. Surveys in the UK and Germany have suggested that 23% and 40% of soils are at a high risk for S deficiency, respectively,. Even less research has focused on Se, although one study in the UK reported declines of Se in pastures due to decreases in atmospheric Se deposition. A recent study using machine-learning algorithms forecasted declines (mean loss = 8.4%) in soil Se concentrations by the end of the twenty-first century, driven by reduced soil Se retention associated with climate change. The driving mechanism for soil Se losses is that increasing aridification shifts the speciation of Se to more oxidized species that are weaker bound in soil and leach more readily during precipitation events. However, future changes in atmospheric inputs of Se to soils were not considered, since mapped estimates of atmospheric Se deposition were not previously available. Here, we calculate future changes in atmospheric S and Se deposition using a global aerosol–chemistry–climate model, SOCOL-AER, which includes the first atmospheric Se chemistry submodel of its kind,,,. The model simulates the ***emissions***, transformations, atmospheric transport, and wet and dry deposition of S and Se. These projections of atmospheric deposition can inform future efforts to characterize and quantify the impacts of anthropogenic activities and climate change on nutrient availability.

We compare modeled deposition of S and Se in the recent past (2005–2009) to future simulations (2095–2099) under two Shared Socioeconomic Pathway (SSP) scenarios that span the range of future climate change projections: SSP1–2.6, where sustainably-driven development maintains global warming below 2 °C relative to preindustrial levels, and SSP5–8.5, where fossil fuel-driven development leads to warming of about 5 °C. Whereas anthropogenic ***emissions*** of sulfur dioxide (SO2) are provided directly by the SSP scenarios, we estimate ***emissions*** of Se by applying scaling factors to SO2. The scaling approach successfully matches observed trends in particulate Se and is consistent with the available bottom-up Se ***emission*** inventories from several countries (Supplementary Discussion and Supplementary Figs. –).

Results and discussion

Projected and observed declines in S and Se deposition

In the recent period (2005–2009), the model predicts hotspots of Se deposition in East Asia, Eastern Europe, and Eastern USA, areas of high anthropogenic ***emissions***, as well as degassing volcanoes (e.g., Mt. Etna, Italy) (Fig. ). Selenium deposition is relatively high over most of the ocean, due to volatile marine biogenic ***emissions***. Since atmospheric Se is mainly transported in submicron particles, the dominant deposition pathway is wet deposition (~80% of total deposition). Therefore, dry areas (eastern ocean basins and the Sahara) have particularly low Se deposition. Recent S deposition shows a similar spatial pattern to Se (Supplementary Fig. ), except that anthropogenic ***emissions*** are relatively more important in the S budget than for Se (60% vs. 34% of total ***emissions***, Supplementary Table ).

Modeled Se deposition in recent and future periods (results for S are in Supplementary Fig. ).

a Distribution of atmospheric Se deposition in the recent period, 2005–2009. b Modeled (red line) and observed (blue line) trend in wet Se deposition, averaged over six measurement stations in Ontario, Canada. Error bars indicate the 2σ variability between measurement stations. c Relative difference in Se deposition from the recent period (2005–2009) to the future (2095–2099) under the SSP1–2.6 scenario (for SSP5–8.5, see Supplementary Fig. ). White grid cells indicate that the mean change is smaller than the 2σ interannual variability from the 2005 to 2009 simulation. Pie charts illustrate the Se source contributions to deposition for each continent for recent and future periods, with pie area proportional to total continental deposition.

Since the 1980s, anthropogenic ***emissions*** of S have decreased in North America and Europe, due to shifts away from coal energy generation and increasing implementation of air pollution control technology, including post-combustion scrubbers to capture SO2 ***emissions***, switching from high S coal to low S coal, and ***removal*** of S from oil before combustion. Due to the chemical similarities between S and Se, Se ***emissions*** are reduced concomitantly by these SO2 control technologies. The model matches the observed declines in Se deposition in recent decades at the only sites where long-term deposition data are available, in Ontario, Canada (modeled = −41 ± 3% per decade, observed = −38 ± 13% per decade) and Western Europe (modeled = −38 ± 10% per decade, observed = −47 ± 18% per decade) (Fig.  and Supplementary Fig. ). In a previous study comparing the model with a larger observational dataset for particulate Se, we found that 85% of modeled Se concentrations are within a factor of 2 of observations and the model captures the observed decline in particulate Se in North America. Although long-term trends of Se are not available outside of Europe and North America, the model showed good agreement (R2 = 0.67) with shorter-term Se measurements from other continents. In China and India, S and Se deposition approximately doubled between 1980s and 2000s (Supplementary Figs. b and ), due to increases in coal combustion. More recently, ***emission*** controls have been implemented in China, resulting in a 62% decline of SO2 ***emissions*** between 2010 and 2017.

Under the two future socioeconomic scenarios, SSP1–2.6 and SSP5–8.5, global Se deposition is projected to decrease (−31% and −23%, respectively) by the end of the twenty-first century compared to 2005–2009 values (Fig.  and Supplementary Fig. ). The projected decrease in deposition is particularly noteworthy over Asia, North America, and Europe, because anthropogenic ***emissions*** are mainly located in these continents. The underlying explanation for the decrease in S and Se ***emissions*** in SSP1–2.6 is a rapid transition away from fossil fuel energy generation toward renewable energies and increased air pollution controls. In SSP5–8.5, further air pollution control technology is implemented and energy production shifts from coal to natural gas, which contains less S and Se,. Although only two future scenarios were simulated in this study, analysis of SO2 ***emission*** projections suggests similar outcomes for other SSP scenarios (Supplementary Fig. ). Certain areas over the ocean display increases in Se deposition in future scenarios, including the Eastern Pacific and Southern Ocean (Fig.  and Supplementary Fig. ). These increases are stronger under SSP5–8.5 than SSP1–2.6 and are caused by projected changes in climate, including precipitation shifts and enhanced marine biogenic ***emissions*** due to sea ice decline (Supplementary Discussion and Supplementary Figs.  and ). Global S deposition shows steeper declines during the twenty-first century than global Se deposition (−56% vs. −31% for SSP1–2.6; −43% vs. −23% for SSP5–8.5), due to greater contributions from anthropogenic sources for total S ***emissions*** than Se (Supplementary Table ).

Our model employs source tracking for Se to attribute deposition to the different sources: anthropogenic activities, volcanoes, marine biosphere, and terrestrial biosphere. During the recent period (2005–2009), most Se deposition over Asia, North America, and Europe is attributed to anthropogenic sources (75%), whereas Africa, South America, and Australia are dominated by biogenic and volcanic sources of Se (79%) (Fig. ). Marine biogenic sources contribute significantly to Se deposition in certain continental areas (e.g., 35% of Australian deposition in 2005–2009), illustrating the long-range transport of Se. By the end of the twenty-first century, anthropogenic contributions to deposition diminish in the Northern Hemisphere (Fig.  and Supplementary Figs. –). For SSP5–8.5, anthropogenic sources are still projected as the dominant contributor to deposition in certain regions, such as the Indo-Gangetic Plain, the Arabian Peninsula, Western Europe, and Northeastern China (Supplementary Fig. ). Overall, however, biogenic and volcanic sources will become the major contributor (53–98%) to Se deposition over all continents under both future scenarios.

Impacts of deposition trends on ***agricultural*** regions

Because atmospheric deposition is the major input of S and Se to soils in many regions globally,,,, the projected changes in deposition will impact the mass balance of these nutrients in ***agricultural*** soils. We quantify trends in the deposition of S and Se to ***agricultural*** soils by calculating median deposition over model grid cells that are covered by >25% croplands or pastures (Fig. ). As the deposition to ***agricultural*** soils in the Southern Hemisphere is less influenced by anthropogenic ***emissions***, S and Se deposition over Africa, Australia, and South America will decrease only modestly in the future, ranging from 20 to 40% for S and 3 to 25% for Se. On the other hand, ***agricultural*** soils in Asia, North America, and Europe show strong decreases at the end of the twenty-first century from recent (2005–2009) values for S (85–90% for SSP1–2.6; 70–75% for SSP5–8.5) and Se (70–80% for SSP1–2.6; 55–65% for SSP5–8.5). These projected declines are on par with the relative changes in S deposition between the 1980s and 2000s for ***agricultural*** regions in Europe and North America (−70% and −35%, respectively) (Fig. ), when ***agricultural*** S deficiencies became more prevalent. Therefore, we expect that if ***agricultural*** practices do not change, S deficiencies in plants and Se deficiencies in livestock and humans could become more frequent and severe in the Northern Hemisphere due to the substantial depletion of the atmospheric S and Se supply.

Trends in atmospheric S and Se inputs to ***agricultural*** soils.

Median S and Se deposition over ***agricultural*** grid cells for different continents and time periods. Error bars indicate the interquartile range. ***Agricultural*** grid cells are defined by selecting grid cells covered by >25% croplands or pastures in the Ramankutty et al. database. For tabulated numerical data, see Supplementary Tables  and .

Comparing current conditions with the end of the twenty-first century, atmospheric S and Se inputs to soil will decline, retention of Se in soils will decrease due to aridification with climate change, and food demand will increase due to a growing global population. The decline in the atmospheric source to soils, coupled with the enhanced soil Se losses (increased leaching and crop production), will increase the risk of S and Se deficiencies, unless adequate S and Se fertilizer management strategies are developed and implemented (Fig. ). Expanding existing strategies of S and Se fertilizer use, for large-scale deployment would pose several logistical, economic, and environmental challenges. Known Se resources could be exhausted within 40 years if standard fertilization rates (20 g Se ha−1) are applied to all wheat fields. Sulfate and selenate, the most common S and Se species in inorganic fertilizers, compete for the same uptake pathway in plants, meaning that excess sulfate in soil can limit Se uptake in crops. A significant fraction of fertilized S and Se will not be assimilated by crops and can leach into surface waters,. Runoff of S and Se poses risks to ecosystems (Fig. ), as Se is toxic at high concentrations, and excess S degrades soils through acidification, can result in sulfide phytotoxicity, and enhanced mercury methylation downstream in drainage waters,. The extent to which S and Se are mobilized from soil systems would depend on the local environmental conditions (e.g., temperature, precipitation, and ***land*** use) and soil properties (e.g., pH, organic carbon content, and clay content). In general, there is a strong need for studies that assess S and Se mass balances at a variety of scales (field plots, watersheds, and larger regions) and geographic locations. Other ***agricultural*** management practices could also be employed to increase the efficiency of S and Se uptake by plants, such as conventional breeding or genetic engineering,, thereby reducing the required amount of fertilizer inputs.

Recent and future S and Se cycling over ***agricultural*** soils.

a Sulfur and Se fluxes in ***agricultural*** soils in the recent period, when atmospheric S and Se deposition have been the dominant source to soils. Arrow width is semi-quantitative in illustrating the relative magnitudes of fluxes. Soil processes are simplified in the diagram and are discussed more comprehensively in previous reviews–. b In the future, S and Se deposition is projected to decrease, while at the same time crop production must increase to satisfy rising food demand. Fertilizer use may become the dominant S and Se source to ***agricultural*** soils in the future, possibly enhancing S and Se runoff. c Fertilizer S and Se inputs have downstream ecological consequences. Sulfur inputs can lead to acidification, soil cation depletion, sulfide toxicity, and mercury methylation, whereas Se inputs can cause harmful algae blooms and toxic conditions for organisms.

S and Se mass balance in USA watersheds

To illustrate the impact of transient changes in deposition and ***agricultural*** inputs on the surface Se mass balance at a regional scale, we analyzed stream concentrations of Se (2000–2020) from the United States Geological Survey (USGS) database (Fig.  and Supplementary Fig. ). Watersheds in the Northeastern USA show declines (likelihood of decreasing trend >92%) in Se stream fluxes (−15 to −28%) that follow steeper Se deposition declines in these watersheds (−39 to −58%). In these basins, Se deposition fluxes are greater or similar in magnitude to the stream Se fluxes (Supplementary Fig. ), implying that atmospheric Se deposition is a major source in the surface mass balance. Since the declining stream Se trends deviate from nitrate and orthophosphate trends in the Northeastern USA watersheds, it is unlikely that wastewater or ***agricultural*** releases are responsible for the decline. Concentration-discharge relationships of S and Se in these basins also support the hypothesis that declining atmospheric inputs drive the stream flux declines (Supplementary Discussion and Supplementary Figs. –).

Stream flux trends of S, Se and other nutrients in USA watersheds.

Comparison between the relative trends in modeled Se deposition fluxes (Sedep), dashed blue line, over watersheds in the USA and flow-normalized fluxes of dissolved Se (Seriv), sulfate (Sriv), nitrate (Nriv), and orthophosphate (Priv), colored solid lines. Detailed information about the stream flux analysis and trends from other basins can be found in the Supplementary Discussion. ***Land*** cover data for 2011 are sourced from the USGS National ***Land*** Cover Database ([*https://doi.org/10.5066/P937PN4Z*](https://doi.org/10.5066/P937PN4Z)).

In contrast, basins in the Midwestern USA show increasing trends in the riverine S and Se (likelihood of increasing trend >90%) that more closely follow nitrate and orthophosphate trends and are inconsistent with decreasing atmospheric deposition trends. The substantial coverage of croplands in these basins (ranging between 21 and 32% of pixels) suggests that ***agricultural*** inputs could be driving the trends in riverine S and Se. Even though Se is not widely intentionally used in fertilizer, ***agricultural*** amendments derived from phosphate rocks contain trace amounts of selenium. In the San Joaquin River Basin, an area known for high Se concentrations in ***agricultural*** irrigation drainage water causing toxicity in animals, riverine Se fluxes have strongly decreased (−73%) from 2008 to 2019 (likelihood of decreasing trend = 97%). The recent decreases in Se are likely driven by restoration projects in the region that aim to reduce flows of ***agricultural*** runoff to the river.

Undeniably, the trends in stream fluxes could be caused by combinations of source (e.g., wastewater, ***agriculture***, deposition, geological) trends and sink (e.g., retention of nutrient in the catchment) behavior, as well as hydrological changes in the basin. Continued monitoring and analysis of stream concentrations will be needed to reveal further insights into the response of watersheds to the decreasing atmospheric inputs of S and Se, and/or potentially increasing inputs from fertilizers,. Since our model projects decreases of S and Se deposition across the Northern Hemisphere (Fig. ), a critical next step is to conduct mass balance calculations for Asian and European catchments.

Outlook

We recognize that any impacts of declining atmospheric S and Se deposition on nutrition and food security will also depend on ***land*** management, crop type, and geochemical factors affecting speciation and bioavailability of these elements in soil. In addition, there is currently no consensus regarding the impact of climate change on biogenic ***emissions*** of sulfur and Se, which can affect both the sources and sinks of these elements in ***agricultural*** soils in the future. Further work characterizing the response of biogenic S and Se ***emissions*** to climate change and ocean acidification will refine our deposition projections. We emphasize that past and projected reductions in coal combustion ***emissions*** of S, Se, and other co-pollutants (e.g., carbon dioxide, methane, nitrogen oxides, mercury, and arsenic) will be effective for climate change mitigation and human and ecosystem health. However, innovative strategies will need to be developed—integrating knowledge from ***agriculture***, environmental sciences, and economics—to sustainably resupply ***agricultural*** soils with S and Se as atmospheric sources decline.

Methods

SOCOL-AER model

We use the aerosol–chemistry–climate model SOCOL-AERv2,,, which comprises the chemical submodel MEZON, the dynamical submodel ECHAM5, and the size-resolving sulfate aerosol module AER. Atmospheric Se chemistry was previously implemented in the SOCOL-AER model,. Including the Se module, SOCOL-AER includes around 89 gas phase chemical species, 299 gas phase reactions, 80 particulate tracers, and 16 heterogeneous reactions, representing a comprehensive description of atmospheric chemistry. Gas phase Se reaction rate constants are obtained from Table  in Feinberg et al. and gas phase S reaction rate constants are taken from the NASA/JPL Data Evaluation. SOCOL-AER tracks the sulfate particle size distribution in 40 size bins between 0.39 nm and 3.2 µm. In terms of microphysical processes, the model considers aerosol sedimentation, nucleation, condensation, evaporation, and coagulation. Uptake of oxidized Se compounds in S aerosols is calculated by determining the gas phase diffusion rate and assuming a mass accommodation coefficient of 1. Wet and dry deposition in SOCOL-AER are based on state-of-the-art schemes that interact with grid cell meteorology and surface properties–. Previous studies have shown very good agreement (R2 ~0.6–0.7) between SOCOL-AER simulations and measurements of S deposition and Se deposition, validating the application of the model in this study for predictions of future deposition.

For this study, we run the model in T42 resolution (~2.8° × 2.8°) and 39 vertical levels up to 80 km. The model is run with an operator splitting approach: a 2 h time step is used for the chemistry and radiation schemes, 15 min for dynamics and deposition, and 6 min for aerosol microphysics schemes.

Boundary conditions

Past ***emissions*** of anthropogenic SO2 to the atmosphere are taken from the Community ***Emissions*** Data Systems, which were developed for Coupled Model Intercomparison Project—Phase 6 (CMIP6). Future projections of anthropogenic SO2 ***emissions*** are sourced from the CMIP6 project ScenarioMIP, which uses integrated assessment models to predict future trends in ***emissions*** for a subset of SSP scenarios. Marine dimethyl sulfide (DMS) concentrations are prescribed by an observation-based climatology and sea-to-air transfer is determined using a wind-based parametrization. Volcanic degassing is assumed to occur in grid boxes where volcanoes are located and emits a total of 12.6 Tg S year–1,. Mixing ratio boundary conditions are applied for the gas phase species hydrogen sulfide (H2S) and carbonyl sulfide (OCS), which are set to 30 and 500 pptv, respectively,.

***Emissions*** of Se in SOCOL-AER are based on the spatial distribution of S ***emissions***, with scaling factors between S and Se derived from available measurements using Bayesian inversion methods. Anthropogenic ***emissions*** of Se are calculated by scaling anthropogenic SO2 ***emissions*** using a mass ratio of 1.9 × 10–4 g Se (g S)–1. We assume the same S-to-Se scaling factor for future projections and historical simulations, given that using a constant S-to-Se scaling factor succeeded in matching observed trends of particulate Se. Marine dimethyl selenide (DMSe) concentrations are scaled from the DMS climatology using a molar ratio of 2.1 × 10–4 mol Se (mol S)–1, as derived in the Bayesian inversion. As with DMS, DMSe ***emissions*** are calculated using a wind-driven parametrization. Volcanic degassing S ***emissions*** are scaled by 3.0 × 10–4 g Se (g S)–1 to yield volcanic Se ***emissions***, which total 3.8 Gg Se year–1. Terrestrial biogenic ***emissions*** of Se are included using the spatial distribution of volatile organic carbon (VOC) ***emissions*** from the MEGAN-MACC inventory, scaled to a global total of 5.0 Gg Se year–1.

Since SOCOL-AER is an atmosphere-only model, we prescribe sea ice coverage and sea surface temperatures using observed data from the Hadley Centre for the past periods (1980–1985 and 2004–2009). For the future scenarios (SSP1–2.6 and SSP5–8.5), we prescribe sea ice coverage and sea surface temperatures using 2094–2099 simulation data from the CESM1(CAM5) model for the analogous Representative Concentration Pathway (RCP) scenarios, RCP2.6 and RCP8.5, since coupled-ocean simulations using the new SSP scenario forcings were not yet available. Other boundary conditions (greenhouse gas forcing; ozone-depleting substances; NOx, CO, and VOC ***emissions***) are taken from the specifications of Chemistry-Climate Model Initiative REF-C2 sensitivity simulations for RCP2.6 and RCP8.5,.

Model simulations

To compare with future projections with past simulations, we model three different periods: past (1980–1985), recent (2004–2009), and future (2094–2099). Each simulation consists of a 1 year spinup for the atmospheric S(e) species and 5 year that are used for analysis. The model was initialized with chemical fields from REF-C2 sensitivity simulations in SOCOL,, to reduce the time necessary for model equilibration. The future period is modeled with three scenarios: SSP1–2.6, SSP5–8.5, and SSP5–8.5 under recent climate conditions. To simulate SSP5–8.5 under recent climate conditions, we include anthropogenic SO2 and Se ***emissions*** from the SSP5–8.5 scenario for 2094–2099, but force the model with greenhouse gas concentrations, sea surface temperatures, sea ice coverage, and solar forcing from 2004 to 2009.

We track the influence of Se sources on deposition for the recent period, SSP1–2.6, and SSP5–8.5. To separate the contribution of each Se source category (anthropogenic activities, volcanoes, marine biosphere, and terrestrial biosphere), we run four individual simulations, each with one source category turned on and all others turned off. Because Se does not have any significant impacts on atmospheric chemistry or climate due to its low concentration, we assume linear additive behavior between the four simulations. To identify the contribution of a certain source category to Se deposition, we divide the Se deposition in an individual source category simulation by total Se deposition summed over all four source category simulations. We decouple interactions between chemistry and radiation, to ensure that each of the four individual source category simulations have the same meteorology, which increases the signal-to-noise ratio.

To compare with Se observations (Figs. b and and Supplementary Figs.  and ), we use transient simulations for 1970–2017 that were conducted for Feinberg et al.. These simulations were run in nudged mode for 1979–2017, meaning that model temperature, surface pressure, divergence, and vorticity were forced toward ERA-Interim reanalysis data. As opposed with the free-running simulations that were explained previously, the meteorology in nudged simulations should follow observed meteorology closer, and therefore they are more appropriate for comparison with observed quantities.

Canadian deposition observations

We compare the model with measured wet Se deposition trends for 2003–2017 from six Ontarian sites in the Canadian National Atmospheric Chemistry database ([*http://donnees.ec.gc.ca/data/air/monitor/monitoring-of-atmospheric-precipitation-chemistry/metals-in-precipitation/):*](http://donnees.ec.gc.ca/data/air/monitor/monitoring-of-atmospheric-precipitation-chemistry/metals-in-precipitation/):) Burlington (43.4° N, 79.8° W), Rock Point (42.8° N, 79.5° W), St. Clair (42.4° N, 82.4° W), Point Pelee (42.0° N, 82.5° W), Sibley (48.5° N, 88.7° W), and Point Petre (43.8° N, 77.1° W). For comparison with measurements, we interpolate the model horizontally to the coordinates of the measurement station. We summarize the regional modeled and observed trend by averaging all available sites for each year and calculate the standard deviation between sites.

Stream flux analysis

All stream water data were downloaded and analyzed using the R packages dataRetrieval and EGRET. The source of the stream concentration samples and daily discharge data is the USGS National Water Information System database ([*https://doi.org/10.5066/F7P55KJN*](https://doi.org/10.5066/F7P55KJN)). The EGRET package includes an implementation of the Weighted Regressions on Time Discharge and Season (WRTDS) method. This method can be used to calculate monthly flow-normalized fluxes of chemical constituents. Flow-normalization ***removes*** the influence of interannual flow variations on the chemical flux, revealing the underlying trends in the watershed, which are often caused by anthropogenic factors. In WRTDS models, the chemical constituent of interest is a function of discharge, seasonality, the long-term trend, and a random component. The method is usually well suited for time series of a decade or longer and a sampling frequency of at least six samples per year. We therefore only selected sites that had Se measurements with sufficient sampling frequency and time span, for a total of 18 sites (Supplementary Fig.  and Supplementary Table ). At each of these sites, we calculated WRTDS models for the flow-normalized fluxes of dissolved Se (parameter ID 01145) using available water quality samples and daily discharge data. WRTDS models were constructed using the default parameters of EGRET: half-window widths of 2 (in log discharge units) for discharge, 7 year for temporal trends, and 0.5 year for seasonality. Annual averages of fluxes are taken over the calendar year (January–December) to compare with modeled deposition fluxes. We also constructed WRTDS models of sulfate (SO42−, parameter ID 00945), nitrate (NO3−, 00618), and orthophosphate (PO43−, 00660) at sites where these parameters were available, in order to compare Se trends with other nutrients. We compare Se stream flux trends with modeled atmospheric Se deposition fluxes by averaging modeled deposition over the watershed region. Geographic shapefiles for the basins were downloaded from Falcone et al., except for the shapefile for the Powder River Basin (site ID 06313500), which was available from Falcone et al.. Statistical significance of the derived WRTDS trends was assessed by calculating the likelihood of increasing or decreasing trends with a bootstrap approach, using methods available in the R package EGRETci.

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**Notes**

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[***FACT SHEET: President Biden’s Leaders Summit on Climate***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62HG-58X1-JDG9-Y4Y2-00000-00&context=1516831)

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**Body**

Washington: White House Administration has issued the following news release:

On Day One, President Biden fulfilled his commitment to rejoin the Paris Agreement. Days later, he took executive actions to ensure we tackle the climate crisis at home and abroad – all while creating jobs and strengthening our economy. This week, he held a historic summit with 40 world leaders to show that America is back.

Over the course of two days and eight sessions, President Biden convened heads of state and government, as well as leaders and representatives from international organizations, businesses, subnational governments, and indigenous communities to rally the world in tackling the climate crisis, demonstrate the economic opportunities of the future, and affirm the need for unprecedented global cooperation and ambition to meet the moment.

On the first day of the summit, President Biden upped the ante. He announced the United States will ***target*** reducing ***emissions*** by 50-52 percent by 2030 compared to 2005 levels. He underscored America’s commitment to leading a clean energy revolution and creating good-paying, union jobs – noting that the countries that take decisive action now will reap the economic benefits of the future.

In the United States, the Biden-Harris Administration has mobilized a whole-of-government approach to unleash economic opportunities, create good jobs, and advance environmental justice. From the national to the local level and across all agencies, the federal government is not only working to help those hit hardest by climate impacts, but also creating a more resilient, equitable, and prosperous future.

While the Biden-Harris Administration has committed itself to addressing the climate crisis, countries across the globe must also step up. Given that more than 85 percent of ***emissions*** come from beyond U.S borders, domestic action must go hand in hand with international leadership. All countries – and particularly the major economies – must do more to bend the curve on global ***emissions*** so as to keep a 1.5 degree C limit on global average temperature rise within reach. President Biden’s Leaders Summit helped ensure the international community is working together to tackle the climate crisis and support the most vulnerable. Together with the new United States 2030 ***target*** along with those announced in the run-up to and at the summit, more than half of the world’s economy is now committed to the pace of action we need to limit warming to 1.5 degree C. And this coalition is growing.

President Biden convened the U.S -led Major Economies Forum (MEF) on Energy and Climate, a group the United States first convened during the George W. Bush Administration. Together, the 17 MEF economies are responsible for approximately 80 percent of global greenhouse gas ***emissions*** and global GDP. At the Summit, alongside the United States, the other MEF participants committed to take the necessary steps to set the world up for success in this decisive decade. The heads of state and leaders of the MEF participants were also joined by the leaders of countries that are especially vulnerable to climate impacts, as well as countries charting innovative pathways to a net-zero economy. Business leaders, innovators, local officials, and indigenous and youth representatives participated in the summit, sharing their insights and planned contributions to help tackle the climate crisis.

For our part, the United States is leading the way with a range of bold new commitments across the federal government that demonstrate its leadership, create jobs, rally the rest of the world to step up, mobilize finance, spur transformational innovations, conserve nature, build resilience, strengthen adaptation and drive economic growth for communities. U.S commitments include:Enhancing climate ambition and enabling the transformations required to reach net-zero ***emissions*** by 2050. President Biden is galvanizing efforts by the world’s major economies to reduce ***emissions*** during this critical period. From reducing short-lived climate pollutants and supporting the most vulnerable to investing in nature-based solutions, these transformational changes are critical to keep a 1.5 degree C limit on global average temperature rise within reach. Just as importantly, they will create new, good-paying jobs today to drive tomorrow’s economy.

The Biden-Harris Administration’s whole-of-government approach is ensuring that climate considerations are incorporated across U.S engagements both at home and abroad. Some of the initiatives that were announced today include:

Launching a Global Climate Ambition Initiative. The U.S government will support developing countries in establishing net-zero strategies, implementing their nationally determined contributions and national adaptation strategies, and reporting on their progress under the Paris Agreement. The Department of State and the U.S Agency for International Development (USAID), working with other agencies, will coordinate U.S government efforts to support countries around the world to enhance and meet their climate goals in ways that further their national development priorities. We will engage strategically with governments, the private sector, civil society, and communities to support transformational policies and programs, build human and institutional capacity, and create momentum toward a zero-***emissions***, climate-resilient future. Setting ambitious benchmarks for climate investments at DFC. The U.S International Development Finance Corporation (DFC) is committing to achieve a net zero investment portfolio by 2040, the earliest ***target*** of any G7 or G20 development finance institution (DFI), and to make at least one-third of all its new investments have a climate nexus beginning in FY 2023. DFC will make climate issues central to its development strategy for the first time and bring all of its tools to bear to ensure a just transition that supports sustainable economic growth in developing countries. Working with the Rockefeller Foundation, DFC will support distributed renewable energy and other innovative climate investments to benefit millions worldwide. It has released a rolling call for proposals for climate investment funds, is bringing onboard its first Chief Climate Officer, and has established a $50 million climate technical assistance facility. These pioneering goals are unique among its peer institutions, and DFC will collaborate with other DFIs and encourage them to raise their own ambitions. Committing to climate investments at MCC. The Millennium Challenge Corporation (MCC) will expand and deepen work to address climate change challenges across its investment portfolio and business operations—investing in climate-smart development and sustainable infrastructure. Over the next five years, MCC commits that more than 50 percent of its program funding will go to climate-related investments. MCC will promote low-carbon economic development, help countries transition away from fossil fuels, and maintain a coal-free policy across its portfolio of grants. Launching a Greening Government Initiative. The Greening Government Initiative launch marks the first international convening on greening national plans for sustainable government operations. Co-chaired by Canada and the United States, GGI countries seek to lead by example in developing and implementing climate action plans that increase the resilience of and mitigate ***emissions*** from national government operations and real property. Through coordinating our national priorities and collaborating on common goals, we hope to foster and inspire a global “race to the top” of government efforts toward achievement of the goals of the Paris Agreement. The United States and Canada will lead this initiative through cooperation in the management of national government procurement and real property, helping both nations achieve their individual goals of a net-zero ***emissions*** economy, 100 percent clean electricity usage, and a zero-***emissions*** vehicle fleet.

Mobilizing financing to drive the net-zero transition and adapt to climate change. Finance plays a vital role in accelerating the transition to a clean energy economy and building a climate-resilient future. Current financial flows are inadequate for addressing the scale of the climate crisis. Through President Biden’s international climate finance plan, the U.S government will make strategic use of multilateral and bilateral channels and institutions to assist developing countries in implementing ambitious ***emissions*** reduction measures, protect critical ecosystems, build resilience against the impacts of climate change, and promote the flow of capital toward climate-aligned investments and away from high-carbon investments. To more effectively mobilize public and private finance to address the climate crisis, the United States announced it is:

Scaling up international financing to address climate needs. The United States intends to double by 2024 our annual public climate finance to developing countries relative to the average level during the second half of the Obama-Biden Administration (FY 2013-2016). As part of this goal, the United States intends to triple its adaptation finance by 2024. The Biden Administration will work closely with Congress to meet these goals. Issuing the first U.S International Climate Finance Plan. The United States is publishing its first-ever U.S international climate finance plan, which lays out how federal agencies and departments responsible for international climate finance will work together to deliver that finance more efficiently and with greater impact. Launching an international dialogue on decreasing fiscal climate risk through national budgets. Earlier this month, the United States announced a more than $14 billion increase in the President’s Budget over FY 2021 enacted levels across the entire government to tackle the climate crisis, the largest in history. The United States is launching an international dialogue on aligning the budget with climate risks and opportunities. The dialogue will build both on U.S leadership in climate budgeting and assessing climate risk and on the pioneering work already being done in multilateral fora. The United States will engage with participating countries through bilateral and multilateral channels to collaborate on cost-effective strategies across participating countries to increase climate investments while creating good-paying jobs. The dialogue will also explore how to improve climate risk analysis in national operations that could help countries optimize and expand investments in adaptation and reduce national exposure to the impacts of climate change.

Transforming energy systems. The potential of solar energy, wind power, and electricity storage technologies has improved dramatically over the past few years. But we need to go further and faster. To support accelerated action, new commitments include:

Establishing a Net-Zero Producers Forum. In support of efforts to achieve net-zero ***emissions*** by midcentury, the United States, together with the energy ministries from Canada, Norway, Qatar, and Saudi Arabia, representing 40 percent of global oil and gas production, established a cooperative forum that will create pragmatic net-zero strategies, including methane abatement, advancing the circular carbon economy approach, development and deployment of clean-energy and carbon capture and storage technologies, diversification from reliance on hydrocarbon revenues, and other measures in line with each country’s national circumstances. Establishing a U.S -India Climate and Clean Energy Agenda 2030 Partnership. The United States is working with allies and partners around the world to set ambitious 2030 ***targets*** for climate action and clean energy innovation and deployment. The U.S -India Climate and Clean Energy Agenda 2030 Partnership will elevate ambitious climate action as a core theme of U.S -India collaboration and support the achievement of India’s ambitious ***targets***, including reaching 450 GW of renewable energy by 2030. The Partnership will aim to mobilize finance and speed clean energy deployment; demonstrate and scale innovative clean technologies needed to reduce greenhouse gas ***emissions*** across sectors including industry, transportation, power, and buildings; and build capacity to measure, manage, and adapt to the risks of climate-related impacts. Supporting ambitious renewable energy goals and pathways in Latin America and the Caribbean. The Department of State announced scaled-up technical assistance to countries participating in the Renewable Energy for Latin America and the Caribbean (RELAC) initiative, a regional effort led by Colombia, Chile, and Costa Rica to increase renewable energy capacity to at least 70 percent by 2030. Expanded U.S support through the Low ***Emission*** Development Strategies Global Partnership and the U.S National Renewable Energy Laboratory will center on peer learning and training on policies and technical measures for achieving high levels of renewable energy grid integration. U.S support to enable current RELAC countries and motivate additional countries to join RELAC will be delivered in cooperation with the InterAmerican Development Bank, the Latin American Energy Organization (OLADE), and the Global Power System Transformation Consortium. Supporting clean energy mineral supply chains. The Energy Resource Governance Initiative (ERGI) is a multinational effort founded by Australia, Botswana, Canada, Peru, and the United States to help build sustainable supply chains and promote sound sector governance for the minerals vital to technologies powering the energy transition, such as solar panels, electric vehicles, and battery storage. The United States has committed more than $10.5 million in bilateral technical assistance in support of ERGI principles in more than ten countries around the world. The Initiative’s focus is now expanding to include greening mining operations, as well as re-use and recycling of key minerals and metals. The United States will also join the Intergovernmental Forum on Mining in support of international cooperation on the minerals and metals that make the renewable energy transition possible.

Revitalizing the transport sector. The transformation of the transport sector offers some of the biggest opportunities for deep ***emissions*** cuts, new jobs, and healthier cities. To jump-start this revolution, the United States is committing to:

Sparking the zero-***emission*** transportation revolution – at home and abroad. The Department of Transportation (DOT) is taking a comprehensive approach to addressing the climate crisis and expanding ways for all modes of transportation to transition to zero ***emissions***. This includes funding for lower-***emission*** buses, expanding access to electric vehicle (EV) charging stations, using our public rights of way in climate-supportive ways, and working with partners around the world bilaterally, regionally, and in multilateral fora to help catalyze the transition to zero-emitting transportation as swiftly as possible. Joining the Zero ***Emission*** Vehicle Transition Council. The United States will join a coalition of governments representing more than half of new vehicle sales globally that is dedicated to accelerating the global transition to zero ***emission*** vehicles. Reducing ***emissions*** from international shipping. The international shipping sector contributes approximately three percent of global greenhouse gas (GHG) ***emissions***, and the sector’s ***emissions*** are only projected to increase. In support of the global effort to keep within reach a 1.5 degree C limit on global average temperature increase, and in support of global efforts to achieve net-zero GHG ***emissions*** no later than 2050, the United States is committing to work with countries in the International Maritime Organization (IMO) to adopt a goal of achieving zero ***emissions*** from international shipping by 2050 and to adopt ambitious measures that will place the sector on a pathway to achieve this goal. Reducing ***emissions*** from international aviation. The United States is committed to working with other countries on a vision toward reducing the aviation sector’s ***emissions*** in a manner consistent with the goal of net-zero ***emissions*** for our economy by 2050, as well as on robust standards that integrate climate protection and safety. The United States intends to advance the development and deployment of high integrity sustainable aviation fuels and other clean technologies that meet rigorous international standards, building on existing partnerships, such as through ASCENT– the Aviation Sustainability Center – and pursue policies to increase the supply and demand of sustainable aviation fuels. In the International Civil Aviation Organization, we will engage in processes to advance a new long-term aspirational goal in line with our vision for reducing greenhouse gas ***emissions*** in the aviation sector, and continue to participate in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

Building workforces for the future and ensuring U.S competitiveness. Climate action is an opportunity to spur job creation while enabling all communities and workers to benefit from the clean energy economy. To create opportunities for American-made solutions to tackle the climate crisis abroad, the United States is announcing new commitments to:

Launching a Global Partnership for Climate-Smart Infrastructure. The U.S Trade and Development Agency (USTDA) will launch the Global Partnership to connect U.S industry to major energy and transportation infrastructure investments in emerging markets. This initiative will support the rebuilding of the U.S middle class through the export of U.S -manufactured goods and services, while enhancing economic recovery through climate-smart infrastructure development for our partners and allies globally. The Global Climate-Smart Infrastructure Partnership will leverage USTDA’s project preparation and partnership-building tools to support the use of U.S technologies and services in overseas climate-smart infrastructure projects. Creating the EXIM Chairman’s Council on Climate. The U.S Export-Import Bank (EXIM) will create a Chairman’s Council on Climate, a sub-committee of EXIM’s Advisory Committee dedicated to advising EXIM on how to better support U.S exporters in clean energy, foster the transition to a low-carbon economy, and create clean U.S jobs at home. Membership will be comprised of a wide range of representatives which could include, for example, members of U.S industry, the financial sector, trade associations, labor, academia, think tanks, and civil society organizations. EXIM will open applications to the public in summer 2021. Supporting workers and communities in the shift to a global clean energy future. As the United States moves towards a clean energy economy, it is committed to helping energy workers and communities address the challenges and equitably capitalize on the opportunities associated with this transition. The U.S Secretary of Energy convened the energy ministers of Canada, India, and the European Commission, along with representatives from the labor and advocacy communities, to begin a discussion on global efforts to address this critical issue. To continue the dialogue, the Department of Energy announced that it is joining Canada, the European Union, and Chile to launch the Empowering People initiative at the Clean Energy Ministerial this June.

Promoting innovation to bring clean technologies to scale. Innovation will spur the technology and transformations necessary to reduce ***emissions*** and adapt to climate change at scale, while also creating enormous new economic opportunities to build the industries of the future. To build the future we want, the United States announced:

Clean energy innovation and manufacturing. The United States commits to accelerating the technology progress critical to advancing sustainable development and achieving a net-zero global economy. The effort will spur good-paying American jobs focused on developing, manufacturing, and exporting cost-effective products that support sustainable development across the world. The U.S Department of Energy will define a series of performance ***targets*** and coherently leverage the diverse expertise and talent at American universities, businesses, and national laboratories to accelerate research and development in top linchpin technologies, beginning with: hydrogen, carbon capture, industrial fuels, and energy storage. The ***targets*** and roadmaps will look beyond incremental advances and aim, instead, at the game-changing breakthroughs that will secure American leadership in the manufacture of net-zero carbon technologies and support sustainable development around the world. In the coming weeks, the U.S Department of Energy will convene experts from American academia, business, and the national laboratories to announce the first of these moonshot-style ventures and catalyze the game-changing breakthroughs that will grow new businesses and new jobs domestically and export these net-zero carbon technologies all around the world. Reinvigorating leadership and participation in Mission Innovation. The Biden-Harris Administration has announced plans to quadruple clean energy innovation funding over the next four years, and the United States is playing a key role in advancing international collaboration on innovation and supporting the launch of Mission Innovation 2.0, including: Launching, and leading together with international partners, a major Mission Innovation international technology mission on carbon dioxide ***removal*** at COP26. Joining Mission Innovation’s hydrogen mission and co-leading, with Denmark, a mission to reducing greenhouse gas ***emissions*** in international shipping, both slated to launch at the June 2021 Mission Innovation ministerial. Planning to host the co-located 2022 Mission Innovation and Clean Energy Ministerial meetings. Leading the ***Agriculture*** Innovation Mission for Climate. The United States will lead the creation of the ***Agriculture*** Innovation Mission for Climate along with the United Arab Emirates and in coordination with several other partner countries. The goal of this initiative is to accelerate innovation and research and development in ***agricultural*** and food systems in order to spur low-carbon growth and enhance food security. The initiative will be advanced at the UN Food Systems Summit in September 2021 and launched at COP26 in November 2021 through the UK’s COP26 Campaign for Nature. Joining the Leadership Group for Industry Transition (LeadIT). The United States will join the Leadership Group for Industry Transition (LeadIT), along with co-founders Sweden and India. LeadIT convenes countries and companies committed to speeding innovation in technologies to reduce greenhouse gas ***emissions*** in energy-intensive sectors and speed progress to net-zero ***emissions*** by 2050. Launching a Global Power System Transformation (G-PST) Consortium. To speed progress toward a carbon-free power system by 2035 at home and around the world, the United States, along with the United Kingdom, joined leading power system operators, world-class research institutes, and private institutions from countries at the forefront of power system transitions to launch this new consortium, which couples cutting-edge research with knowledge diffusion to share best-in-class operational, engineering, and workforce development solutions with power system operators around the world. The G-PST Consortium aims to help system operators to permanently change their ***emissions*** trajectories while simultaneously improving grid reliability, resiliency, and security and supporting economic growth. Launching the FIRST Program to support the use of small modular reactors. In support of the Administration’s commitment to increasing reliable energy access worldwide while meeting carbon reduction ***targets***, the Department of State is launching the Foundational Infrastructure for the Responsible Use of Small Modular Reactor Technology (FIRST) Program with an initial $5.3 million investment. FIRST provides capacity-building support to enable partner countries to benefit from advanced nuclear technologies and meet their clean energy goals under the highest standards of nuclear security, safety, and nonproliferation.

Providing urgent support for vulnerable countries to adapt and build resilience to the climate crisis. The climate crisis is already posing challenges to communities at home and around the world. Millions of Americans feel the effects of climate change each year when ***agriculture*** fields are flooded, wildfires destroy neighborhoods, and storms knock out power. Communities of color and low-income communities around the country are particularly vulnerable to climate change. Abroad, many vulnerable countries already are facing catastrophic climate impacts. They must build their resilience to the climate crisis now. To strengthen our capacity to help people, reduce future risks and improve resilience, the United States is announcing it is:

Supporting environmental justice and climate resilience. EPA will fund $1 million in grants/cooperative agreements through the Commission on Environmental Cooperation (CEC) to work with underserved and vulnerable communities, including indigenous communities, in Canada, Mexico, and the United States to prepare them for climate-related impacts. This initiative will provide funding directly to community-based organizations to help them develop community-driven solutions to the challenges of climate change. These projects could involve vulnerable communities converting workers to clean jobs, addressing extreme weather impacts, transitioning to clean energy and/or transportation, or utilizing traditional ecological knowledge. Following a competitive process, the most innovative and impactful projects will be approved by consensus by the environment ministers of the three countries. The United States currently chairs the CEC Council. Partnering with islands to lead on climate and energy resilience. The United States is committed to partnering with small islands in their efforts to combat the climate crisis in ways that reflect their unique cultures and development challenges by building resilience in the face of a changing climate. Working together, the Department of State, the National Oceanic and Atmospheric Administration (NOAA), the Department of Energy (DOE), and the U.S Agency for International Development (USAID) will launch a new partnership to advance the inclusion of locally generated climate information, knowledge, data and decision support tools in ongoing and emerging sustainability and resilience endeavors in island regions. The Department of State will support a unique island-led partnership, the Local2030 Island Network, which links U.S island jurisdictions with those around the world in developing common solutions in a shared cultural context. NOAA will work with this network and other partners to enhance the capacity of island nations to integrate climate data and information, and it will apply effective coastal and marine resource management strategies to support sustainable development. DOE will launch the Energy Transitions Initiative – Global, which will focus on transforming the energy systems of and increasing resilience for islands and remote communities, starting in the Caribbean and Asia-Pacific and growing to include other vulnerable communities. USAID, through the Pacific Climate Ready project and the Caribbean Energy and Resilience initiatives, will support small island developing states to strengthen their systems and capacities to become more climate resilient in ways that are country-driven, coordinated, inclusive, and equitable. Reducing black carbon by investing in clean cookstoves. Household energy ***emissions*** have a significant impact on the climate, environment, human health, gender, and livelihoods. In addition, the reduction of short-lived climate pollutants, such as methane and black carbon, can in the short term contribute significantly to keeping a 1.5 degree C limit on global average temperature rise within reach. Given the urgent need for tangible, ambitious, and global action, the U.S government is announcing that it is resuming and strengthening its commitment to the United Nations Foundation’s Clean Cooking Alliance. The U.S Environmental Protection Agency (EPA) will work with the Clean Cooking Alliance, other governments, and partners to reduce ***emissions*** from home cooking and heating that contribute to climate change and also directly affect the health and livelihoods of almost 40 percent of the world’s population. Mitigating black carbon health impacts in Indigenous Arctic communities. EPA, working through our partners in the Arctic Council, is pleased to announce the Black Carbon Health in Indigenous Arctic Communities project to be implemented by the Aleut International Association. Indigenous Arctic communities need tools to understand their exposure to black carbon ***emissions***, to help them identify significant local sources, and to share best practices for preventing and mitigating the health impacts of air pollution and climate. The project will help these communities measure, analyze, and addresses black carbon exposure and strengthen their capacity to develop and promote black carbon mitigation strategies.

Implementing nature-based solutions. Nature is a critical part of reaching net-zero ***emissions*** and enhancing community resilience. The world’s ocean and ***forests*** are critical carbon sinks and a source of life and livelihoods. Recognizing nature’s vital role, the United States is announcing new resources and support for:

Investing in tropical ***forests*** to drive towards a net-zero world. Halting deforestation globally, and restoring ***forests*** and other ecosystems, is critical to reaching a net-zero ***emissions*** world by 2050. The United States is joining together with other governments and private sector companies today to announce the Lowering ***Emissions*** by Accelerating ***Forest*** finance (LEAF) Coalition. The LEAF Coalition expects to mobilize at least $1 billion this year to incentivize tropical and subtropical countries in reducing ***emissions*** from ***forests*** by paying for verified ***emissions*** reductions that meet a high environmental and social standard. This is a crucial component to raising global climate ambition and to halting and reversing deforestation by 2030. Funding nature-based approaches to coastal community and ecosystem resilience. The National Oceanic and Atmospheric Administration (NOAA), the National Fish and Wildlife Foundation, and additional governmental and private partners will provide $34 million for nature-based approaches through the National Coastal Resilience Fund. These projects will advance restoration or enhancement of natural features, such as coastal wetlands, dunes, and coral reefs, to protect coastal communities and infrastructure from flooding, while also improving habitat for fish and wildlife. NOAA and the National Fish and Wildlife Foundation commit to advancing the science and practice of implementing nature-based approaches to coastal resilience with international communities of practice by participating in exchanges and dialogues to share the lessons and innovations learned from these projects. The U.S Fish and Wildlife Service and its partners will also provide $78 million in grants to help conserve or restore nearly 500,000 acres of wetlands in Canada, Mexico, and the United States through the Migratory Bird Conservation Commission. Promoting resilience in the Southern Ocean. The United States is supporting the three marine protected area proposals in the Southern Ocean before the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). These unique areas are vulnerable to the impacts of climate change, and they must be protected. The United States is calling on all CCAMLR members to adopt these marine protected areas at this year’s meeting.

Promoting safety and security at home and abroad. Climate change has been identified by the Department of Defense (DoD) as a critical national security threat and threat multiplier. As a result, DoD has undertaken assessments of the impacts that the climate crisis has on American military instillations. Today the United States is announcing:

Conducting climate exposure assessments on all U.S installations. The DoD is announcing a plan to complete climate exposure assessments on all major U.S installations within 12 months and all major installations outside the continental U.S within 24 months using the Defense Climate Assessment Tool (DCAT). The DCAT helps identify the climate hazards to which DoD installations are most exposed, which is the first step in addressing the potential physical harm, security impacts, and degradation in readiness resulting from global climate change. Supporting assessments in partner countries around the world. The DoD is also announcing its commitment to share the DCAT with a number of attending allied partners and militaries.

Supporting action at every level. Fully addressing the climate crisis requires an all-of-society response. President Biden is committed to working with sub-national actors, business, civil society, indigenous communities, and youth to facilitate collective ambitious action that yields lasting results.

Advancing subnational and non-state engagement abroad. The United States will step up engagement with subnational governments and non-state actors around the world to accelerate climate action. It will also partner with U.S cities, states, territories, and Tribes in the context of its diplomatic outreach globally, supporting their engagement at UN Climate Change summits and working with other countries to elevate similar efforts. Catalyzing subnational action and participation in COP26. The United States endorses Race To Zero, a global campaign for net-zero ***targets*** from businesses, cities, and regions, and will work to seek additional U.S participants. The United States also announced an intent to commission analysis of the ***emission*** reduction potential from subnational leadership worldwide and to work with national and subnational partners globally to achieve this potential.

Today’s announcements are additional steps in the Biden-Harris Administration’s work to advance an unprecedented whole-of-government response to climate change while creating good-paying, union jobs and advancing environmental justice. On his first day in office, President Biden fulfilled his promise to rejoin the Paris Agreement, and one week later he signed an Executive Order on Tackling the Climate Crisis at Home and Abroad. As part of this Order, the President charged federal agencies to take a comprehensive approach to addressing the climate crisis. From reducing ***emissions*** to advancing a just transition, the Biden-Harris Administration is committed to working hand in hand with international leaders, civil society, businesses, and communities and getting countries around the world to step up and meet this global challenge.

**Load-Date:** April 24, 2021

**End of Document**



[***WTAS: BUILDER Act***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60XD-KF11-JDG9-Y4YF-00000-00&context=1516831)

Impact News Service

September 24, 2020 Thursday

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**Body**

Washington, DC: U.S House of Representatives Committee on Natural Resources has issued the following press release:

Today, Rep. Garret Graves (R-La.) and Ranking Republican Rob Bishop (R-Utah) introduced the “Building U.S Infrastructure through Limited Delays & Efficient Reviews (BUILDER) Act. Below is what they are saying:

“We support NEPA and the proposed legislation’s over-riding goal for better environmental decisions in a cost and time-efficient manner. In our view, the bill will advance the goals of the statute as well as reduce paperwork, delays, and promote better environmental policy decision-making.” -Paul Schlegel, Vice President of Public Affairs, American Farm Bureau Federation

'Recent reforms to NEPA will unlock shovel-ready jobs while maintaining the robust environmental protections Americans depend on, and these reforms should be broadly supported. Codifying the careful NEPA modernization will bring a higher level of certainty to critical infrastructure projects, including the planned offshore wind farms up and down the Atlantic Coast. NOIA stands with Congressman Graves in ensuring that endless bureaucratic red tape and lawsuits do not return to lock away the shovel-ready jobs Americans need.' -Erik Milito, President, National Ocean Industries Association

“ABC applauds congressional leaders for introducing this legislation, which will go a long way toward eliminating unnecessary delays that cause budget overruns in construction. Construction businesses recovering from the ongoing health and economic crisis caused by COVID-19 will surely benefit from these modifications, which will help reduce costs and speed up project approvals so that hardworking U.S workers can get back on the job quickly and safely. The coordinated, predictable and transparent process to streamline permitting will also enable the industry to plan and execute even the most complex projects while safeguarding our communities, maintaining a healthy environment and being good stewards of public funds.” -Kristen Swearingen, Vice President of Legislative &Political Affairs, Associated Builders and Contractors

“Congressional Committee leaders’ newly-introduced legislation will provide needed enhancements to the National Environmental Policy Act. This legislation complements the administration’s recent efforts to streamline the environmental review process while continuing to adhere to the same rigorous environmental standards. The Associated General Contractors of America is eager to work with members of Congress to further improve the permitting process for infrastructure projects that require federal environmental review prior to construction. This new bill codifies many of the positive changes to the National Environmental Policy Act that our association has advocated. These changes would streamline the analyses and processes that have led to litigation and project delays over the years, build accountability and transparency into the review process, and reduce redundancy and duplication of existing work product. Importantly, infrastructure projects will still undergo an environmental review with public input and all substantive environmental rules will still apply.” Stephen Sandherr, Chief Executive Officer of the General Contractors of America

“We believe this bill will help modernize the federal environmental review process, which will improve the public process for Western water resource development and management. We thank Congressmen Bishop and Graves for their leadership on this matter, which is particularly important to the family farmers and ranchers of our membership.” -Dan Keppen, Executive Director, Family Farm Alliance

“Highway congestion costs the trucking industry $75 billion a year and wastes seven billion gallons of fuel, resulting in 67 million metric tons of excess carbon dioxide ***emissions***. The reforms envisioned by the BUILDER Act will give state and local transportation agencies the tools they need to make the improvements necessary to prevent these job-killing losses and to move us toward environmental sustainability.” -Erik J. Prince, VP of Legislative Affairs, American Trucking Associations

“NSSGA applauds Rep. Garrett Graves (LA) for introducing the Building U.S Infrastructure through Limited Delays & Efficient Reviews (BUILDER) Act which will bring key reforms and clarity to the National Environmental Policy Act (NEPA) process– while still maintaining strong environmental protections. The BUILDER Act is critical for our economic recovery as it enhances recent Administration action to ***remove*** pointless red tape. It will allow taxpayer dollars to be used to develop much needed infrastructure that sustains high-paying jobs, improves our communities and advances environmental stewardship.” -Michele Stanley, VP of Government and Regulatory Affairs, National Stone, Sand & Gravel Association

“TFI believes in the original Congressional intent of NEPA, which was to help public officials make decision that are based on the understanding of environmental consequences and to take actions that protect, restore, and enhance the environment. The BUILDER Act will ensure that federal regulations continue to protect the environment without causing unnecessary negative impacts to the business community and allowing what our members to do what they do best: feed the world.” -Corey Rosenbusch, President & CEO, The Fertilizer Institute

“As stewards of the environment with significant infrastructure and public safety responsibilities, counties support efforts to streamline the NEPA permitting process. Unnecessarily onerous, inefficient regulations often hinder our ability to meet residents’ needs and strengthen communities. We support the BUILDER Act, which will help to cut red tape, support our infrastructure and economic priorities, and preserve common-sense environmental safeguards. We applaud Representative Graves for sponsoring this legislation and call on Congress to pass it swiftly.” -Matthew Chase, Executive Director, National Association of Counties

“As Congress considers ways to support the nation’s economic recovery, it’s important to recognize that an efficient permitting system is essential to all U.S infrastructure development and creating good-paying jobs in communities across the country. Codifying the recent NEPA reforms will provide more certainty to jumpstart not only the modern pipeline infrastructure we need to deliver cleaner fuels, but highways, bridges and wind and solar projects. This is a commonsense and necessary step toward modernizing American infrastructure while advancing environmental progress.” -Frank Macchiarola, Senior VP of Policy, Economics, and Regulatory Affairs, American Petroleum Institute

“CEA applauds Congressman Graves for continuing to push for policies and regulatory improvements that will directly benefit the lives of families and small businesses across our country. CEA strongly supports the BUILDER Act and looks forward to working with Congressional leaders to get this important piece of legislation signed into law.” -Michael Zehr, Consumer Energy Alliance

'The vagueness of NEPA has led to regulatory growth over the last 50 years that has slowly choked our ability to build in this country. The White House NEPA reforms were an important step, but ultimately action from Congress like this legislation is necessary to establish boundaries for NEPA that balance environmental protection with necessary infrastructure and development.' -Tom Pyle, President American Energy Alliance.

“CRES is proud to support Representatives Garret Graves in introducing much-needed legislation to reform the National Environmental Policy Act (NEPA). For far too long, red tape has hamstrung our nation’s ability to rebuild crumbling infrastructure, prevented communities from taking advantage of technological revolutions, and delayed our transition to a more robust and sustainable energy future. Rep. Graves’ BUILDER Act will codify into legislation common sense reforms that the Trump Administration recently introduced to modernize NEPA, ensuring that clean energy infrastructure projects won’t be delayed into obscurity by bureaucratic roadblocks. CRES commends Rep. Graves for championing the BUILDER Act and thanks Leaders Kevin McCarthy, Whip Steve Scalise, Conference Chair Liz Cheney and the bill’s other 15 cosponsors for their support. CRES will remain a stalwart proponent of NEPA reforms.” -Heather Reams, Executive Director, Citizens for Responsible Energy Solutions

“ARA strongly support this effort to help codify the Administration’s NEPA final rule. NEPA reform is necessary to help speed up the approval process for much-needed infrastructure projects for the benefit the rural communities in which ag retailers and their customers live and work. Reforms to the NEPA rule does not compromise environmental reviews or public input, in fact these revisions to modernize the process will enhance the public's involvement through better coordination of hearings and more concise, accessible documents for review.” -Richard Gupton, Senior Vice President of Public Policy & Counsel, ***Agriculture*** Retailers Association

“To ensure our nation has the quality infrastructure that can meet tomorrow’s demands of moving people, clean energy, and information, we need an efficient and transparent permitting process. That is why the provisions in the BUILDER Act are so important. To modernize our nation’s infrastructure, we must utilize limited investment in a more efficient way. As America’s economy continues to recover from—and is reshaped by— the pandemic, delivering 21st century infrastructure can play a critical role. A predictable permitting process will help communities by attracting investment that will create jobs in the near term, but will also accelerate environmental benefits such as the deployment of clean energy infrastructure to address climate change and environmentally sustainable transportation to rebuild our aging highways, bridges and airports.” -Ed Mortimer, Vice President of Transportation and Infrastructure, U.S Chamber of Commerce

“The National Environmental Policy Modernization Act refocuses NEPA on its original intent, to promote our nation’s most vital infrastructure projects while ensuring our shared goal of proper environmental stewardship. Creating a business and policy environment supportive of ongoing investments in our nation’s infrastructure will help strengthen our economy and create thousands of jobs during a time when this is more needed than ever. We fully support this new legislation that will reinforce a more efficient NEPA review process and create greater predictability around permitting of key U.S infrastructure projects.” -Cory Toth, Director of Government Relations, American Fuel & Petrochemical Manufacturers

“All we have ever asked for is transparency, clarity, and certainty as we look to build out this important energy source and develop America’s biggest emerging market. We applaud Congressman Graves for putting forth this important piece of legislation and look forward to working with him and his team.” -Chris Quinn, Executive Director, American Offshore Wind Coalition

“FFRC applauds the introduction of this important bill. The ***Forest*** Service does more NEPA than any other Federal agency, usually while trying to manage a very small percentage of the 193-million-acre National ***Forest*** System. In some regions, nearly all meaningful ***land*** management projects face litigation, usually alleging inadequate NEPA analysis. This bill, like the important regulation it is based on, would help clarify the NEPA burden for the ***Forest*** Service, thus eliminating duplicative analysis and speeding badly needed ***land*** management projects. As we’ve seen with the recent wildfires, time is of the essence when it comes to reducing the amount of fuel piled up on our ***forests***. This will help address this critical problem.” -Bill Imbergamo, Federal ***Forest*** Resource Council

“For far too long, NEPA has been a tool used not for mitigating actual environmental impacts, but for stopping projects that create jobs and economic benefit for Americans. To function properly as a society, we must get a handle on NEPA to reach a reasonable balance between building infrastructure and protecting the environment. We appreciate Congressman Graves’ bill that sensibly tackles some of the most effective ways to ensure NEPA achieves its original intent of enabling decision makers to make environmentally protective decisions while disarming the use of NEPA as a weapon to simply say ‘no’ to roads, bridges, pipelines, water projects and other infrastructure. In particular, scoping NEPA to actual environmental impacts and not far-flung concerns of dubious connection to a project is key to ensuring NEPA can be completed in a reasonable timeframe. Also limiting obstructionist groups’ ability to come in at the eleventh hour and tie up projects indefinitely in court after failing to participate constructively in the process is something that Western Energy Alliance fully supports.” -Kathleen Sgamma, President, Western Energy Alliance

Additional groups supporting H.R 8333:

American Chemistry Council

American Exploration and Mining Association

American Exploration and Production Council

American Public Gas Association

Association of Oil Pipe Lines

GPA Midstream Association

Interstate Natural Gas Association of America

National Mining Association

U.S Oil and Gas Association

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[***Rep. Boebert Introduces 30 x 30 Termination Act to Block Biden Land Grab***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62N1-KP41-JDG9-Y213-00000-00&context=1516831)

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**Body**

Washington: Office of the MP Lauren Boebert has issued the following news release:

Today, Representative Lauren Boebert (CO-03) introduced the 30 x 30 Termination Act to block the radical 30 x 30 program, a massive ***land*** grab being pursued by the Biden administration at the behest of extremist environmentalists, that seeks to lock up at least 30% of all ***lands*** and waters in the U.S by 2030.

Representative Lauren Boebert stated: “Joe Biden can give it a fake name and try to disguise its identity but moving forward with the 30 x 30 program is another radical pander to Green New Deal activists and extremist enviros funded by George Soros that believe the federal government should control every aspect of our daily lives, including our ***land***. The Biden administration has made clear they will ignore the input of opposing counties when adding more federal ***land*** to the rolls and that they believe grazing, responsible energy production and other ***land*** uses that contain ***emissions*** should be prevented on federal ***lands***. Locking up 30% of all our ***land*** and water within the next decade is a dream killer for future generations and local economies and will also prevent Americans from utilizing their public ***lands*** and enjoying the outdoors. In the West, we are all too familiar with government ***land*** grabs, and we can see this one coming from a mile away. I’m honored to have so much support from Americans throughout the country for my bill that seeks to block the 30 x 30 program and prevent this government expansion. ”

Background: Today, Congresswoman Lauren Boebert (CO-03) introduced the 30 x 30 Termination Act to block the radical 30 x 30 program being pursued by the Biden administration that seeks to lock up at least 30% of all ***lands*** and waters in the U.S by 2030.

Yesterday, the Biden administration released a report that was all fluff and no substance but made clear the administration is moving forward with this dangerous ***land*** grab put forth by extremist environmentalist groups.

The 30 x 30 ***land*** grab seeks to “preserve or conserve” 30% of all ***lands*** and waters in the U.S by 2030. Private ***lands*** are not exempt from this initiative. Hundreds of millions of additional acres currently managed for multiple-use or economic development are threatened by this ***land*** grab. The federal government already manages 640 million of acres of ***land***, the vast majority of which is in the West. More than 750 million acres of federal waters are already locked up through unilateral designations under the Antiquities Act. But that’s not good enough for the extremist environmentalists pushing the 30 x 30 ***land*** grab who claim an additional 681 million acres of additional ***land*** and water must be put under government control or elevated to a more extreme status that prevents use of these ***lands***, all within in the next nine years.

The 30 x 30 Termination Act:

Nullifies Section 216 of Executive Order 14008 which contains the 30 x 30 program.

Prohibits federal funds from being spent to carry out the 30 x 30 program, the report in Section 216, and any substantially similar program.

Ensures no net-loss of non-federal ***land*** in counties and states that already contain 15% or more federal ***land***.

Ensures no net-loss of multiple-use activities in states unless such action has been authorized by Federal statute.

Prohibits withdrawing federal ***lands*** from mineral development without Congressional approval.

Prohibits unilateral 30 x 30 designations under the Antiquities Act in counties and states that already contain 15% or more federal ***land***.

22 Members of Congress joined Representative Boebert in introducing her bill including:

Representatives Michael Guest (MS-03), Chip Roy (TX-21), Scott Perry (PA-10), Ted Budd (NC-13), Ronny Jackson (TX-13), Adrian Smith (NE-03), Doug LaMalfa (CA-01), Ken Buck (CO-04), Dan Bishop (NC-09), Pat Fallon (TX-04), Tom Emmer (MN-06), Randy Weber (TX-14), Bob Good (VA-05), Don Bacon (NE-02), Andy Biggs (AZ-05), Paul Gosar (AZ-04), Brian Babin (TX-36), Rick Crawford (AR-01), Michael Cloud (TX-27), Pete Stauber (MN-08), and Austin Scott (GA-08), Tom Tiffany (WI-07).

U.S Congressman Doug LaMalfa said: “The federal government already possesses millions of acres it already cannot manage well. We have witnessed millions of acres of ***forest*** ***land*** burned in recent years, wild horse populations that grow exponentially and are in peril, and a backlog of national parks maintenance and closure. Why the government would seek to add hundreds of millions of acres to its holdings is senseless. Before locking up more ***land*** and water in perpetuity without Congressional approval, we should implement the reforms necessary to properly manage the federal government’s current possessions, leading to countless benefits like reducing wildfire risk, better utilization of natural resources to supply our renewable energy demand, and getting more water to our farmers, ranchers and urban users soon to be under rationing. ”

U.S Congressman Michael Guest said: “Biden’s executive order to place almost one-third of American ***lands*** under government control is an extreme overreach. The American dream is rooted in the ownership and stewardship of private ***lands*** for recreational and economic purposes. This landgrab is another example of the Biden Administration’s priority of expanding government control over the resources that belong to the American people. ”

U.S Congressman Dan Bishop said: “President Biden’s radical 30 x 30 program represents yet another liberal power grab. The federal government should not be taking more federal ***land*** for themselves. Americans are dealing with enough overreach and control from this Administration as is, the least the President could do is not add to it,”

U.S Congressman Pat Fallon Said: “Over six hundred million acres of ***land*** and seven hundred and fifty million acres of water currently sit under management of the federal government, locked up from nearly any form of utilization. Radical environmentalists are seeking to drastically expand those numbers under the Biden administration, snatching valuable ***land*** and water from both private use and economic development. I’m proud to cosponsor Congresswoman Boebert’s bill which would halt the Biden administration’s radical ***land*** grab agenda and preserve the property rights of all Americans. ”

U.S Congressman Adrian Smith said: 'I hear daily from Nebraska farmers and ranchers who, already dependent on their access to and stewardship of the ***land***, are deeply concerned about the potential of this arbitrary goal impacting their lives and livelihoods. Westerners have a proud history of protecting and preserving our natural treasures, and future decisions should be science-based and broadly incorporate local stakeholders. I am proud to cosponsor the 30 by 30 Termination Act because rural communities in the American West deserve to have the loudest voice in determining how to protect local ***lands*** and water, not Washington bureaucrats.'

U.S Congressman Chip Roy said: 'The Biden Administration’s plans to drastically increase federal ***land*** holdings is another disastrous ***land*** grab and will undermine federalism, local self-government, and private property rights under the guise of Biden’s radical Green New Deal-focused agenda. The federal government cannot properly manage the hundreds of millions of acres it currently controls; and it has no business taking on any more from states, localities, or private entities. Congress should empower private citizens to own and manage property, not unelected bureaucrats in Washington.'

U.S Congressman Ted Budd said: “The Biden administration’s latest executive power grab is designed to lock up our country’s vast ***land*** resources from energy development. This is yet another example of this administration putting it’s left-wing base first, and hardworking Americans last. I’m proud to join Rep. Boebert’s bill to reverse this dangerous overreach and ensure that the federal government is not able to unilaterally prevent America’s natural resources from being utilized. ”

Supported by: Governor Pete Ricketts (NE), Governor Mike Dunleavy (AK), Americans for Limited Government, Arizona Liberty (Sedona, AZ), Arizona Power Authority, Arizona Rock Products Association, Baker County (OR), Catron County (NM), Center for Renewing America, Citizens For America (Sedona, AZ), Colorado Off Highway Vehicle Coalition, Colorado Snowmobile Association, Colorado Wool Growers Association, Competitive Enterprise Institute, Conservatives for Property Rights, Council for Citizens Against Government Waste, Custer County (ID), Dolores County (CO), Elko County (NV), enCore Energy Corp, Flexilis Forestry LLC, Frontier Applied Sciences, Grand Junction Area Chamber of Commerce (CO), Idaho State Snowmobile Association, Idaho Recreation Council, Industrial Minerals Association – North America, Jefferson County (NE), Keith County (NE), Las Animas County (CO), Less Government, McDavitt Township (MN), Mesa County (CO), Moffat County (CO), Montrose County (CO), Mountain Capital Partners, New Mexico Business Coalition, New Mexico Cattle Growers Association, Off-Road Business Association, Inc., One Voice for Off-Road Motorized Recreation, Range Association of Municipalities & Schools (MN), Rio Blanco County (CO), Roughrider Policy Center (ND), Sulphur Springs Valley Electric Cooperative, Inc. (AZ), Niobrara County (WY), Trails Preservation Alliance (CO), United Four Wheel Drive Associations, United Snowmobile Alliance, Mohave County Supervisor Buster Johnson (AZ), Silver Cliff Mayor H.A 'Buck' Wenzel (CO), Denver Lumber Company President Scott W. Yates, Protect Americans Now President John Richardson, New Mexico Federal ***Lands*** Council President Bebo Lee, Grant County Cattle Growers' Association President Buddy Eby and Dr. Dan Eichenbaum.

Nebraska Governor Pete Ricketts: “Thank you to Congresswoman Boebert and everyone who is stepping up to stop President Biden’s radical climate agenda and the 30 x 30 plan. It will take an all-hands-on-deck effort to stop the Biden-Harris Administration. They are attempting to undermine the prerogative of states and private landowners to manage their ***land*** and natural resources. Together, we can push back on federal overreach and protect our way of life. ”

Alaska Governor Mike Dunleavy: “The Fifth Amendment of the United States Constitution sets the policy and clear protection for private property. This is overreach of federal power overstepping on the sovereignty of Alaska and the rights of Alaska. ” Nowhere in the laws of our nation is the authority granted to the President to unilaterally change the policies governing ***land*** use in America. I am committed to ensuring that Alaska’s ***lands*** are well managed for the benefit of our entire state. ”

Custer County Idaho Board of Commissioners Chairman Wayne F. Butts: “For years Custer County, Idaho has struggled with the reality of living and working in a county that is already nearly 97% federally managed. We have recently seen two new wilderness areas added, bringing our county to 44% wilderness. Because of the resulting economic and social difficulties, our Comprehensive ***Land*** Use Plan specifies no net loss of private ***land***, and no new wilderness. We look around and see burned out ***forests***, lost multiple use, and shrinking access. We see that the best ***land*** management is closest to the private sector. The Biden administration's 30X30 looks like a disaster heading our way- federal government management increased exponentially across the country. We wholeheartedly support Mrs. Boebert's proposed remedy in the 30X30 Termination Act, with its provisions protecting multiple use, access, and private ***land***. ”

Garfield County Colorado Commissioner Tom Jankovsky: “Garfield County commends you on taking the lead to stop formal authorization of the 30 x 30 program advanced by the Biden Administration. For Counties such as ours, further restrictions on the use of our ***lands*** will substantially harm our local economy. Sixty-two percent of Garfield County is already owned by the federal government, where daily we battle the top-down policies from Washington D.C that harm our citizens, our economy and our ***lands***. Although the new Administration promises to work with us, they have failed to answer our direct request to meet with us on their 30 x 30 proposal. Instead, they have taken away our ability to reject a federal ***land*** acquisition under the ***Land*** and Water Conservation Fund. We need more local control and less federal bureaucracy over our ***lands*** and economies to ensure the continued multiple-uses, sustained yields and viability of our natural resources. Your bill will help protect Garfield County from this radical attempt to restrict more of our ***land***. ”

Grand Junction Chamber of Commerce President and CEO Diane Schwenke: “The 30 x 30 plan without major revision or guardrails will destroy the livelihoods of hardworking farmers and ranchers, kill jobs in rural communities and flies in the face of individual liberty and property rights…all in nine short years. We applaud Representative Boebert for pushing back on behalf of those of us who knows our ***lands*** much better than anyone in D.C ”

Elko County Nevada Commissioner Rex Steninger: “Absolutely, idling 30 percent of our ***land*** and water is idiotic. Placing ***land*** and water in conservation takes it out of production. Particularly under the Biden Administration, I fear the government would ***target*** areas it deemed important to the Quixotic battle with climate change. Nationally, that for sure would mean the end of our short-lived energy independence and could also mean the end of our long-lived food independence. Here at home in Nevada, our ***land*** is already nearly 90 percent federally owned. Federally owned ***land*** is tax exempt, which means our governments here must make do with a very small taxable base. Lincoln County, Nev., for example, has only one percent of its ***land*** on the tax roles. We in Nevada can't stand any more ***land*** removed from those tax roles. ”

Cherry County Nebraska Commissioner Tanya Storer: “Cherry County is the nation’s #1 beef cow producing County. The economy of our County is dependent on livestock production and the majority of the ***land*** is used for livestock grazing, managed through private ownership. Cherry Counties history of private ranching stewardship runs deep and the management practices of landowners over the generations has resulted in more vegetative cover in the Sandhills, which has not only increased the productivity but also the habitat for wildlife, a natural secondary benefit. America’s history is deeply rooted in private property, limited government and a free market system. There is no need to create a stakeholder relationship between Government and private industry and we firmly believe a move in that direction would hinder good management decisions. ”

Catron County New Mexico Commissioner Anita A Hand: “Catron County has over 2.7 million acres of Federal ***Lands***. Catron County depends on the natural resources for our economic base which is primarily ***agriculture***. Under the undefined 30 x 30, the protected areas are viewed as a threat to rural America. Catron County was prosperous with our timber industry, but with the designation of critical habitat for endangered species our timber industry was destroyed, and other industries are threatened. Farmers and Ranchers are defined by the ***land*** in their pursuit to provide food and fiber for the nation and are constantly trying to improve the ***land*** and the habitat while making a living. This 30 x 30 will not recognize the efforts of ***agriculture*** short of giving up some of their rights. ”

Baker County Oregon Commission Chair Bill Harvey: “It is critical that Rep. Boebert’s 30 x 30 Termination Act passes. Baker County encompasses 51.5% of federally managed ***lands***. The County has already had general ***forests*** reduced by 70% leaving only 30% for multiple uses including timber harvest, grazing, mining, and enjoyment of our citizens. If the 30 x 30 program is adopted, it will decimate the already struggling County economy. Simply, the County and its citizens cannot afford to lose any more ***land*** use. ”

Moffat County Colorado Commissioner Melody Villard: “Moffat County is in complete support of this bill to stop the 30x30 ***land*** grab. Moffat County, we already host 339,036 acres of Wilderness Study Areas (9 WSA’s) and ***Lands*** With Wilderness Character. Moffat County hosts 10’s of thousands of acres of private perpetual conservation easements. Moffat County hosts, over 150,000 acres of National Monument, 14,000 acres of US Fish and Wildlife Refuge, and 10’s of thousands of acres of State Wildlife Areas, Areas of Critical Environmental Concern, and other conserved ***lands***. Furthermore, every single acre of public ***land*** in Moffat County is protected and conserved with an active federal ***land*** management plan, far exceeding 30% conserved ***lands*** in Moffat County. ”

Jefferson County Nebraska Commissioners Vice Chairman Gale Pohlmann: “Our county has very few federal or state ***lands*** and is primarily ***agriculture*** based income. We depend on property taxes to support our schools, local government agencies, and county government. If this is not stopped it would be economically devastating to our county and would seriously erode our tax base. ”

Catron County New Mexico Commissioner Haydn Forward: “I am in favor of supporting Boebert’s bill in opposition to 30 X 30 Plan. Do take note of the others in opposition. All western states that potentially will carry the loss of private property and self-governing privilege. ”

President of Citizens for Renewing America Russ Vought: “Under President Trump, we expanded American use and enjoyment of ***land*** and water. Now, President Biden is taking away our backyards and national parks and shorelines for his progressive climate change agenda. We applaud those stopping this ***land*** grab. ”

Competitive Enterprise Institute Director of Center for Energy and Environment Myron Ebell: “CEI enthusiastically supports Representative Boebert’s bill to stop any attempts to implement the 30 by 30 project. Thirty by 30 rivals the Wildlands Project and the Endangered Species Act as the most audacious federal ***land*** grab and lock-up ever attempted. It presents a huge threat to the environmental health and economic survival of rural America and not just the federal ***lands*** West. ”

The Industrial Minerals Association President Chris Greissing: “The impact of the COVID-19 virus on our nation’s supply chains should have served as a wake-up call that the United States must become less reliant on foreign sources for our manufacturing needs. The Industrial Minerals Association is very concerned that the 30 x 30 initiative from President Biden’s Executive Order 14008 would only exacerbate this reliance on foreign nations such as China and Russia to meet our mineral needs. The IMA supports the ‘30 x 30 Termination Act’ which prevents the arbitrary ***removal*** of an additional 30% of all ***lands*** and waters in the United States from development by 2030. The first-step the federal government must take to strengthen our supply chain is implement policies that will promote a stronger domestic minerals industry, as minerals are the raw material feedstock necessary for much of our ***agricultural*** and manufacturing needs. ”

Off-Road Business Association Inc.’s Scott Jones: “The motorized community vigorously supports the 30x30 Termination Act as we are deeply concerned that the unintended consequences of 30x30 will hugely outweigh any benefits to recreation. Creating another Wilderness Study Area or Roadless Area inventory management situation must be avoided at all costs and currently 30x30 does that. ”

Freedom Forum Radio’s Dr. Dan Eichenbaum: “The right to own private property that cannot be arbitrarily regulated or confiscated by the government is the moral and constitutional basis for individual freedom. ”

This past Tuesday, Congressman Boebert joined Members of the House Committee on Natural Resources in a Forum on the 30 by 30 program.

In March, Congresswoman Boebert and more than 50 Members of the United States Senate and U.S House of Representatives sent a letter to President Bident expressing serious concerns that the “30 by 30 initiative will be used as a method to undermine private property rights, circumvent the multiple-use mandate, and lock up more ***land***. ” In April, 15 Governors also sent a letter to President Biden opposing the 30 x 30 plan and warning that this radical program would “violate property rights and hurt the economy. ”

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[***UKSA&#8217;s National Space Innovation Programme funds 21 UK organisations***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61GM-V5G1-JDHR-82J1-00000-00&context=1516831)

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**Length:** 2533 words

**Byline:** Alun Williams

**Highlight:** The UK government is investing £7 million, via the National Space Innovation Programme, in 21 UK organisations working on innovative space technologies. The idea is that it represents cash injections for “high-risk, high-reward” projects of both companies and universities. Areas addressed include monitoring climate change through Earth Observation and satellite communications to provide greater connectivity to ...

**Body**

[*https://static.electronicsweekly.com/wp-content/uploads/2020/12/09165216/Laser-Optical-Communications-for-CubeSats.pngThe*](https://static.electronicsweekly.com/wp-content/uploads/2020/12/09165216/Laser-Optical-Communications-for-CubeSats.pngThe) UK government is investing £7 million, via the National Space Innovation Programme, in 21 UK organisations working on innovative space technologies.

The idea is that it represents cash injections for “high-risk, high-reward” projects of both companies and universities. Areas addressed include monitoring climate change through Earth Observation and satellite communications to provide greater connectivity to remote places.

For example, one project involves The Open University, which will use the money to create the UK’s first Precision Forestry tool, TreeView. This aims to support detailed measurement of tree-planting initiatives aimed at increasing carbon dioxide ***removal***.

Another, by Surrey-based Global Satellite Vu, will build a new compact, high-resolution infrared camera for satellites to measure thermal ***emissions*** from our homes, schools and places of work.

The funding comes from the UK Space Agency’s National Space Innovation Programme (NSIP), which is described by the government as the first UK fund dedicated to supporting the space sector’s development of innovations. It points out that international rivals, like France and Germany, have dedicated national funding for space.

“We want the UK to be a world leader in space technology which is why we are supporting our most ambitious innovators who are developing first-of-a-kind technologies to help solve some of our greatest challenges,” said Science Minister Amanda Solloway.

“From slashing carbon ***emissions*** to protecting the UK’s critical services from harmful cyber-attacks, today’s funding will unshackle our most entrepreneurial space scientists so that they can transfer their revolutionary ideas into world-class products and services, while helping to boost the UK economy.”

Further details below, on the 21 projects, are provided by the government.

Wetlands regeneration and conservation efforts offer a highly effective source of reducing ***emissions*** via carbon sequestration. The potential of wetlands is limited by the cost of mapping and monitoring. Plymouth based Argans aim to remedy this by utilising Earth Observation (EO) by developing a wetlands map to support monitoring of total carbon ***emissions*** for national accounting and to provide low-cost intelligence on how and where governments can most cost-effectively intervene to leverage wetlands as a source of carbon sequestration.

Consortium Partner: London Economics Ltd

Greenhouse Gas (GHG) ***emissions*** are recognised as a major contributor to climate change and temperature increase, but detection and monitoring of locations where ***emissions*** are occurring is problematic and expensive using current technologies. Geospatial Insight aims to create a service which will detect, quantify and monitor point-source GHG ***emissions***.

Consortium Partner: University of Leicester

TreeView, led by The Open University, is a SmallSat mission to provide unprecedented capacity in the emerging field of Precision Forestry. A major pillar of UK’s national response to the climate change emergency is a significant increase in tree planting for a nature-based carbon capture and storage solution. In this project, the team will conduct a feasibility study, resulting in a system design document and science case that both justifies and defines the UK’s first Precision Forestry tool with a national focus but global potential.

Consortium Partners: 2Excel Geo, Centre for Ecology and Hydrology, ***Forest*** Research, Grey Consultants, In-Space, RAL Space, Teledyne e2v, XCAM

Global Satellite VU will develop and launch the world’s first small ~130kg satellite that will deliver high-quality thermal video and thermal still imagery of the Earth, initiating the design, build and integration of the infrared camera.

By launching a small constellation of infrared satellites, this project looks to measure the thermal ***emissions*** from any structure on the planet; their technology will act as the Earth’s ‘Smart Energy’ meter to monitor energy efficiency, economic activity and carbon footprint.

Consortium Partner: Surrey Satellite Technology Ltd

Space Forge is developing and launching the world’s first returnable satellite, delivering revolutionary products back to Earth to significantly improve the efficiency and sustainability of telecommunications infrastructure. They are launching a small fleet of satellites to harness the benefits of the space environment for manufacture of next generation devices, changing the way in which the UK uses space, for the benefit of its citizens on Earth.

Consortium Partners: Compound Semiconductor, Applications Catapult, AAC Clyde Space

Project CitiScan aim to develop a new, responsive, space-based climate observation service to support end users in their goal to achieve national and global climate obligations. The project will provide climate-related measurements of individual cities and industrial complexes to enable end-users, such as local authorities, to monitor their omissions and progress.

Consortium Partners: Thales Alenia Space UK, University of Leicester

The Responsive Operations for Key Services (ROKS) mission will demonstrate technologies for future secure telecommunication systems using Quantum Key Distribution (QKD) and supported by artificial intelligence. This discovery phase will progress the flight payload and ground test systems to Critical Design Review (CDR), before a final build and delivery to demonstrate in-orbit operation by 2022. To date the work has developed the technology basis for miniaturized space-ready QKD systems and has developed service opportunities with multinational finance, telecommunication and data providers for securing their networks.

Consortium Partners: Strathclyde University, Bristol University, Fraunhofer Centre for Applied Photonics (CAP) Glasgow

New imaging sensors designed for Earth Observation (EO) are being developed with increasing numbers of pixels and faster operating rates. Whilst this allows improved performance it presents great challenges for data handling in the satellite itself and also for data downlink given the vast amount of data generated. RAPID – Real-time AI Processes for Intelligent Detection will use space ready hardware to establish the RAPID test and demonstration system while also providing the image processing platform and algorithms to handle the significantly higher data volumes.

Consortium Partner: Craft Prospect Ltd

The STORICLI project will look into the opportunities for using earth observation techniques to better understand how the supply and demand for water might change in the future due to climate change. HR Wallingford will develop a prototype web-based tool to help water companies and regulators consider the robustness of water resources plans, using a set of plausible future storylines.

There is an increased recognition of the need to deliver enhanced connectivity across the globe. In this project led by the Satellite Applications Catapult, the team is developing a pioneering solution for delivering connectivity to poorly served areas, leveraging the performance and ubiquitous coverage of satellite mega-constellations with the innovation of terrestrial networks. This project is the first of its kind and will use OneWeb’s satellites to demonstrate high speed data transfer through space to the Catapult’s 5G network at its connectivity research and innovation centre in Westcott, Buckinghamshire.

Consortium Partners: OneWeb, LiveWire Digital Ltd, Uni of Strathclyde

Applying Machine Learning (ML) to Earth observation (EO) data gives us the ability to better make predictions about how to adapt and mitigate our changing climate. Trillium Technologies aims to create a new public ‘ML Toolbox’, comprising an open repository of artificial intelligence tools such as enhanced, simulated and labelled geospatial data and advanced machine learning modules. ML4CC is dedicated to simplifying ML production and validation and ultimately improving climate related decision-making within the UK.

Consortium Partners: Oxford University Innovation, Know.space

Thermal infrared telescopes in space can monitor the energy output of buildings which makes them a powerful tool for ensuring that governments, companies and even individuals are on track to meet internationally agreed carbon ***emission*** goals. The team will study how the data can be used and develop prototypes for an innovative unfolding telescope for a nanosat constellation giving the required ground resolution (7 metres) with frequent revisit rates.

Consortium Partners: Super-Sharp Space Systems Ltd, Open Cosmos Ltd

As average global temperatures rise, hazards such as heatwaves and floods grow in frequency and severity, and chronic hazards, such as drought and rising sea levels intensify. Improved observations of our weather systems and more accurate forecasts are essential for our understanding, planning, and mitigation of extreme events. RAL Space will carry out a rigorous analysis and develop the Hyperspectral Microwave Sounder, a first of its kind, designed to provide unprecedented resolution of global moisture and temperature profiles in a highly compact form factor, allowing for a constellation deployment that will dramatically enhance global weather forecasting and climate monitoring.

Climate change is a defining issue of our time with transport being the UK’s biggest contributor to greenhouse gas ***emissions***. The transition from greenhouse gas-emitting conventional engines to Electric Vehicles (EVs) will bring an unprecedented increase in demand for a mixture of battery metals.

This project is a collaboration between space and mining companies led by the Satellite Applications Catapult and will use satellite data with advanced analytics to increase the identification of battery metals for mining companies in the UK and internationally, whilst decreasing the overall cost and environmental degradation associated with exploration.

Consortium Partners: Decision Lab, CGG Satellite Mapping, Terrabotics, Pixalytics, Cornish Lithium, University of Exeter, BGS

Shipping is responsible for approximately 1bn tonnes of greenhouse gas and significant air pollutant ***emissions***. NSIP’s support to integrate the latest satellite measurement developments into the latest modelling, is giving UMAS and the UK a globally leading position in the decarbonisation of this important sector. This project will build on previous “big data” capabilities and modelling studies that utilise the latest satellite systems to create powerful new tools for the estimation and tracking of shipping ***emissions*** on a global scale.

Consortium: UMAS International Ltd, University College London

The space communications sector is currently booming with the emergence of low cost, short-turnaround and high production rate satellites, such as CubeSats. One significant drawback for CubeSats is that they are not currently applicable for data intensive applications, primarily because CubeSats have low data storage and data transmission capabilities. The aim of the project is to replace the existing low-speed radio frequency transceiver used in CubeSats with the high-speed, light weight and lower power free-space optical transceivers, enabling a step-change in our approach to communications constellations and space science missions. By the end of this project, a test-bed design will have been developed together with a mission design study for future testing of the system in space.

Consortium Partner: ISOCOM Limited

In-Space Missions is using its NSIP programme to substantially extend its current Space as a Service, Faraday, capabilities. The expanded capability, Faraday+, will provide a Software Defined Satellite service which will allow customers to upload their application from the ground or buy capacity without the need to launch their own space hardware. Short-circuiting lengthy satellite build schedules lasting years and costing millions of pounds, new services using Faraday+ will be rolled out in weeks and at a fraction of traditional costs. Faraday+ will support multiple customers at the same time and underpin a significant acceleration of innovation across the whole of the UK space sector.

Consortium: Subcos Wave RF Ltd, National Physical Laboratory (NPL)

Lynk Global UK Limited, a subsidiary of Lynk Global, is developing LynkCast that will work on Lynk’s mobile microsatellite communications network. This network will function as a “mobile network in orbit” to enable mobile phones anywhere on Earth connect to their orbiting network without the need of modification to the devices’ hardware or software. LynkCast is an innovative product, which will be accelerated by funding from the UK Space Agency, to bring the critical information services such as weather forecasts and alerts to users direct from the satellites to the mobile phones in their pockets.

Consortium Partners: With Reason Ltd, Farm.ink

Space-borne lidar systems, Laser altimeter system that determines the distance by measuring light pulse travel time, are collecting important data but provide only sparse coverage, making them unsuitable for many commercially and societally important applications such as flood prediction. Scaling up these existing technologies to provide continuous global coverage would be prohibitively expensive.

The School of Geosciences at the University of Edinburgh, GLAMIS will bring together expertise from Scotland’s growing space and photonics sectors to pioneer a new approach to space-borne lidar using a laser compatible with a small satellite and, for smaller platforms, deployable optics to collect sufficient light.

Consortium Partners: Fraunhofer UK Research Ltd (Glasgow), UK Astronomy Tech Centre, University of Strathclyde

The Quantum Accelerometer Climate Explorer (Q-ACE) Mission brings together cutting edge Teledyne e2v Cold Atom Space Payload (CASPA) quantum accelerometer with Thales Alenia Space’s new revolutionary Very Low Earth Orbit (VLEO) SkimSat satellite platform to better understand climate change. Through the development of these highly innovative technologies, the mission would measure the density of the Earth’s thermosphere, mapping the small scale structure. In the future, this could further improve climate predictions and its evolution.

Consortium Partners: Teledyne e2v, University of Birmingham, RAL Space

The University of Edinburgh will develop and demonstrate efficient, scalable data handling systems for use by organisations working on climate change mitigation. These systems will have a further potential impact on the ***agriculture***, forestry, coastal, freshwater, urban and infrastructure domains.

Their pathfinder system, SingleTree, will use EO data to detect small scale ***land*** use changes that are important from a climate policy perspective.

Consortium Partners: Resilience Constellation Management Ltd, The Data-Driven Innovation and Edinburgh and South East Scotland City Region

Image: Northumbria University – Laser Optical Communications for CubeSats

This story continues at [*UKSA’s National Space Innovation Programme funds 21 UK organisations*](https://www.electronicsweekly.com/news/research-news/uksas-national-space-innovation-programme-funds-21-uk-organisations-2020-12/)

Or just read more coverage at [*Electronics Weekly*](https://www.electronicsweekly.com)

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[***Earth Day 2021: A turning point for climate action***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62H2-9KX1-F0YC-N387-00000-00&context=1516831)

Impact News Service

April 22, 2021 Thursday

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**Length:** 1547 words

**Body**

Cologny: World Economic Forum has issued the following press release:

US President Biden is expected to commit the US to reduce greenhouse gases at his Leaders Summit on Climate. While there is still much to be done, a major political turning point on climate action has occurred. Climate ambition and the net-zero transition is a central pillar of World Economic Forum activity through our Platform for Climate Action.

Earth Day 2021 marks a historic moment for action on climate change. Today, at President Biden's unprecedented Leaders Summit on Climate, he is expected to put forward an ambitious national commitment from the US to help the world tackle the climate crisis.

Combined with existing commitments to achieve net-zero ***emissions*** by 2050 from the EU, the UK and other major G20 economies including Japan and the Republic of Korea, as well as a commitment from President Xi to peak China’s carbon ***emissions*** by 2030 and achieve carbon-neutral growth by 2060, major governments are now committing to a significant effort required for the world to meet net-zero ***emissions*** by 2050.

There is still much diplomatic work required to close this commitment gap ahead of the COP26 climate summit in Glasgow in November, but a major political turning point on climate action has undoubtedly occurred.

The additional challenge is to now turn these political commitments into practical action, especially to get on track with ***emissions*** reductions by 2030.Have you read?

2021: the year the real economy must start building a net-zero, nature-positive partnership 4 ways to build a net-zero economy by 2050 How to create a net-zero, nature-positive recovery

Turning commitments into action

This is where the second important turning point on climate action comes into play. Alongside national governments, many global companies, cities, states, and regions are also pledging climate action. More than 1,000 corporations, for example, have now made net-zero commitments, and a United Nations-convened group of investors called the “Net Zero Asset Owners Alliance” now has more than $5 trillion of assets under ownership committed to net zero ***emissions*** by 2050 or sooner. These “non-state actor” commitments (to use United Nations language for everyone who is not a government), often come with practical roadmaps, investment plans and partnership strategies, to help the CEO be clear on how action will be delivered in the next few years.

Biden's expected national strategy for climate action would bring an “all of government” approach, which would also help scale and accelerate non-state actor efforts in the US: effectively stimulating a “win-win” public-private scenario for climate action. The European Green Deal and the recently released 14th Five Year Plan in China also offer green industrialisation and investment strategies, leveraging government capabilities to promote partnerships with industry to help meet climate goals.

These plans also reflect a more broadly interventionist mood among the major governments to stimulate a sustainable and resilient post-COVID-19 economic recovery involving technology, job creation and action on climate. The aspirations of the G-7 and G-20 Presidencies for 2021 reflect this.

Consequently, the transition to get on track for net-zero ***emissions*** may now be viewed through the perspective of a unique, decadal effort of public-private cooperation – a once in a generation push for an energy, industrial and ***agricultural*** systems upgrade, boosted by the need for a post-pandemic economic stimulus.

This helps sharpen the frame for climate action to 2030.

We know we have 10 years to get on track. We know we must ***remove*** about 25 billion tonnes of CO2 equivalent of greenhouse gas ***emissions*** in that time. We know the key sectors of the economy we must focus our relative efforts on.Image: Net-Zero Challenge: The supply chain opportunity

We know the levers of technology innovation, investment and policy that must be pulled. And we can increasingly see the value creation this transition can create, as costs of renewable power collapse in relation to fossil fuel options, and as innovations advance many new climate-smart products and services.

We can see investors and markets around the world responding. Values are rising for green innovation, climate-smart companies and green or ESG investment funds. And consequently, we also know the transition risks we need to mitigate as we make the shift – the transition in jobs and skills for example, and the need for more comprehensive standards, reporting and accountability frameworks to help show which companies are taking action and managing climate risk best.

The UNFCCC Climate COP “Champions” – who focus on helping to mobilise non-state actor effort - have even usefully broken down the economic and industrial areas required for transition and action into twenty-eight specific Breakthrough Ambitions that need to be achieved across the global economy by 2030 to get us on the pathway to net zero ***emissions*** by mid-century.

The public-private agenda for climate action has never been clearer.Have you read?

Fostering Effective Energy Transition 2021 edition

Delivering on the climate action agenda

This is why climate ambition and the net-zero transition is a central pillar of World Economic Forum activity through our Platform for Climate Action. As the international organisation for public-private cooperation, our story to governments since 2008, ahead of the Copenhagen Climate COP, has been consistent: that climate change is a key global risk; and that the challenge of taking climate action can effectively be broken down into a set of major multistakeholder (or stakeholder capitalism) programs of public-private partnership, each leveraging public sector support to unlock innovation, growth and value-creation from the private sector. More recently, the potential to harness Fourth Industrial Revolution technologies can be added to this agenda.What’s the World Economic Forum doing about climate change?

Climate change poses an urgent threat demanding decisive action. Communities around the world are already experiencing increased climate impacts, from droughts to floods to rising seas. The World Economic Forum's Global Risks Report continues to rank these environmental threats at the top of the list.

To limit global temperature rise to well below 2°C and as close as possible to 1.5°C above pre-industrial levels, it is essential that businesses, policy-makers, and civil society advance comprehensive near- and long-term climate actions in line with the goals of the Paris Agreement on climate change.Global warming can be beaten thanks to this simple plan

The World Economic Forum's Climate Initiative supports the scaling and acceleration of global climate action through public and private-sector collaboration. The Initiative works across several workstreams to develop and implement inclusive and ambitious solutions.

This includes the Alliance of CEO Climate Leaders, a global network of business leaders from various industries developing cost-effective solutions to transitioning to a low-carbon, climate-resilient economy. CEOs use their position and influence with policy-makers and corporate partners to accelerate the transition and realize the economic benefits of delivering a safer climate.

Contact us to get involved.Mission Possible Platform: Delivering industry pathways t...

Today, our portfolio of public-private initiatives on climate action is delivering on this agenda. They include working with industry leaders, investors, innovators and governments to trigger the net-zero transition in key industrial sectors like energy, aviation, shipping, trucking, steel, chemicals, aluminium and cement, through the Mission Possible Partnership and Finance For the Transition; and working on net-zero, nature positive food and ***land*** use partnerships including the Tropical ***Forest*** Alliance, 1t.org, Grow Asia, and Friends of Ocean Action.

We offer public-private support to international efforts like COP26 and the UNFCCC Climate Champions, the Clean Energy Ministerial, Mission Innovation and G7 and G20 processes. We use our own digital platform and major events, including the Special Annual Meeting in Singapore, the Davos Annual Meeting, and the upcoming virtual climate event in May to help advance these efforts and invite more in. We also promote the efforts of technology innovators, young people and social entrepreneurs around the world through scaling circular economy solutions for climate, and through UpLink; and we are proud to host and support the world’s leading community of CEOs committed to climate action, the Alliance of CEO Climate Leaders.

All these activities, and more, form a unique package of stakeholder capitalism, public-private cooperation and harnessing the Fourth Industrial Revolution, designed to help governments, companies, and civil society to accelerate climate action and be on track for a net-zero and nature positive economy by 2030.

Spurred by President Biden’s Leaders’ Summit and its announcements, and the potential it raises for the forthcoming Glasgow COP26, let us ensure history looks back on 2021 as the turning point year when climate action truly became seen as a decadal programme for breakthrough public-private action.

**Load-Date:** April 22, 2021

**End of Document**



[***Endangered and Threatened Wildlife and Plants: Reclassification of Eugenia woodburyana as Threatened and Section 4(d) Rule***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6147-V2D1-F0YC-N098-00000-00&context=1516831)

Impact News Service

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**Length:** 21570 words

**Body**

Washington, DC: This Proposed Rule document was issued by the Fish and Wildlife Service (FWS)

Action

Proposed rule.Summary

We, the U.S Fish and Wildlife Service (Service or USFWS), propose to reclassify the plant Eugenia woodburyana (no common name) from an endangered species to a threatened species under the Endangered Species Act of 1973, as amended (Act), due to improvements in the species' status since the original listing in 1994. This proposed action is based on a thorough review of the best available scientific and commercial information, which indicates that E. woodburyana is not currently in danger of extinction throughout all or a significant portion of its range, but it is likely to become so within the foreseeable future. If this proposal is finalized, E. woodburyana would remain protected as a threatened species under the Act. We seek information, data, and comments from the public on this proposal. We also propose to establish a rule under section 4(d) of the Act that will provide measures that are necessary and advisable for conservation of the E. woodburyana.Dates

We will accept comments received or postmarked on or before December 21, 2020. We must receive requests for public hearings in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by December 7, 2020.Addresses

You may submit comments on this proposed rule by one of the following methods:

Electronically: Go to the Federal eRulemaking Portal: [*http://www.regulations.gov*](http://www.regulations.gov) In the Search box, enter the Docket Number for this proposed rule, which is FWS-R4-ES-2019-0070. Then, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on “Comment Now!” Please ensure that you have found the correct rulemaking before submitting your comment. Comments submitted electronically using the Federal eRulemaking Portal must be received by 11:59 p.m Eastern Time on the closing date.

By hard copy: Submit by U.S mail to: Public Comments Processing, Attn: FWS-R4-ES-2019-0070; U.S Fish and Wildlife Service Headquarters, MS: JAO/1N, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on [*http://www.regulations.gov*](http://www.regulations.gov) This generally means that we will post any personal information you provide us (see Public Comments below for more information).

Document availability: The proposed rule, list of literature cited, the 5-year review, and other supporting documents are available at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0070.For Further Information Contact

Edwin Muñiz, Field Supervisor, U.S Fish and Wildlife Service, Caribbean Ecological Services Field Office, P.O Box 491, Boquerón, Puerto Rico 00622, telephone (787) 851-7297. Individuals who use a telecommunications device for the deaf (TDD), may call the Federal Relay Service at (800) 877-8339.Supplementary InformationExecutive Summary

Why we need to publish a rule. Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or ***removing*** species from the Lists of Endangered and Threatened Wildlife and Plants. To list, reclassify, or delist a species, we must issue a rule in the Federal Register. This rule proposes to reclassify the E. woodburyana from endangered to threatened on the List.

What this document does. We propose to reclassify the plant Eugenia woodburyana as threatened on the Federal List of Endangered and Threatened Plants and to establish provisions under section 4(d) of the Act to ensure the continued conservation of this species.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species based on any one or a combination of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. In our May 2017 5-year status review, we made a recommendation to reclassify this plant from endangered to threatened based on our evaluation of these same five factors. Based on the status review, the current threats analysis, and evaluation of conservation measures discussed in this proposed rule, we conclude that the plant E. woodburyana no longer meets the Act's definition of endangered and should be reclassified to threatened because it is no longer in danger of extinction throughout all or a significant portion of its range, but is likely to become so within the foreseeable future.

New information indicates that Eugenia woodburyana is now more abundant and more widely distributed than when it was listed in 1994, when only approximately 45 individuals were known from 3 localities in southwestern Puerto Rico. In the recovery plan for E. woodburyana (Service 1998), the species was identified as occurring in four locations in southwest Puerto Rico, totaling approximately 150 individuals. In the 2017 5-year review, it was known from 6 populations and 2,597 individuals (not including seedlings) (Service 2017, p. 13). Currently, self-sustaining E. woodburyana natural populations are known to occur in 6 localities along southern Puerto Rico, extending from the municipality of Cabo Rojo in the southwest eastward to the municipality of Salinas in the south, totaling approximately 2,751 not including seedlings (table 1). About 47 percent of the currently known individuals occur under protective status in areas managed for conservation and where threats due to habitat modification have been reduced. Recovery actions (e.g , propagation and planting, habitat enhancement with native tree species, cattle exclusion, firebreaks) to control and reduce remaining threats have been successfully implemented in collaboration with several partners.

Our review of the best available scientific and commercial information indicates that some threats to Eugenia woodburyana still remain while others have been reduced or no longer occur. Remaining threats that will make this species likely to become endangered in the foreseeable future include habitat loss, degradation, and fragmentation, and other natural or manmade factors such as human-induced fires and landslides. For example, in May 2019, a large wildfire affected the upper ***forested*** hills of a private ***land*** in conservation in Sierra Bermeja (southwest Puerto Rico), affecting an undetermined number of individuals of E. woodburyana (Envirosurvey 2020, p. 52).Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

(1) The species' biology, range, and population trends, including:

(a) Biological or ecological requirements of the species, including habitat requirements;

(b) Genetics and taxonomy;

(c) Historical and current range including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Current or planned activities within the geographic range of Eugenia woodburyana that may impact or benefit the species.

(2) Factors (threats) that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

(5) Information on regulations that are necessary and advisable to provide for the conservation of Eugenia woodburyana and that the Service can consider in developing a 4(d) rule for the species. In particular, information concerning the extent to which we should include any of the section 9 prohibitions in the 4(d) rule or whether any other forms of take should be excepted from the prohibitions in the 4(d) rule (to the extent permitted by Commonwealth law).

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that a determination as to whether any species is a threatened or endangered species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your comments and materials concerning this proposed rule by one of the methods listed in ADDRESSES. We request that you send comments only by the methods described in ADDRESSES.

If you submit information via [*http://www.regulations.gov*](http://www.regulations.gov), your entire comment—including any personal identifying information—will be posted on the website. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Please note that comments posted to this website are not immediately viewable. When you submit a comment, the system receives it immediately. However, the comment will not be publically viewable until we post it, which might not occur until several days after submission.

Comments and materials we receive, as well as supporting documentation used in preparing this proposed rule will be available for public inspection at Docket No. FWS-R4-ES-2019-0070 on [*http://www.regulations.gov*](http://www.regulations.gov) Public Hearing

Section 4(b)(5)(E) of the Act provides for one or more public hearings on this proposal, if requested. We must receive requests for public hearings, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by the date shown in DATES. We will schedule a public hearing on this proposal, if any are requested, and announce the date, time, and place of those hearings, as well as how to obtain reasonable accommodation, in the Federal Register at least 15 days before the first hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the Federal Register. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).Peer Review

In accordance with our policy published in the Federal Register on July 1, 1994 (59 FR 34270), and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review, dated December 16, 2004, we will seek the expert opinions of at least three appropriate and independent specialists regarding the science in this proposed rule. The purpose of such review is to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We will send peer reviewers copies of this proposed rule immediately following publication in the Federal Register. We will invite these peer reviewers to comment during the public comment period on both the proposed reclassification of Eugenia woodburyana and the proposed special rule. We will summarize the opinions of these reviewers in the final decision documents, and we will consider the comments and information received from peer reviewers during the public comment period on this proposed rule, as we prepare our final determination.

Because we will consider all comments and information received during the comment period, our final determination may differ from this proposal. Based on the new information we receive, we may conclude that the species status should not change and may choose to withdraw the proposal. Such a final decision would be a logical outgrowth of this proposal, as long as we: (a) Base the decisions on the best scientific and commercial data available after considering all of the relevant factors; (2) do not rely on factors Congress has not intended us to consider; and (3) articulate a rational connection between the facts found and the conclusions made, including why we changed our conclusion.Previous Federal Actions

On September 9, 1994, we published a final rule in the Federal Register (59 FR 46715) listing Eugenia woodburyana as an endangered species. The final rule identified the following threats to E. woodburyana: Loss of habitat due to ***agricultural*** (grazing by cattle and goats), rural, and tourist development and possibly the use of off-road vehicles within the habitat; lack of State regulations to protect this species; and the limited distribution of the species. On October 6, 1998, we published the recovery plan for this endangered plant (USFWS 1998, entire). We completed a 5-year status review on May 7, 2017 (USFWS 2017, entire). In that review, we determined that the species no longer met the definition of an endangered species and should be reclassified to threatened because new occurrences of the species had been located since completion of the recovery plan, and a substantial number of individuals had been documented (i.e , 2,567 individuals including adults and saplings).

The 5-year status review is available at [*https://www.regulations.gov*](https://www.regulations.gov) at (Docket No. FWS-R4-ES-2019-0070).

For additional details on previous Federal actions, see discussion under Recovery, below. Also see [*http://www.fws.gov/endangered/species/us-species.html*](http://www.fws.gov/endangered/species/us-species.html) for the species profile for this plant.I. Proposed Listing DeterminationBackgroundSpecies Information

A thorough review of the taxonomy, life history, ecology, and overall viability of Eugenia woodburyana was presented in the 5-year review (USFWS 2017, entire). Below we present a summary of the biological and distributional information discussed in the 5-year review and new information published or obtained since.Taxonomy and Species Description

Eugenia woodburyana is a small evergreen tree that belongs to the family Myrtaceae (Judd et al. 2002, p. 398). Eugenia is the largest genus of this family, which is very diverse in the Antilles and includes more native trees than any other genus of flowering plants in the flora of Puerto Rico (Breckon and Kolterman 1994, p. 5). Eugenia woodburyana was first collected by Roy O. Woodbury in October 31, 1977, in the municipality of Guánica, Puerto Rico, and later described as a new species (Liogier 1994, p. 407).

Eugenia woodburyana may reach up to 6 m (19.8 ft) (Liogier 1994, p. 407). Its leaves are chartaceous (thin and stiff), pubescent on both sides, obovate or elliptic, rounded at the apex, and dark green and shining above, and paler beneath. The fruit is an eight-winged, globose berry with a diameter of 2 cm (0.08 in) that turns red when mature (Liogier 1994, p. 407).Reproductive Biology

The reproductive biology of Eugenia woodburyana had not been thoroughly studied at the time it was listed. According to data in the recovery plan, herbarium specimens collected in October and May at the GCF contained buds and flowers, whereas specimens collected in February and April were sterile. However, a specimen collected in March in Sierra Bermeja (southwest Puerto Rico) had remnants of flowers (USFWS 1998, pp. 3-4).

Some information on the phenology and germination of Eugenia woodburyana has been gathered since the species was listed. This plant has been observed flowering in February, May, June, August, and October, and not all individuals flower at the same time and not all produce fruits (USFWS 2017, p. 17). Therefore, we suspect it could flower February through October, depending on rain levels. Flower bud development has been observed 3 to 5 days after rain events of greater than 1 inch (25.4 mm) in 1 day, and fruits are observed about 3 weeks later (USFWS 2017, p. 17). In the event water availability becomes a limiting factor, the immature fruits may become dormant for months until conditions are favorable for developing (Monsegur-Rivera 2012-2017, pers. obs.). Flowers of E. woodburyana are typically visited by honey bees (Apis mellifera), and pollination and fruit production appear to be the result of crosspollination, as few fruits are produced when single individuals flower (Monsegur-Rivera 2012-2017, per. obs.).

Eugenia woodburyana seeds can remain dormant for a considerable period of time, and likely vary in time of emergence (Santiago 2011, p.14). Recent germination trials indicate the species has a high germination rate (i.e , 70 percent), and that germination success is greater if seeds are planted within 2 weeks following harvesting. Seeds start germinating by developing a long taproot, an adaptation to secure access to water, and in the case of a sudden drought, the seed may stop development of new growths and go dormant (Monsegur-Rivera 2012-2014, pers. obs.). Additional propagation efforts have been conducted because Eugenia woodburyana is relatively easy to propagate. Over the past 10 years, the Service has worked with local partners propagating and planting this species on ***lands*** managed for conservation in the Sierra Bermeja area (USFWS 2017, p. 11). These efforts need to be expanded to geographical areas in the proximity of the other natural populations (e.g , Almácigo Bajo).Distribution and Abundance

Eugenia woodburyana was originally known from dry thickets within the GCF (Liogier 1980, p. 185; Breckon and Kolterman 1994, p. 5). In 1981, this species was collected at an uncertain location within the CRNWR, and in 1984, at the dry serpentine slopes of Cerro Mariquita in Sierra Bermeja (Santiago-Blay et al. 2003, p. 1). At the time of listing, E. woodburyana was considered an endemic species of southwest Puerto Rico, known from only 45 individuals within the GCF, Sierra Bermeja, and an individual reported from the CRNWR. In addition, E. woodburyana was collected in 1996 at Peñones de Melones in Cabo Rojo (Breckon 4863; MAPR herbaria). Thirteen individuals of this species were recorded during a study at La Tinaja Tract (Laguna Cartagena National Wildlife Refuge [LCNWR]), which found the species was present in open ***forest*** on east-facing slopes, and that it did not occur in areas in transition from pasture to ***forest*** (Weaver and Chinea 2013, p. 279).

Following the finalization of the species' recovery plan in 1998, new populations within the geographical areas of Montes de Barinas, between the municipalities of Yauco and Guayanilla, and Punta Cucharas, and between the municipalities of Ponce and Peñuelas, were identified by local experts and the Service (Román-Guzman 2006, p. 25). These reports expanded the species' distribution further east within the subtropical dry limestone ***forest*** of Puerto Rico. The range of the species continued to expand: In 2008, it was located at Almácigo Bajo Ward in the municipality of Yauco (Sepúlveda 2008, pers. comm.). The species is also now known to extend to the Municipality of Salinas, as evidenced by a specimen collected within the boundaries of the Puerto Rico National Guard's Camp Santiago (Acevedo-Rodriguez 2014, p. 15; table 1). This locality is at least 18.6 miles (30 km) east of the previously nearest known site at Punta Cucharas in the municipality of Ponce. Below we discuss each of these areas in more detail.Table 1—Currently Known Natural Populations and Number of Individuals (Adults and Saplings) of Eugenia woodburyana in Puerto Rico Population name based ongeographical range Subpopulation name Percent of the total (2,751)known adults/saplings persubpopulation a Conservationstatus(protected,not protected) OwnershipSierra Bermeja \* La Tinaja Tract (within LCNWR) 808/271 (39.2%) Protected USFWS. \* Finca María Luisa (also known as Finca Escabi) 692/90 (28.4%) Not protected Private ***land*** under conservation easement with Para La Naturaleza. Threats not managed. \* El Conuco (also known as Finca Sollins) 88/8 (3.5%) Protected P.R Conservation Trust (Para La Naturaleza). \* Finca Lozada 300 estimated adults (10.9%) Not protected Private.Almácigo Bajo, Yauco Almácigo Bajo (Río Loco) 120/226 (12.6%) Not protected Private.Guánica Commonwealth ***Forest*** \* Cañon Hoya Honda 10 estimated adults (0.36%) Protected PRDNER. \* Cañon Eugenias 31/8 (1.4%) Protected PRDNER. \* Cañon Murciélagos 27/39 (2.4%) Protected PRDNER. \* Cañon Las Trichilias 1 (0.04%) Protected PRDNER.Montes de Barinas Finca Catalá 1 (0.04%) Not protected Private.Punta Cucharas (Ponce-Peñuelas) \* Peñon de Ponce 20 (0.7%) Not protected Private. \* Puerto Galexda 9 (0.3%) Private. \* Gasoducto Sur ROW 1 (0.04%) Private.Salinas Camp Santiago 1 (0.04%) Not protected P.R National Guard. Threats not managed.

As shown in Table 1, the largest population and suitable habitat of Eugenia woodburyana is found in Sierra Bermeja, southwest Puerto Rico, a mountain range that covers approximately 3,706-ac (1,500-ha) (USFWS 2011a, p. 17). E. woodburyana is known from at least four locations (subpopulations) within this area: La Tinaja Tract, Finca María Luisa (also known as Finca Escabi), Finca Lozada, and El Conuco (also known as Finca Sollins) (Envirosurvey 2020, p. 44). La Tinaja Tract is part of the LCNWR and occupies 263 ac (106.4 ha) in the foothills of Sierra Bermeja (USFWS 2011a, pp. 23 and 26), and lies within the Subtropical Dry ***Forest*** Life Zone (Ewel and Whitmore 1973, p. 10; Weaver and Chinea 2003, p. 273). Although the species is not specific to this type of habitat, drainages provide moist conditions (mesic) favorable for its establishment, which may explain the higher abundance of the species at these sites. In fact, an inventory of listed plant species at La Tinaja Tract accounted for 808 adults and 271 saplings of Eugenia woodburyana, associated to those mesic habitats that favor germination and recruitment (Morales-Pérez 2013, p. 4, Monsegur-Rivera 2009-2018, pers. obs.; table 1). The occurrence in Sierra Bermeja of multiple listed plants and rare endemics is the result of the little ***agricultural*** value of the steep slopes, hence little deforestation, which resulted in a refugia for those species, including E. woodburyana. Nonetheless, the lower slopes of Sierra Bermeja and surrounding valleys are subject to different ***land*** use practices that hinders the expansion of the species and associated native vegetation due to threats such as fires, invasive grasses, and grazing, along with dry climate conditions (Weaver and Chinea 2003, pp. 281-282).

Finca María Luisa is a private ***land*** that ranges from the upper slopes of Sierra Bermeja extending south to the coast near La Pitahaya in the Boquerón Commonwealth ***Forest***. This property is composed of a mosaic of habitats with different ***land*** uses that include ranching, hay production, and remnants of ***forested*** habitats. The ***forested*** habitat is adjacent to the boundaries of the LCNWR (La Tinaja Tract) and provides connectivity to the Eugenia woodburyana subpopulations, particularly on La Tinaja Tract. An assessment of Finca María Luisa identified 629 adults and 90 saplings of E. woodburyana (Envirosurvey 2020, p. 47; table 1). A total of 105 seedlings also were documented during that same assessment. However, there is no information on the survival of those seedlings. This property is currently under a conservation easement managed by the nongovernmental organization Para La Naturaleza, Inc. (PLN), the operational unit of The Conservation Trust of Puerto Rico (PLN 2013). This easement should provide for the conservation of the natural resources of the property, including E. woodburyana. However, there are some ***agricultural*** practices (e.g , grazing, ***forest*** conversion into grassland) that still threatening the species (PLN 2013, p. 56; USFWS 2017, p. 18; Envirosurvey 2020, p. 49). El Conuco is another property owned and managed for conservation by PLN in Sierra Bermeja, where E. woodburyana is also found (PLN 2014). This property is located on the west side of the mountain range, and in 2014, a subpopulation of E. woodburyana was reported with at least 41 individuals (USFWS 2014a, p. 2). The latest survey indicates that there are at least 88 adults and 8 saplings of E. woodburyana on this property (Envirosurvey 2020, p. 51; table 1). A total of 20 seedlings also were documented during this assessment, but there is no information on their long-term survival.

Finca Lozada is a private property located west of La Tinaja Tract, and with similar habitat to La Tinaja. In 2007, a rapid assessment of Eugenia woodburyana was conducted on this property and estimated the subpopulation at around 300 individuals (USFWS 2017, p. 9).

Eugenia woodburyana also was known from the area of Peñones de Melones in the Boquerón Ward of Cabo Rojo. This site is a western extension of the Sierra Bermeja habitat, but at lower elevations, and it has been subject to deforestation mainly for ***agriculture*** and urban development (USFWS 2017, p. 14). However, there are no current data on the status of this population, and E. woodburyana is presumed extirpated from this area due to the extensive deforestation and development that occurred during the early 2000s. In addition, there is a single record of the species from the CRNWR, but this locality has not been surveyed recently due to lack of information on the specific location of the individual. However, the CRNWR is currently a reintroduction site for E. woodburyana.

As previously stated, the known range of Eugenia woodburyana increased when the species was located on private ***land*** (Río Loco population) at the Almácigo Bajo Ward near the southeast boundary of the Susúa Commonwealth ***Forest*** (SCF). This is the only population that occurs in the boundaries of the subtropical dry and moist ***forests*** life zones (Ewel and Whitmore 1973, pp. 25 and 72). The latest information from this site indicates the E. woodburyana population is composed of at least 120 adults and 226 saplings (USFWS 2017, p. 9; table 1). Despite the relatively disturbed nature of this area, a total of 211 seedlings also were documented during the assessment, but their current survival is unknown (USFWS 2017, p. 9). In fact, due to the proximity of this population to the SCF, and the availability and continuity of suitable habitat, we would expect to find additional E. woodburyana individuals along the southeastern portion of the SCF.

The GCF is a natural area comprising one of the best remnants of subtropical dry ***forest*** vegetation in Puerto Rico (Monsegur-Rivera 2009, p. 3). Elevation ranges from 0 to 228 m (0 to 748 ft) above sea level (Murphy et al. 1995, p. 179), and the landscape includes a variable topography with a mixture of hills and deep canyons or ravines that provides adequate conditions for the occurrence of Eugenia woodburyana. There are four localities within the GCF where subpopulations of this species have been documented: Cañón Hoya Honda, Cañón Murciélagos, Cañón Las Eugenias, and Cañón Las Trichilias (Monsegur-Rivera 2009-2018, pers. obs.; table 1). The currently known number of E. woodburyana individuals at the GCF is approximately 69 adults and 47 saplings (USFWS 2017, pp. 8). Also, 31 seedlings were found in the ***forest***, but no information is available regarding their survival (USFWS 2017, p. 8).

The range of Eugenia woodburyana extends north to the hills along Montes de Barinas in a habitat similar to the GCF (Monsegur-Rivera 2009-2018, pers. obs.). This tract of privately owned ***lands*** is located primarily along Indios Ward in the municipality of Guayanilla, and Cambalache Ward in the municipality of Yauco. Due to the marginal ***agricultural*** value of these areas, the ***forest*** was partially logged for charcoal production and ranching; fortunately, the prime habitat for native and endemic plant species remained undisturbed (79 FR 53326, September 9, 2014). The ***forested*** habitats at Montes de Barinas and the GCF are separated by an ***agricultural*** valley along the Yauco River. In fact, this geographical range overlaps with the designated critical habitat of V. rupicola (Montes de Barinas Unit; 79 FR 53326, September 9, 2014). The number of individuals of E. woodburyana at this location is limited to one record (table 1). However, the majority of the habitat remains unexplored; thus, further surveys are necessary to determine the size of this population (Monsegur-Rivera 2009-2018, pers. obs.).

Similar habitat extends east to private ***lands*** in the area of Punta Cucharas, along Encarnación and Canas Wards between the municipalities of Peñuelas and Ponce in southern Puerto Rico. This area also lies within the designated critical habitat for V. rupicola (Peñon de Ponce Unit) (79 FR 53326, September 9, 2014). Here, Eugenia woodburyana is known from at least three subpopulations: Peñon de Ponce, Puerto Galexda, and the former right of way of the proposed gas pipeline Gasoducto Sur, with an estimated minimum number of 30 individuals growing mainly along drainages on the northwest-facing slopes with greater moisture retention (Monsegur-Rivera 2009-2018, pers. obs.; Service 2017, p. 10; table 1). The current ***forest*** structure and absence of exotic plant species suggest this habitat has remained mainly undisturbed, explaining the presence of rare species like Buxus vahlii (an endemic species with limited seed dispersal mechanism) in the area. Thus, the presence of additional subpopulations of E. woodburyana in this area is very likely.

The newest record indicating the expansion of the species' known range is from a specimen collected at the Puerto Rico National Guard's Camp Santiago in the municipality of Salinas. This site is about 18.6 miles (30 km) east from the nearest known locality in Punta Cucharas in a habitat composed of remnants of native dry ***forest***. Camp Santiago covers an area of 5,175 ha (12,787.6 ac), and is located south of the central mountain range of Puerto Rico (Acevedo-Rodríguez 2014, p. 15).Population Summary

Available information indicates at least 808 adults and 271 saplings of Eugenia woodburyana occur within the boundaries of La Tinaja Tract (Morales-Pérez 2013, p. 4; table 1). The population of Finca María Luisa is composed of at least 692 adults and 90 saplings (Envirosurvey 2020, p. 47; table 1). In the case of El Conuco, the population is 88 adults and 8 saplings (Envirosurvey 2020, p. 51; table 1). When evaluating the combined data from La Tinaja Tract, Finca María Luisa, El Conuco, and Finca Lozada as the whole Sierra Bermeja population, the total number of adults (1,888) and saplings (369) consists of 2,257 individuals. In addition, at least 269 seedlings have been recorded in this population (Morales-Pérez 2013, p. 4; Envirosurvey 2020, pp. 47 and 51). Although we recognize the occurrence of seedlings, we did not include them part of the whole E. woodburyana population because their fate is unknown due to the lack of long term monitoring. For example, seedling survival can be compromised by environmental variables like droughts, particularly in the dry ***forest*** habitat where the species occurs. Still, the current number of adult individuals represents a demonstrable increase when compared to the overall number of individuals known at the time when the species was listed (45 individuals) or even at the time the recovery plan was published (150 individuals). The presence of different size classes shows that the E. woodburyana population in Sierra Bermeja has been resilient to past and current threats (e.g , unsustainable ***agricultural*** practices, grazing, fires, invasive plant species) as suggested by its natural recruitment, reflected in the actual number of adults and saplings. Based on aerial images, and because the vegetation structure in neighboring ***lands*** is similar to areas with documented presence of E. woodburyana, we anticipate the species extends beyond our surveyed area in Sierra Bermeja. Nonetheless, E. woodburyana appears to be absent from areas previously deforested and degraded to grasslands dominated by exotics (e.g , Megathyrsus maximus [guinea grass]), and it is mainly restricted to those areas that provide favorable conditions for its establishment (e.g , drainages) (Weaver and Chinea 2003, entire; Morales-Pérez 2013, p. 4; Monsegur-Rivera 2009-2018, pers. obs.; Envirosurvey 2020, pp. 46 and 51). Similar to Sierra Bermeja, the Almácigo Bajo (also known as Río Loco) population also shows evidence of natural recruitment and resiliency to previous habitat disturbance. The latest comprehensive survey of this population resulted in 346 individuals, corresponding to 120 adults and 226 saplings (USFWS 2017, p. 11; table 1). Despite the relatively disturbed nature of this area, it harbors a higher proportion of seedlings (38 percent) than that of Sierra Bermeja (10.5 percent) (USFWS 2016, p. 5; USFWS 2017, pp. 9 and 10), which most likely is the result of the moister understory conditions in the drainages where the species is found, and provides for better seed germination and seedling establishment. Nonetheless, even though this population is the more structurally proportionate, the recruitment of those seedling into the population is uncertain.

At the GCF, the subpopulation at Cañón Murciélagos (also known as Dinamita Trail) is relatively small (i.e , 27 adults and 39 saplings (USFWS 2016, p. 8). Further assessment of the subpopulation at Cañón Las Eugenias (also known as Cueva Trail) in the GCF found 31 adults and 8 saplings (USFWS 2016, p. 8). A third subpopulation at Cañón Hoya Honda is predominantly composed of about 10 adult individuals (Monsegur-Rivera 2009-2018, pers. obs.). A total of 31 seedlings were found at Cañón Murciélagos (29), and Cañón Las Eugenias (2) (USFWS 2019, p. 8), but their current survival is unknown. The populations of Montes de Barinas, Punta Cucharas, and Camp Santiago are recent additions to the species' range, and further systematic inventories are needed in order to determine the extent and trends of these populations. Nonetheless, these very small populations are characterized by little or no recruitment (e.g , Acevedo-Rodríguez 2014, p. 15).Recovery

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of threatened and endangered species unless we determine that such a plan will not promote the conservation of the species. Recovery plans are not regulatory documents and are instead intended to establish goals for long-term conservation of a listed species, define criteria that are designed to indicate when the threats facing a species have been removed or reduced to such an extent that the species may no longer need the protections of the Act, and provide guidance to our Federal, State, and other governmental and non-governmental partners on methods to minimize threats to listed species. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished, yet the Service may judge that, overall, the threats have been minimized sufficiently, and the species is robust enough, to reclassify the species from endangered to threatened or perhaps delist the species. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan.

Likewise, information on the species that was not known at the time the recovery plan was finalized may become available later. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Recovery of species is a dynamic process requiring adaptive management that may, or may not, fully follow the guidance provided in a recovery plan.

The following discussion provides an analysis of the recovery criteria and goals as they relate to evaluating the status of the taxon.Recovery Criteria

The recovery plan for this species did not provide downlisting criteria (USFWS 1998, entire). In 2019, the Service published an amendment to the original recovery plan, which amended the recovery criteria of this species by establishing that Eugenia woodburyana will be considered for delisting when the following criteria are met (USFWS 2019, p. 4): (1) Threat reduction and management activities have been implemented to a degree that the species will remain viable into the foreseeable future; (2) Existing natural populations of E. woodburyana (6 populations) show a stable or increasing trend, as evidenced by natural recruitment and multiple age classes; (3) Within the historic range, establish at least three (3) new populations of E. woodburyana on ***lands*** protected by a conservation mechanism that show a stable or increasing trend, evidenced by natural recruitment and multiple age classes. We apply our current understanding of the species' range, biology, and threats to these delisting criteria to support our rationale for why downlisting is appropriate.

Threat reduction and management activities described in delisting criterion number 1 have been partially met. Overall, about 47 percent of the currently known Eugenia woodburyana individuals occur within ***lands*** managed for conservation. As previously stated, the GCF is managed for conservation by PRDNER as recommended by the Master Plan for the Commonwealth ***Forests*** of Puerto Rico (DRN 1976, p. 56). In addition, E. woodburyana is currently listed as critically endangered under PRDNER regulations (PRDNER 2004, p. 52). Consequently, that agency reviews all proposed actions for the GCF that may adversely affect this and other listed species and their habitat within the ***forest***. During an E. woodburyana rapid assessment conducted at the GCF, no changes in habitat or evidence of activities affecting this species were observed (USFWS 2017, p. 8). Thus, as E. woodburyana is protected in that ***forest***, it appears to be stable based on consistent records of estimated individuals and because no modifications in the habitat that could affect the species have occurred lately (USFWS 2017, p. 8).

As for LCNWR, in 1996 the Service acquired La Tinaja Tract, a 263-ac (106.4-ha) piece of ***land*** in the foothills of Sierra Bermeja (USFWS 2011a, pp. 23, 26). This ***land*** is now protected and managed for the conservation of natural resources, with a comprehensive conservation plan that includes measures for the protection and recovery of threatened and endangered species, including Eugenia woodburyana (USFWS 2011a, p. 35, Service 2011b, p. 47). As part of an existing Service's Cooperative Recovery Initiative project, a new fence was built along the upper southeast and southwest boundaries of La Tinaja Tract to reduce the chances of habitat modification from cattle grazing (mostly trampling, which damages the species, erodes soil, and opens up space to invasive plant species), and allowing for the recovery of native vegetation.

Recovery actions like ***land*** acquisition and the establishment of conservation easements also have been undertaken to prevent habitat loss and degradation, and potential population decline. For example, PLN has two natural protected areas in Sierra Bermeja: The conservation easement Finca María Luisa (755.6 ac [305.8 ha]), and the Natural Protected Area El Conuco (37.4 ac [15.1 ha]) (PLN 2013, 85 pp.; PLN 2014, 58 pp.). As discussed above, both properties harbor subpopulations of Eugenia woodburyana (PLN 2014, p. 13; Envirosurvey 2020, p. 44). Habitat management practices implemented at El Conuco include cattle exclusion, firebreaks, and a reforestation plan, providing suitable conditions for natural recruitment and the expansion of the E. woodburyana population (PLN 2013, 85 pp.). However, in the case of the Finca María Luisa easement, the conservation practices included in the management plan developed by PLN for this property have not yet been implemented. The plan identifies the habitat that harbors E. woodburyana as a conservation area, and recommends the exclusion of cattle from those parcels (PLN 2014, pp. 36 and 56). The conservation easement also establishes that ***agricultural*** practices and urban development cannot be conducted on management units identified for conservation (PLN 2014, pp. 36 and 56). During an assessment of Finca María Luisa, we recommended the implementation of conservation actions such as cattle exclusion and establishments of firebreaks to protect E. woodburyana, and to avoid additional habitat degradation (USFWS 2014b, p. 3). At present, none of these actions have been implemented. The fourth E. woodburyana subpopulation in Sierra Bermeja (i.e , Finca Lozada) remains under pressure of cattle grazing and trampling, competition with exotic grasses, human-induced fires, and bulldozing (Lange et al. 2017, p. 4; Monsegur-Rivera 2016, pers. obs.).

Information gathered post-listing indicated that the range of Eugenia woodburyana has expanded to new localities: Montes de Barinas, Almácigo Bajo, Punta Cucharas, and the Puerto Rico National Guard's Camp Santiago in the municipality of Salinas. These areas collectively comprise approximately 14 percent of the currently known number of adults and saplings of Eugenia woodburyana. However, all these locations are subject to habitat destruction or modification as described below in the section of biological status and threats, making the species vulnerable to habitat encroachment or even extirpation.

Therefore, we do not consider that threats reduction and management activities at Finca María Luisa, Finca Lozada, Montes de Barinas, Almácigo Bajo, Punta Cucharas, and the Puerto Rico National Guard's Camp Santiago have been implemented to a degree that these Eugenia woodburyana subpopulations are viable into the foreseeable future.

We look forward to improving implementation of management practices (e.g , firebreaks, fencing, and reforestation) throughout the species' range, and to working with partners to continue monitoring Eugenia woodburyana and to survey suitable unexplored habitat in the ***forest*** in search for this species. We are also looking for opportunities to implement best management practices with private landowners to enhance habitat to establish additional E. woodburyana subpopulations.

We are showing increased progress in achieving Criterion 2 which requires that existing populations show a stable or increasing trend. The presence of different size classes in three (i.e , Sierra Bermeja, Almácigo Bajo, and GCF) out of the six existing Eugenia woodburyana populations suggests certain degree of stability, and that the species has been resilient to past and current threats at these sites (e.g , unsustainable ***agricultural*** practices, grazing, fires, invasive plant species). However, when considering the population structure, that stability has not been fully achieved.

For example, Sierra Bermeja is the largest known population, with 2,526 individuals, including seedlings, but the proportion of adults, saplings, and seedlings is 75, 14.5, and 10.5 percent, respectively. Despite it being the largest population, its structure is skewed towards adult individuals, with low frequency of saplings and seedlings (Envirosurvey 2020, pp. 51-52). Thus, it is reasonable to expect a reduced recruitment on this population, which can have negative implications for the long-term viability of the species. The relative low frequency of seedlings and saplings in this population may be the result of former and ongoing habitat modifications that have changed the microhabitat conditions favorable for Eugenia woodburyana (Envirosurvey 2020, p. 51-52). Under such habitat conditions it is unlikely the population can expand to adjacent native ***forest***. In fact, recruitment is limited to the close proximity of parental trees, which is apparently driven by gravity in the drainages were the species is present (Morales-Pérez, 2013, p. 4).

Similar to Sierra Bermeja, the E. woodburyana population in the GCF is mostly found in drainages dominated by native ***forest*** vegetation, which provides adequate habitat conditions (i.e , humidity) for the establishment of seedlings and saplings. However, there is little information about the ability of E. woodburyana to survive stochastic events such as landslides and heavy sediment runoff, particularly in these drainages. There is evidence of impacts on seedlings (e.g , uprooting, covered by sediment) of other species that share habitat with E. woodburyana at the GCF due to runoff and sediments resulting from hurricane María in September, 2017 (Monsegur-Rivera 2018, pers. obs.). Hence, seedlings of E. woodburyana can also suffer these same impacts. Moreover, although this population may not face the same threats as in Sierra Bermeja because the habitat is protected, its expansion outside drainages may be limited by the dry climate of the ***forest*** as suggested for other areas (e.g , Weaver and Chinea 2003, p. 281).

The Almácigo Bajo population appears to be relatively stable, with multiple age classes resulting from natural recruitment. The proportion of seedlings observed in Almácigo Bajo (38 percent) is higher than Sierra Bermeja (10.5 percent), and GCF (21 percent). Despite the relatively disturbed nature of this site, the population structure may be the result of the mesic understory conditions due to its geographical location in the transition between the subtropical dry and moist ***forest*** life zones (Ewel and Whitmore 1973, pp. 25 and 72).

In an effort to improve the conditions of existing populations of Eugenia woodburyana, the Service, PRDNER, and PLN have joint efforts to enhance or augment the natural population of Sierra Bermeja (i.e , La Tinaja Tract and neighboring private ***lands***). La Tinaja Tract was selected for planting based on its habitat suitability and reduced threats of habitat modification (protected ***land***), and human-induced fires (existence of firebreaks), and to expand the natural subpopulation in that area. Despite past disturbances at this site, mainly due to cattle grazing, the area has recovered after over two decades of natural regeneration, as evidenced by a robust natural recruitment of native species (e.g , Bucida buceras, Pisonia albida, E. spp.; Envirosurvey 2017, p. 5). We estimate that a timeframe of 10-15 years is needed for the planted individuals to reach reproductive size. Planting to augment the number of individuals of natural populations will ensure the self-sustainability of the species and will help it withstand stochastic events (e.g , severe droughts). Nonetheless, similar efforts need to be initiated at the GCF, Montes de Barinas, Punta Cucharas, and Almácigo Bajo to improve the species' status and secure its representation.

Based on the available information, despite the threats (e.g , cattle grazing, fence posts harvesting) impacting the Almácigo Bajo population it is probably the closest to fulfilling this recovery criterion due to its relatively large number of individuals, multiple age classes, and geographic location. Therefore, efforts should be directed towards designing and implementing ***land*** conservation measures to address such threats at this site. In addition, the proximity of this population to suitable and protected habitat in the SCF provides favorable conditions for its natural expansion or for planting additional individuals to assist its expansion.

Criterion 3 is ongoing and requires the establishment of at least three new populations on ***lands*** protected by a conservation mechanism that show a stable or increasing trend. Currently, the Service and other partners have initiated the establishment of a new Eugenia woodburyana population at the CRNWR, where as of 2019, 191 E. woodburyana individuals had been planted (Envirosurvey 2020, p. 17). Here a drainage area was selected for planting this and other federally listed species (e.g , Ottoschulzia rhodoxylon; Envirosurvey 2020, p. 17). This habitat is ***forested*** with native vegetation, has low intrusion of exotic grasses (e.g , Megathyrsus maximus), and provides moisture that would facilitate the establishment of seedlings. Also, the CRNWR maintains firebreaks along the boundaries of the refuge, which help protect this site from human-induced fires. Two years of monitoring after planting have shown a survival rate greater than 96 percent (Envirosurvey 2020, p. 17), demonstrating that the proper selection of reintroduction sites is critical to maximize the survival of planted material. Further efforts are needed to establish two new self-sustainable populations within the species' range.Regulatory and Analytical FrameworkRegulatory Framework

Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an “endangered species” or a “threatened species.” The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.Analytical Framework

The 5-year review (USFWS 2017) documents the results of our comprehensive biological status review for the species, including an assessment of the potential threats to the species. The following is a summary of the key results and conclusions from the 5-year review and information gathered since that time. The 5-year review can be found at Docket FWS-R4-ES-2019-0070 on [*http://www.regulations.gov*](http://www.regulations.gov) Summary of Biological Status and Threats

Habitat destruction and modification (Factor A) were identified as factors affecting the continued existence of Eugenia woodburyana when it was listed in 1994 (59 FR 46715, September 9, 1994). The suitable habitat for E. woodburyana on privately owned ***lands*** at mid elevations and gentle slopes in Sierra Bermeja had been largely modified or destroyed through deforestation mainly for ***agricultural*** practices (i.e , cattle and goats grazing), and some urban development (i.e , construction of houses, and roads), thus affecting the species' recruitment in those areas (USFWS 1998, p. 6). As previously discussed, the Sierra Bermeja range comprises the core known natural population of E. woodburyana, with about 82 percent of the currently known adults and saplings being found in this area. Most of this mountain range was zoned by the Puerto Rico Planning Board as a District of Conservation of Resources and Rustic Soil Specially Protected, which has specific restrictions on development activities in order to protect the natural resources of the area (JPPR 2009, pp. 151-153). This zoning designation allows ***agricultural*** activities and construction of residential development (JPPR 2009, p. 151; JPPR 2015, pp. 118-129). Therefore, landowners continue to affect the habitat through activities like cutting new access roads on their properties (Pacheco and Monsegur-Rivera 2017, pers. obs.). In addition, deforestation for ***agricultural*** practices (e.g , conversion of ***forested*** habitat to pasturelands) has led to invasion of exotic species like guinea grass (Megathyrsus maximus), thus promoting favorable conditions for wildfires that further adversely affect E. woodburyana habitat (Weaver and Chinea 2003, p. 281). Also, cattle, horses, and goats graze all over the Sierra Bermeja range, causing habitat modification by making trails while foraging on the slopes, which also increases erosion (Morales-Pérez, 2013, p. 4, Envirosurvey 2016, p. 9; Lange et al. 2017, p. 4; Envirosurvey 2020, p. 49). Cattle grazing has resulted in direct impacts to E. woodburyana due to predation and trampling of seedlings (Lange et al. 2017, p. 4). In fact, cattle trails were observed through a patch of E. woodburyana at Finca María Luisa, and at La Tinaja Tract horses trampled several planted individuals of the species (Morales-Pérez 2013, p. 7; Envirosurvey 2016, p. 8). Such impacts (e.g , trampling and predation) from livestock is likely one of the reasons for the low number of seedlings of E. woodburyana in Sierra Bermeja (Envirosurvey 2020, p. 49).

Currently, two of the four subpopulations in Sierra Bermeja are protected since they occur on ***lands*** managed for conservation (i.e , La Tinaja Tract and El Conuco), representing approximately 43 percent of all known adults and saplings. The remaining two subpopulations (i.e , Finca María Luisa and Finca Lozada) represent about 39 percent of all known adults and saplings, and are subject to habitat destruction and modification for ***agricultural*** practices, which most likely has eliminated some Eugenia woodburyana individuals (USFWS 2017, p. 18). Based on a comparison of a recent aerial photograph (2019) of this area, habitat modification through bulldozing has occurred within the area identified for conservation in the conservation easement of Finca María Luisa (Monsegur-Rivera 2019, pers. obs.; PLN 2013, p. 56). In addition to direct impacts to the species, bulldozing results in habitat fragmentation and degradation that change the microhabitat conditions needed for the successful recruitment of E. woodburyana. It also facilitates the invasion of exotic plant species such as guinea grass (Megathyrsus maximus) that compete with E. woodburyana and promote favorable conditions for wildfires.

The Eugenia woodburyana populations at Punta Cucharas, Montes de Barinas, and Almácigo Bajo occur in privately owned ***lands*** that are vulnerable to habitat modification. For example, the habitat in the municipalities of Peñuelas and Ponce, including the area of Punta Cucharas, has been severely fragmented by urban development (79 FR 53303, September 9, 2014). In this area, the species occurs in at least three ***forested*** drainages located just north and close to highway PR 2, or adjacent to the right of way of a power line from the Puerto Rico Electric and Power Authority. Urban development has expanded north of highway PR 2, modifying the suitable habitat for the species (USFWS 2017, p. 20). On October 4, 2011, areas that harbored E. woodburyana individuals at Puerto Galexda (Ponce-Peñuelas) were bulldozed, and some individuals were gone (USFWS 2017, p. 20). We observed that sediment runoff from adjacent urban development was covering the bottom of the drainage and likely precluding the recruitment of E. woodburyana seedlings as the sediment buries the small plants and seeds (USFWS 2011, p. 3).

In Montes de Barinas, Eugenia woodburyana occurs on private properties subject to urban development, resulting in the encroachment of native dry ***forest*** areas, and thus in the isolation and possible extirpation of E. woodburyana individuals. These areas also are threatened by deforestation for cattle grazing and for the extraction of fence posts (Román-Guzmán 2006, pp. 1-2; Monsegur-Rivera 2005, pers. obs.; 79 FR 53303).

The Eugenia woodburyana population at Almácigo Bajo Ward in Yauco is located in a small ***forested*** drainage in a parcel of ***land*** used for cattle grazing, and adjacent to an abandoned quarry (USFWS 2017, p. 19). Approximately 80 percent of the property was cleared of vegetation and its surroundings are under pressure by ***agricultural*** and urban development (USFWS 2017, p. 19). Also, the reactivation of the quarry could negatively affect this population, which is less than 50 meters (164 ft) away in an adjacent natural drainage by further modifying the habitat or by direct impacts to the species (USFWS 2017, p. 19). In 2008, 72 seedlings and saplings of E. woodburyana were found in a human-made ditch located approximately 45 meters (148 ft) downhill of the Almácigo Bajo population (USFWS 2017, p. 19). A total of 46 saplings from this area were transplanted into the SCF to avoid being impacted by a project from the Puerto Rico Aqueduct and Sewage Authority (USFWS 2017, p. 11). The latest account of the success of the transplanting effort indicates that only 11 individuals survived, but appeared to be in good condition (USFWS 2017, p. 11). Habitat modification and adverse impacts to E. woodburyana individuals also have been documented as a result of extraction of fence posts from this site (Monsegur-Rivera 2011-2017, pers. obs.). The recently discovered site at Camp Santiago in Salinas is owned by the Puerto Rico National Guard (Acevedo-Rodriguez 2014, p. 15). The areas covered by vegetation at this camp are frequently impacted by human-induced fires, which compromise the survival of E. woodburyana (Acevedo-Rodriguez 2014, p. 15). According to Acevedo-Rodriguez (2014, p. 2), the predominant vegetation type are grasslands dominated by guinea grass, which are maintained by human-induced fires and grazing animals.

The area of Peñones de Melones in Cabo Rojo is the only historical site for which the Service has strong evidence that Eugenia woodburyana was extirpated. In 1996, an estimate of about 20 individuals of E. woodburyana was provided for this area (Breckon 1996, unpublished data). Approximately 80 percent of the suitable habitat for this species in Peñones de Melones has been impacted by residential and tourist development, and by ***agricultural*** practices such as livestock grazing (USFWS 2017, p. 18). These practices have resulted in habitat modification and degradation, soil erosion, and the extirpation of E. woodburyana. Only about 20 percent of the Peñones de Melones area remains in secondary ***forest***, and the area is under potential development pressure from two projects: Bahía de Campomar and Monte Carlo Resort-Boquerón Bay Villas (USFWS 2017, p. 18). These two projects could affect approximately 510 acres (206.4 ha) of suitable habitat that could harbor undetected E. woodburyana individuals. Both projects were proposed more than 10 years ago and have not been developed; however, we have no information indicating that development plans were abandoned.

Human-induced fires have been documented in Eugenia woodburyana habitat, and were considered a threat to the species when listed (59 FR 46715, September 9, 1994; USFWS 2017, p. 23). Fires are not a natural event in the subtropical dry ***forests*** in Puerto Rico, and the native vegetation in the Caribbean is not adapted to this type of disturbance (Brandeis and Woodall 2008, p. 557; Santiago-García et al. 2008, p. 604). Human-induced fires could modify the landscape by promoting the establishment of exotic trees and grasses, and by diminishing the seed bank of native species (Brandeis and Woodall 2008, p. 557). For example, the exotic guinea grass is well adapted to fires and typically colonizes areas previously covered by native vegetation before a fire event. Furthermore, the presence of guinea grass and other grass species increases the amount of fuel, hence the intensity of the fires. Seedling mortality after fires is related to the differences in fuel loads and different fire intensities (Santiago-García et al. 2008, p. 607).

Eugenia woodburyana populations occur on the driest region of Puerto Rico where fires are sometimes ignited accidentally or deliberately, particularly during the dry season. Human-induced fires are a current threat to this and other native vegetation in Sierra Bermeja, Almácigo Bajo, Punta Cucharas, and Camp Santiago in Salinas (Envirosurvey 2020, p. 52). For example, the lowlands and gentle slopes of Sierra Bermeja are subject to human-induced fires on a yearly basis, encroaching on E. woodburyana and other native vegetation in this habitat (Monsegur-Rivera 2009-2019, pers. obs.; Envirosurvey 2020, p. 46). In May 2019, a large wildfire extended from the southern lowlands of Sierra Bermeja to the upper ***forested*** hills into El Conuco, affecting an undetermined number of individuals of E. woodburyana, encroaching suitable habitat of the species (Envirosurvey 2020, p. 52). In La Tinaja Tract, LCNWR staff maintains firebreaks on the lower slopes, reducing the chance of fires reaching the upper part of the tract.

Fires also have occurred in Eugenia woodburyana habitat in Punta Cucharas, between the municipalities of Ponce and Peñuelas. Habitat disturbance due to urban development and the expansion of highway PR 2 in this area has promoted the establishment of guinea grass, resulting in favorable conditions for the occurrence of human-induced fires in the proximity of E. woodburyana (Monsegur-Rivera 2011 and 2013, pers. obs.). Camp Santiago is another area where fires have been identified as a threat to E. woodburyana due to anthropogenic disturbance (Acevedo-Rodríguez 2014, p. 15), and fires occur in the proximity of E. woodburyana basically on a yearly basis (Monsegur-Rivera 2009-2018, pers. obs.).

At the GCF, Eugenia woodburyana seems to be protected from fires as the species mostly occurs in mesic (humid) drainages dominated by native ***forested*** vegetation where the risk of fires is low (Monsegur-Rivera 2011, pers. obs.).

Nonnative plant species are another threat to Eugenia woodburyana. Some nonnative plants can be very aggressive and compete with native species for sunlight, nutrients, water, and ground cover (79 FR 53309, September 9, 2014). In fact, the impacts of invasive species are among the greatest threat to the persistence of native rare species and their habitat (Thomson 2005, p. 615). The exotic tree Leucaena leucocephala can remain as a dominant canopy species for at least 80 years (Wolfe 2009, p. 2). Other exotic species like guinea grass are known to colonize habitat and suppress native vegetation (Rojas-Sandoval and Meléndez-Ackerman 2013, p. 489). Both L. leucocephala and guinea grass are fire-adapted species that have widely colonized Eugenia woodburyana habitat and outcompete native vegetation (Monsegur-Rivera 2018, pers. obs.; Envirosurvey 2020, p. 46). In addition, some exotic plants create favorable conditions for fires, as in Camp Santiago in Salinas where degraded habitat is dominated by guinea grass, threatening E. woodburyana (Acevedo-Rodríguez 2014, p. 15).

As demonstrated by the research conducted in the GCF, restoring degraded habitat to native vegetation may require decades, and in some cases, such damage may be irreversible (Wolfe 2009, p. 2). Although the core Eugenia woodburyana individuals are found in protected areas dominated by native ***forest*** vegetation rather than invasive species, the threat of invasive or exotic plant species intruding into E. woodburyana habitat persists due to the vulnerability of the area to fires as explained above.

Based on the above information we believe that human-induced fires and invasive plants are a threat to Eugenia woodburyana, particularly to those populations extending into private ***lands*** where habitat modifications and human-induced fires commonly occur.

In summary, at present the Eugenia woodburyana population at the GCF occurs within an area managed for conservation, and thus it is not subject to habitat destruction and modification. The Sierra Bermeja population is the largest, and is partially protected as part of the individuals occur either in Federal (i.e , La Tinja Tract-LCNWR) or private ***lands*** managed for conservation (i.e , El Conuco). The remaining four populations (i.e , Almácigo Bajo, Montes de Barinas, and Punta Cucharas and Camp Santiago) occur on private and State ***lands*** currently threatened by habitat destruction and modification (e.g , urban development, vegetation clearing, road construction, grazing and trampling by cattle, horses, and goats, and military maneuvers (i.e , Camp Santiago)). Losing these populations would result in a reduction of the genetic representation and redundancy of the species. In addition, human-induced fires and invasive species are considered as further stressors to the viability of E. woodburyana. Human-induced fires have been documented in E. woodburyana habitat, particularly on private ***lands*** where no fire management practices are implemented, and have the potential to adversely affect the species. Invasive species can preclude the establishment of E. woodburyana as they are very successful competing for sunlight, nutrients, water, and ground cover. Establishment of invasive species is facilitated by disturbances caused by fires and habitat modification. Fortunately there are E. woodburyana subpopulations in protected areas dominated by native ***forest*** vegetation that does not facilitate the invasion of exotic plant species. However, in ***lands*** where habitat modification activities do occur, invasive plant species colonize and make the habitat unsuitable for E. woodburyana, and also promote conditions for fires.

In the final listing rule, we identified the inadequacy of existing regulatory mechanisms (Factor D) as one of the factors affecting the continued existence of Eugenia woodburyana. At that time, the species had no legal protection because it had not been included in Puerto Rico's list of protected species. Once E. woodburyana was federally listed, it triggered the addition of the species as endangered to the Commonwealth's list of protected species. Thus, Federal listing assured the addition of E. woodburyana as endangered to the Commonwealth's list of protected species (DRNA 2004, p. 52).

Presently, Eugenia woodburyana is legally protected under Commonwealth's Law No. 241-1999 (12 L.P.R.A Sec. 107), known as Nueva Ley de Vida Silvestre de Puerto Rico (New Wildlife Law of Puerto Rico). The purpose of this law is to protect, conserve, and enhance both native and migratory wildlife species; declare property of Puerto Rico all wildlife species within its jurisdiction; and regulate permits, hunting activities, and exotic species, among other activities. This law also has provisions to protect habitat for all wildlife species, including plants. In 2004, the PRDNER approved Regulation 6766 or Reglamento para Regir el Manejo de las Especies Vulnerables y en Peligro de Extinción en el Estado Libre Asociado de Puerto Rico (Regulation 6766: To govern the management of threatened and endangered species in the Commonwealth of Puerto Rico). Article 2.06 of Regulation 6766 prohibits collecting, cutting, and ***removing***, among other activities, listed plant individuals within the jurisdiction of Puerto Rico (DRNA 2004, p. 11). The provisions of Law No. 241 and Regulation 6766 extend to private ***lands***.

As for the individuals found at the GCF, this area is protected under Law No. 133-1975 (12 L.P.R.A Sec. 191), known as Ley de Bosques de Puerto Rico (Puerto Rico ***Forests***' Law), as amended in 2000 (12 L.P.R.A Sec. 191b). Section 8(a) of this law prohibits cutting, killing, destroying, uprooting, extracting, or in any way hurting any tree or vegetation within a Commonwealth ***forest*** (12 L.P.R.A Sec. 191f). The PRDNER also identified the GCF as a Critical Wildlife Area (CWA). The CWA designation constitutes a special recognition by the Commonwealth with the purpose of providing information to Commonwealth and Federal agencies about the conservation needs of these areas, and to assist permitting agencies in precluding adverse impacts as a result of a project's endorsements or permit approvals (PRDNER 2005, pp. 211-216).

The LCNWR and CRNWR are managed in accordance with the National Wildlife Refuge Improvement Act of 1997. Collection of plants is prohibited per 50 CFR 27.51 as well as per the Endangered Species Act. Additionally, the comprehensive conservation plans for LCNWR and CRNWR include measures for the protection and recovery of threatened and endangered species, including Eugenia woodburyana, within these Refuges (USFWS 2011a, p. 35; USFWS 2011b, p. 47).

Although there are legal mechanisms in place for the protection of Eugenia woodburyana (e.g , laws, regulations, zoning), sometimes the enforcement of such mechanisms on private ***lands*** is challenging (e.g , USFWS 2019, pp. 29-31). For example, accidental damage (e.g , by cutting, pruning, or mowing) or even extirpation of E. woodburyana individuals may occur because private landowners may not be aware that it is a protected species (e.g , fence posts harvesting in Almácigo Bajo (USFWS 2016, p. 8)). Another form of impact is from ***agriculture***; for example, zoning may restrict subdivision of lots and dense urbanization in some areas where the species is present, but may allow ***agricultural*** practices that can result in habitat modification that can affect E. woodburyana. On the other hand, the knowledge of the natural range of E. woodburyana has increased since the time of listing. The species has been recorded in new areas subject to ***agriculture*** and urban development (USFWS 2016, entire; USFWS 2017, pp. 18-21). In such cases, despite the existence of regulatory mechanisms, habitat modification has occurred in these newly documented areas (e.g , Almacigo Bajo site; USFWS 2017, pp. 18-21).

Outside of the protections provided by the Act, as described above, the species is protected from collection and provided management considerations by the National Wildlife Refuge Improvement Act on two refuges. In addition, the Commonwealth of Puerto Rico legally protects Eugenia woodburyana as an endangered species, including protections to its habitat, through Commonwealth Law No. 241 and Regulation 6766. If E. woodburyana is reclassified, we do not expect it to be removed from legal protection by the Commonwealth. Although these protections extend to both public and private ***lands***, protection of this species on private ***land*** is challenging. Habitat that occurs on private ***land*** is subject to pressures like grazing and development. Accidental damage or extirpation of individuals has occurred due to lack of awareness by private landowners or other parties on the property (Román-Guzmán 2006, pp. 25-33; USFWS 2016, entire). Habitat modifications continue to occur on private ***lands***, which can increase the chances of sediment runoff and human-induced fires (and subsequent spread of nonnative vegetation). In short, this plant is now more abundant and widely distributed and largely in conservation ***land***, so effects due to inadequacy of regulatory mechanisms has been reduced. However, the occurrences of this species on private ***land*** continue to need enforcement, attention, and increased outreach to explain its importance.

At the time of listing, the Service considered small population size (Factor E) as a threat affecting the continued survival of Eugenia woodburyana (59 FR 46715, September 9, 1994) based on species' limited distribution (i.e , only three isolated populations known at that time) coupled with low number of individuals (i.e , only 45 individuals throughout the species' range). Information about the distribution and abundance gathered since this species was listed reflects that E. woodburyana is more abundant and widely distributed than previously thought (USFWS 2017, entire). Thus, we no longer consider limited distribution and low population numbers as threats to this species. Even though some of the known populations are small (e.g , Montes de Barinas), there are other populations with large numbers of individuals (e.g , Sierra Bermeja), and that show recruitment (e.g , Almácigo Bajo), which with proper management will allow the species to persist into the future even if one of the very small populations is adversely affected.Hurricanes and Other Weather Events (Factor E)

The islands of the Caribbean are frequently affected by hurricanes. Puerto Rico has been hit by four major hurricanes in recent years: Hugo (1989), Hortense (1996), Georges (1998), and most recently, María (2017). Successional responses to hurricanes can influence the structure and composition of plant communities in the Caribbean islands (Van Bloem et al. 2003, p. 137; Van Bloem et al. 2005, p. 572; Van Bloem et al. 2006, p. 517; Lugo 2000, p. 245). Examples of the visible effects of hurricanes on the ecosystem include massive defoliation, snapped and wind-thrown trees, large debris accumulations, landslides, debris flows, and altered stream channels among others (Lugo 2008, p. 368). Hurricanes can produce sudden and massive tree mortality, which varies among species, but average about 41.5 percent (Lugo 2000, p. 245). Hence, small populations of Eugenia woodburyana may be severely impacted by hurricanes, even resulting in extirpation of relic individuals. The recent hurricane María caused defoliation and uprooting of some E. woodburyana individuals planted at the CRNWR, and even though none have died, they are stressed due to the damage to the root system (Monsegur-Rivera, Service 2017, pers. obs.).

As an endemic to the Caribbean, Eugenia woodburyana is adapted to tropical storms and the prevailing environmental conditions. However, the reduced number of populations, and the small numbers of individuals in some populations (e.g , Camp Santiago and Montes de Barinas), make the species more vulnerable to stochastic and catastrophic events such as hurricanes. Based on observations of the damage caused by hurricane María, small E. woodburyana populations such as those of the GCF, Montes de Barinas, Punta Cucharas, and Camp Santiago, may be extirpated if any of those areas is directly impacted by a category 4 or 5 hurricane that will cause high levels of wind, knocking over trees or uprooting them leading to stress or possible death. Therefore, we believe hurricanes can be a threat to E. woodburyana, particularly to small populations dominated by adult reproductive individuals, as the intensity and frequency of these natural disturbances is expected to increase due to climate change (see Climate Change, below).

Landslides and sediment runoff associated with atmospheric disturbances may also pose a threat to Eugenia woodburyana, particularly in Sierra Bermeja, GCF, Punta Cucharas, and Almácigo Bajo (Morales-Pérez 2013, pp. 5 and 12). At these locations, adult mature individuals, as well as seedlings and saplings, are mostly found on steeper slopes or along the bottom of deep natural drainages (USFWS 2016, p. 5). High rainfall associated with tropical storms and hurricanes may cause floods that, in combination with steep topography and highly erodible soils, may lead to mass wasting events (e.g , ***land***, mud, and debris slides; Lugo 2008, p. 368). In fact, in September 2009, three landslides resulting from heavy rains were recorded in Sierra Bermeja adjacent to the area where E. woodburyana occurs (USFWS 2010, p. 16). Moreover, Envirosurvey (2020, p. 51) observed that runoff and erosion exposed the roots of E. woodburyana in Sierra Bermeja (Envirosurvey, p. 51). As mentioned above, the Service has evidence of impacts to seedling recruitment by sediment runoff from adjacent urban development in the area of Punta Cucharas in Ponce (O. Monsegur-Rivera and R. González, 2011, p. 2). Events like this may be exacerbated by severe rains associated with hurricanes or storms. Recent observations identified uprooted and buried seedlings of the endangered Palo de Rosa (Ottoschulzia rhodoxylon) and Bariaco (Trichilia triacantha), which shares habitat with E. woodburyana in the GCF, due to sediment runoff and flooding events associated with hurricane María on September 20, 2017 (Monsegur-Rivera 2018, pers. obs.). Similar observations have been recorded from the area of Punta Cucharas, where seedlings of Bariaco were adversely affected by sediment runoff (USFWS 2011, entire). There is little information about E. woodburyana' s ability to survive stochastic events like landslides and heavy sediment runoff. However, the small size of some populations and the seedling establishment on moist drainages mean that events such as those mentioned may have adverse impacts on this species.Effects of Climate Change (Factor E)

The Intergovernmental Panel on Climate Change (IPCC) concluded that evidence of warming of the climate system is unequivocal (IPCC 2014, p. 3). Observed effects associated with climate change include widespread changes in precipitation amounts and aspects of extreme weather including droughts, heavy precipitation, heat waves, and a higher intensity of tropical cyclones (IPCC 2014, p. 4). Rather than assessing climate change as a single threat in and of itself, we examined the potential consequences to the species viability and its habitat that arises from changes in environmental conditions associated with various aspects of climate change. Based on what it is known about the distribution of Eugenia woodburyana and the habitat where it is more abundant (i.e , steep slopes and bottom of deep natural drainages), we believe climate change can have adverse effects on this species, particularly in its natural recruitment, hence populations expansion.

We examined a downscaled model for Puerto Rico based on three IPCC global ***emissions*** scenarios from the CMIP3 data set: Mid-high (A2), mid-low (A1B), and low (B1) as the CMIP5 data set was not available for Puerto Rico at that time (Khalyani et al. 2016, pp. 267 and 279-280). These scenarios are generally comparable and span the more recent representative concentration pathways (RCP) scenarios from RCP4.5 (B1) to RCP8.5 (A2) (IPCC 2014, p. 57). Under all these scenarios, ***emissions*** increase, precipitation declines, and temperature and total dry days increase, resulting in extreme drought conditions that would result in the conversion of sub-tropical dry ***forest*** into dry, and very dry ***forest*** (Khalyani et al. 2016, p. 280).

Modeling shows dramatic changes to Puerto Rico through 2100, the divergence in these projections increases dramatically after mid-century, making projections beyond 20 to 30 years more uncertain (Khalyani et al. 2016, p. 275). By mid-21st century, Puerto Rico is predicted to be subject to a decrease in rainfall, along with increase drought intensity (Khalyani et al. 2016 p. 265, U.S Global Change Research Program (USGCRP) 2018, 20:820). As precipitation decreases influenced by warming, it will tend to accelerate the hydrological cycles, resulting in wet and dry extremes (Jennings et al. 2014, p. 4; Cashman et al. 2010, p. 1). There are indications that the western region of Puerto Rico, where Eugenia woodburyana occurs, has experienced negative trends in annual rainfall (PRCC 2013, p. 7). Downscaled general circulation models (GCMs) developed by Khalyani et al. (2016, p. 275) predicted dramatic shifts in the life zones of Puerto Rico with potential loss of subtropical rain, moist, and wet ***forest***, and the appearance of tropical dry, and very dry ***forests*** are anticipated. This shift in life zones may result in potential species migration to higher elevations, however the extend of the species ability to redistribute will depend on their dispersal capability and ***forest*** connectivity (Khalyani et al. 2019, p. 11). Subtropical dry ***forests*** are already subject to water deficit for ten months of the year and are expected to become drier in the future, particularly in the Caribbean where oceans have a largest influence on local precipitation, climate models consistently project significant drying by the middle of the century (Miller and Lugo 2009, p. 86, USGCRP 2018, 20:820). For example, droughts may compromise seedling recruitment as it may reduce seed viability and result in increased seedling mortality. We have already seen a low proportion of E. woodburyana seedlings and saplings at lower elevations and outside drainages in areas like Sierra Bermeja and Punta Cucharas that are probably associated with anthropogenic impacts (e.g , human-induced fires, habitat modification). The inability of E. woodburyana to migrate to moister habitats due to low seed dispersal capability and the lack of ***forest*** connectivity would reduce its survival.

Prolonged droughts can exacerbate those anthropogenic impacts by changing the microclimate conditions (i.e , temperature and soil moisture retention) favorable for the establishment of seedlings, hence reducing the recruitment of Eugenia woodburyana. In Almácigo Bajo, where the Service has recorded a high proportion of seedlings and saplings compared to adults (Monsegur-Rivera 2009-2018, pers. obs.; table 1), mesic (humid) environmental conditions favor the natural recruitment of the species, contrasting with the low proportion of seedlings versus adult individuals of Sierra Bermeja (despite the partial protection of the habitat), where overall environmental conditions are drier. The lowlands and valleys surrounding Sierra Bermeja were covered by continuous ***forest***, and these areas were deforested for ***agriculture***, thus changing the microhabitat conditions and the moisture retention of the habitat, which are the natural conditions in which E. woodburyana evolved. For example, the populations of E. woodburyana at El Conuco that are located on the south-facing slope and more disturbed sites, show basically no recruitment when compared to the individuals of the same populations located on the north-facing slopes, which is a dense ***forested*** habitat with moist conditions and less intrusion by exotic species.

Climate model simulations indicate an increase in global tropical cyclone intensity as well as an increase in the number of very intense tropical cyclones (USGCRP 2018, 2:8). Thus, it is expected that the Caribbean will experience an increase in the amount of precipitation and extreme winds produced during hurricane events (Herrera et al. 2018, p. 1). Hurricanes, followed by extended periods of drought caused by climate change, may result in changes to microclimate that could allow other highly adaptive invasive species to get established and become harmful to the system (Lugo 2000, p. 246, Hopkinson et al. 2008, p. 255, IPCC report 2018, p. 244). In fact, as stated above, species like the exotic guinea grass can colonize and spread into Eugenia woodburyana habitat after a disturbance, increasing fire propensity and altering microclimate and nutrient cycling of the habitat on which this species depends. Additionally, increased heavy precipitation can augment the probability of landslides and sediment runoff in those steep areas where E. woodburyana is abundant and severely affect the species (Morales-Pérez 2013, pp. 5 and 12). In general, the increasing hurricane intensity and frequency, coupled with E. woodburyana showing reduced populations, low number of individuals in most populations, low recruitment rate, and habitat degradation and fragmentation, is likely to have adverse consequences for this species and its habitat.

As stated above, projected climate conditions will likely have direct or at least indirect adverse effects on Eugenia and its habitat. Some general patterns associated with ***forest*** ecosystems in Puerto Rico (PRCC 2013, p. 14), and that can be reflected on E. woodburyana are as follows: Increased seasonality in precipitation and decreased soil moisture availability will alter flowering and fruiting patterns, affecting seedlings germination and survival, which will result in changes in ***forest***'s species composition, structure, and ecological functions. Also, an increment in intense storms will increase disturbance, hence, will cause changes in plant successional direction and biomass, leading to novel communities (likely dominated by exotic plant species).

Despite the evidence that some terrestrial plant populations have the ability to adapt and respond to changing climatic conditions (Franks et al. 2013, entire), a sound long-term monitoring of known Eugenia woodburyana populations is needed to determine whether this species will have the ability to cope with the stressors indicated above and adapt to such changes.

In summary, the limited distribution and low number of individuals were considered a threat to Eugenia woodburyana when listed. Recent information indicates the species is more abundant and widely distributed than previously thought. Currently, other natural and manmade factors, such as hurricanes and climate change are considered stressors to E. woodburyana.

Hurricanes can result in massive mortality of trees, and particularly can affect or even extirpate small populations of Eugenia woodburyana. Hurricane María caused defoliation and uprooting of E. woodburyana individuals at the CRNWR (Monsegur-Rivera 2017, pers. obs.). Stochastic events, such as landslides and heavy sediment runoff, particularly caused by hurricanes, also can threaten E. woodburyana because of the occurrence of core populations of this species in steep areas in Sierra Bermeja where landslides have been documented near them.

Also, it is expected that Eugenia woodburyana will be affected by changes in climatic conditions. Effects associated with climate change include droughts, heavy precipitation, and intense tropical storms and hurricanes. For E. woodburyana, a reduction in precipitation in a subtropical dry ***forest*** where precipitation is already reduced, compromise its phenology, seed viability, seedling recruitment, and seedling survival. Intense hurricanes, followed by extended periods of drought may result in changes in microclimate conditions that can favor the establishment invasive species that can compete with E. woodburyana. Additionally, increased heavy precipitation during hurricanes can produce landslides and sediment runoff in steep areas where E. woodburyana occurs, affecting its survival and recruitment (Morales-Pérez 2013, pp. 5 and 12; Envirosurvey 2020, p. 51). Moreover, extreme wind events may result in the direct mortality of individuals and extirpation of small populations (e.g , Montes de Barinas and Salinas). Overall, the effects of a changing climate on E. woodburyana can be exacerbated by its reduced number of populations, low number of individuals in most populations, and habitat degradation and fragmentation, which can affect the viability of the species into the future.Overall Summary of Factors Affecting

We have carefully assessed the best scientific and commercial information available regarding the threats faced by Eugenia woodburyana in developing this proposed rule. Based on the analysis above, even though we no longer consider limited distribution as a threat to this species, we believe that habitat destruction and modification (e.g , ***forest*** conversion into pasturelands) on privately owned ***lands***, and other factors such as human-induced fires, livestock, invasive plant species, hurricanes, and climate change (droughts), continue to threaten E. woodburyana populations despite these threats being reduced in some areas.

Species viability, or its ability to survive long term, is related to the species' ability to withstand catastrophic population and species-level events (redundancy), to adapt to changing environmental conditions (representation), and to withstand disturbances of varying magnitude and duration (resiliency). The viability of a species is also dependent on the likelihood of new stressors or continued threats now and in the future that act to reduce a species' redundancy, representation, and resiliency. Redundancy of populations is needed to provide a margin of safety for a species to withstand catastrophic events.

We further evaluated the biological status of this species both currently and into the future, considering the species' viability as characterized by its resiliency, redundancy, and representation (i.e , 3Rs). Eugenia woodburyana has demonstrated to be resilient to both natural and anthropogenic disturbances. However, although adult individuals have overcome stochastic events such as droughts, seedlings are susceptible to the effects of droughts and habitat modification, which can affect the recruitment and long-term viability of E. woodburyana.

Currently, three (i.e , Sierra Bermeja, GCF, and Almácigo Bajo) of the six known Eugenia woodburyana populations show some degree of natural recruitment. The observed resiliency of the species may have been achieved by the availability of suitable habitat where some of the subpopulations are found, which have allowed some recruitment. Thus, in order to maintain and improve such resiliency, habitat protection and enhancement to increase connectivity between subpopulations are important to maximize the likelihood of crosspollination and gene flow, and to increase fruit production, viable seeds, and the chances of natural recruitment. In addition, in order to secure the long-term resiliency of E. woodburyana, remaining small and isolated populations (i.e , Monte Barinas, Punta Cucharas, and Camp Santiago) need to be enhanced and protected.

In terms of the representation of Eugenia woodburyana, we have no data on its genetic variability. This species occurs in a wide range of habitats and environmental conditions, suggesting that the species was widely distributed in the past and it may have an ample genetic plasticity that would allow the species to adapt to different habitat and environmental changes. However, although the E. woodburyana is still thriving in these environments, its representation basically relies on the genetic contribution of only two populations—Sierra Bermeja and GCF—as a result of the connectivity among subpopulations in these two areas. The remaining four populations are isolated, with only a very few individuals and lack of recruitment, except for the Almácigo Bajo population. However, this population occurs on a private ***land*** adjacent to a former quarry and where harvesting of E. woodburyana and other species for fence posts has been documented (USFWS 2017, p. 19). The loss or reduction of the Almácigo Bajo population would represent an important impact to the species' conservation due to its higher recruitment rate, and its presumed genetic uniqueness as it is the only one occurring within the subtropical moist ***forest*** life zone. Three of the known populations are small in numbers, isolated, and not effectively reproducing. Therefore, we believe the overall representation of E. woodburyana is low to moderate.

We consider that Eugenia woodburyana's redundancy has increased since listing, but remains low to moderate as it is only known from six populations throughout its geographical range. Moreover, three of these populations—Montes de Barinas (1 individual), Punta Cucharas (30 individuals), and Camp Santiago (1 individual)—are very small with no current evidence of natural recruitment, making them more vulnerable to catastrophic and stochastic events such as human-induced fires, hurricanes, and droughts, which affect seedling establishment (Acevedo-Rodríguez 2014, p. 15). In fact, E. woodburyana has not been observed naturally expanding or colonizing into degraded habitat outside the areas where it is known to occur, particularly where the largest populations are found (i.e , Sierra Bermeja, GCF, and Almácigo Bajo). The populations on Montes de Barinas and Camp Santiago are the most vulnerable to extirpation if not managed and enhanced. The loss of the Montes de Barinas, Punta Cucharas, and Camp Santiago individuals (the easternmost populations) will reduce the redundancy of the species.

Although population numbers and abundance of Eugenia woodburyana have increased, and some identified threats have decreased, our analysis indicates that, because of the remaining threats and stressors, the species remains likely to become in danger of extinction in the foreseeable future throughout all of its range. Based on biological factors and stressors to the species viability, we consider 30 years to be the foreseeable future within which we can reasonably determine the identified threats and the species response to those threats is likely. The foreseeable future for the individual threats vary. Projections out to the year 2100 show increases in temperature and decreases in precipitation (Khalyani et al. 2016, pp. 274-275). However, divergence in temperature and precipitation projections increases dramatically after mid-century, depending on the scenario (Khalyani et al. 2016, p. 275), making projections beyond 20 to 30 years uncertain. Therefore, our ability to predict stressors associated with climate change is reduced beyond mid-century. Thus, the 30-years foreseeable future we are proposing, would account for the effects of predicted changes in temperature, life zone's shifting, and increasing droughts. Additionally, the species has been listed for over 25 years, so we have a baseline to understand how populations have performed in that period.

This time period includes multiple generations of the species and allows adequate time for impacts from conservation efforts or changes in threats to be observed through population responses. For example, this timeframe accounts for the species reproductive biology, and thus the time required by an individual plant of E. woodburyana to reach a reproductive size and effectively contribute to the next generations. It accounts for reaching maturity, the probability of flowering, effective crosspollination, setting viable fruits, seed germination, and seedling survival and establishment, considering environmental stochastic events such as drought. Furthermore, the established timeframe provides for the design and implementation of conservation strategies to protect and enhance currently known populations. It also accounts for the continued collaborating with partners (e.g , PRDNER and PLN) to implement effective propagation and reintroduction of E. woodburyana, and to implement best management practices to reduce impacts from ***agricultural*** practices that will reduce incidence of human-induced fires and will promote habitat connectivity until such time as we find it no longer requires protections under the Act.Determination of

Section 4 of the Act (16 U.S.C 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for determining whether a species meets the definition of “endangered species” or “threatened species.” The Act defines an “endangered species” as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a “threatened species” as a species that is “likely to become an endangered in the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence.Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we carefully examined the best scientific and commercial information available regarding the past, present, and future threats faced by this plant. We reviewed the information available in our files and other available published and unpublished information, and we consulted with recognized experts and State agencies. In considering factors that might constitute threats to a species, we must look beyond the exposure of the species to a factor to evaluate whether it responds to the factor in a way that causes impacts to the species or is likely to cause impacts in the future. If a species responds negatively to such exposure, the factor may be a threat and, during the status review, our aim is to determine whether impacts are or will be of an intensity or magnitude to place the species at risk. The factor is a threat if it drives, or contributes to, the risk of extinction of the species such that the species warrants listing as an endangered or threatened species as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely affected could suffice. In sum, the mere identification of factors that could affect a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors act on the species to the point that the species meets the definition of an endangered or threatened species.

At the time of listing, the known range of Eugenia woodburyana consisted of 45 individuals distributed along 3 localities in southwestern Puerto Rico. The most serious threats to such a small number of individuals were habitat destruction and modification, inadequacy of existing regulatory mechanisms, and limited distribution. Currently, E. woodburyana exists across a broader geographic range in six populations composed of several sub-populations. Increased survey efforts and implementation of recovery actions have resulted in more occupied habitat identified, leaving open the potential of finding even more E. woodburyana individuals. Protection under the Act, and Commonwealth laws and regulations has reduced the unauthorized take, although accidental damage to the species has occurred due to lack of knowledge of the species by private landowners. Also, about 47 percent of the total known natural adults and saplings are found on Federal, Commonwealth, and private ***lands*** managed for conservation and where the species is protected.

However, although now known to be more widespread and abundant than previously thought, the other 53 percent of known adult and saplings occur on ***lands*** where they are threatened by habitat destruction and modification (e.g , conversion of ***forested*** habitat into pasturelands, grazing by cattle, horses, and goats, and urban development). In addition, recent information indicates that threats from invasive species, human-induced fires, droughts, hurricanes, landslides, and sediment runoff are currently acting upon Eugenia woodburyana. Some of these threats could be more severe for the populations on ***lands*** where, for example, there are no fire management prevention practices implemented, making the species more vulnerable to impacts.

We have determined that the previously recognized impacts to Eugenia woodburyana from inadequacy of existing regulatory mechanisms that occurred prior to listing by the Commonwealth of Puerto Rico has been reduced and limited distribution is no longer impacting E. woodburyana. In summary, there continues to be concern about present or threatened destruction, modification, or curtailment of its habitat or range (specifically, conversion of ***forested*** ***land*** into pasturelands, grazing by cattle, horses, and goats, and urban development); and other natural or manmade factors affecting its continued existence (specifically, invasive species, human-induced fires, droughts, hurricanes, landslides, and sediment runoff) throughout the range of E. woodburyana, particularly for those populations on private ***lands***. The existing regulatory mechanisms are not adequate to address these threats at this time. The species is not affected by stressors related to over collection, and disease and predation. Still, none of these is an imminent threat or at a magnitude such that the taxon warrants endangered status across its range. Thus, after assessing the best available information, we conclude that E. woodburyana is not currently in danger of extinction throughout all of its range, but is likely to become in danger of extinction within the foreseeable future throughout all of its range.Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in Center for Biological Diversity v. Everson, 2020 WL 437289 (D.D.C Jan. 28, 2020) (Everson), vacated the aspect of the 2014 Significant Portion of its Range Policy that provided that the Services do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and, (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in Everson, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e , endangered). In undertaking this analysis for Eugenia woodburyana, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered.

For Eugenia woodburyana, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the following threats: Habitat destruction and modification (particularly by urban development, and grazing by cattle, horses, and goats); human-induced fires; invasive species; hurricanes, ***lands*** slides and sediment runoff; and the effects of climate change (e.g , prolonged droughts and expected shits of life zones). As discussed above, these threats are acting upon the species across its range. We have identified that habitat modification is threatening four of the six E. woodburyana known populations. In addition, human-induced fires and invasive plant species are considered as further stressors to the viability of E. woodburyana, particularly on private ***lands*** throughout the range of the species where no fire management practices are implemented. It is also expected that E. woodburyana will be affected by changes in climatic conditions as suggested by downscaled models developed for Puerto Rico, particularly by generalized changes in precipitation and drought conditions, and shifting of life zones in the Island. In fact, climate change is expected to result in more intense hurricanes and extended periods of droughts that can be exacerbated by a reduced number of populations, low number of individuals in most populations, and habitat degradation and fragmentation.

Narrow endemics are generally more likely to experience the same kinds and levels of threats in all parts of their ranges, and thus, no portion would likely have an increased level of threats and, accordingly, a different status. Here, we found no concentration of threats in any portion of E. woodburyana' s range at a biologically meaningful scale. Thus, there are no portions of the species' range where the species has a different status from its rangewide status. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in Desert Survivors v. Department of the Interior, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D Cal. Aug. 24, 2018), and Center for Biological Diversity v. Jewell, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).Determination of Status

Our review of the best available scientific and commercial information indicates that the Eugenia woodburyana meets the definition of a threatened species. Therefore, we propose to reclassify E. woodburyana as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. The Act encourages cooperation with the States and requires that recovery actions be implemented for all listed species. The protections required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystem.

Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered, or may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. All planning documents can be found on our website ([*http://www.fws.gov/endangered*](http://www.fws.gov/endangered)) or from our Caribbean Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States (in this case, the Commonwealth of Puerto Rico), Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g , restoration of native vegetation), research, captive propagation, and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal ***lands*** because their range may occur primarily or solely on non-Federal ***lands*** (like Commonwealth-owned ***forests***). To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal ***lands*** where appropriate. Funding for recovery actions could become available from a variety of sources, including Federal budgets, Commonwealth programs, and cost share grants from non-Federal landowners, the academic community, and nongovernmental organizations. We invite you to submit any new information of this species whenever it becomes available (see FOR FURTHER INFORMATION CONTACT).

Section 7(a) requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species. If a Federal action may affect a listed species, the responsible Federal agency must enter into consultation with the Service.Proposed 4(d) RuleBackground

Section 4(d) of the Act contains two sentences. The first sentence states that the “Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation” of species listed as threatened. The U.S Supreme Court has noted that statutory language like “necessary and advisable” demonstrates a large degree of deference to the agency (see Webster v. Doe, 486 U.S 592 (1988)). Conservation is defined in the Act to mean “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the Act] are no longer necessary.” Additionally, the second sentence of section 4(d) of the Act states that the Secretary “may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants.” Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife, or include a limited taking prohibition (see Alsea Valley Alliance v. Lautenbacher, 2007 U.S Dist. Lexis 60203 (D. Or. 2007); Washington Environmental Council v. National Marine Fisheries Service, 2002 U.S Dist. Lexis 5432 (W.D Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see State of Louisiana v. Verity, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species” (H.R Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising its authority under 4(d) the Service has developed a proposed rule that is designed to address Eugenia woodburyana' s specific threats and conservation needs. Although the statute does not require the Service to make a “necessary and advisable” finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the E. woodburyana. As discussed under Overall Summary of Factors Affecting Eugenia woodburyana, the Service has concluded that the Eugenia woodburyana is at risk of extinction within the foreseeable future primarily due to habitat destruction and modification, particularly by urban development, and grazing by cattle, horses, and goats; human-induced fires; and invasive species. Additionally, other natural or manmade factors like hurricanes, ***lands*** slides, sediment runoff, and the effects of climate change can cause the species to be in the risk of extinction in the foreseeable future. The provisions of this proposed 4(d) rule would promote the conservation of the E. woodburyana by encouraging the conservation of the habitat considering ***land*** use and the species' needs. The provisions of this proposed rule are one of many tools that the Service will use to promote the conservation of E. woodburyana. This proposed 4(d) rule would apply only if and when the Service makes final the listing of E. woodburyana as a threatened species.Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of the Eugenia woodburyana by prohibiting the following activities, except as otherwise authorized or permitted: Importing or exporting; certain acts related to ***removing***, damaging, and destroying; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; selling or offering for sale in interstate or foreign commerce; or collecting plant material (seeds, seedlings, propagules, or cuttings) and natural individuals or those planted to enhance the status of the species in the wild.

As discussed under the Overall Summary of Factors Affecting Eugenia woodburyana (above), the present or threatened destruction, modification, or curtailment of its habitat or range (specifically, urban development; grazing by cattle, horses, and goats; human-induced fires; and invasive species), the inadequacy of existing regulatory mechanisms, and other natural or manmade factors affecting its continued existence (specifically, hurricanes, landslides, sediment runoff, and the effects of climate change) are affecting the status of E. woodburyana. A range of activities have the potential to impact E. woodburyana, including: Habitat conversion from ***forested*** habitat to pasture for grazing, fence posts harvesting, and ***land*** clearing for development. Regulating these activities will help preserve the species' remaining populations, slow their rate of potential decline, and decrease synergistic, negative effects from other stressors.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened plants under certain circumstances. Regulations governing permits are codified at 50 CFR 17.72 With regard to threatened plants, a permit may be issued for the following purposes: Scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or for other purposes consistent with the purposes of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

It is our policy, as published in the Federal Register on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities with the range of listed species. Based on the best available information, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements (this list is not comprehensive): (1) Engaging in sustainable ***agricultural*** and grazing practices; (2) conducting low-impact residential development (e.g , single-family units); and (3) minimizing areas of rights of way for infrastructure development projects. Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Southeast Region Recovery Permit Coordinator at (404) 679-7097, or to the Caribbean Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

The Service recognizes the special and unique relationship with our State and Territorial natural resource agency partners in contributing to conservation of listed species. State and Territorial agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State and Territorial agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Service in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Service shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a Territorial conservation agency which is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, will be able to conduct activities designed to conserve Eugenia woodburyana that may result in otherwise prohibited activities for plants without additional authorization.

The Service recognizes the beneficial and educational aspects of activities with seeds of cultivated plants, which generally enhance the propagation of the species, and therefore would satisfy permit requirements under the Act. The Service intends to monitor the interstate and foreign commerce and import and export of these specimens in a manner that will not inhibit such activities, providing the activities do not represent a threat to the survival of the species in the wild. In this regard, seeds of cultivated specimens would not be regulated provided that a statement that the seeds are of “cultivated origin” accompanies the seeds or their container (e.g , the seeds could be moved across State lines or between territories for purposes of seed banking or use for outplanting without additional regulations).

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the Eugenia woodburyana. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see Information Requested, above).Effects of This Proposed Rule

This proposed rule, if made final, would revise 50 CFR 17.12(h) to reclassify Eugenia woodburyana from endangered to threatened on the Federal List of Endangered and Threatened Plants. It would also recognize that this plant is no longer in danger of extinction throughout all or a significant portion of its range. This reclassification does not significantly change the protections afforded to this species under the Act. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, continue to apply to E. woodburyana. Federal agencies are required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect E. woodburyana.

As applicable, recovery actions directed at Eugenia woodburyana will continue to be implemented as outlined in the recovery plan for this plant (USFWS 1998). Highest priority actions (also recommended as future actions in our 5-year review (USFWS 2017) include:

(1) Develop more measurable and objective criteria to delist this species based on best available information;

(2) Continue conducting comprehensive surveys for this species within traditional and non-traditional sites to determine more details on abundance and distribution of the species;

(3) Promote conservation agreements with private landowners to protect and enhance existing populations;

(4) Work closely with the Puerto Rico Department of Natural and Environmental Resources and landowners to ensure the protection of the species and its habitat on private ***lands***; and

(5) Continue implementing fire prevention practices in Sierra Bermeja, CRNWR, and GCF during the dry season.Required DeterminationsClarity of This Proposed Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in ADDRESSES. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.National Environmental Policy Act

We have determined that we do not need to prepare an environmental assessment or environmental impact statement, as defined in the National Environmental Policy Act of 1969 (42 U.S.C 4321 et seq.), in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244).Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, “Government-to-Government Relations with Native American Tribal Governments” (59 FR 22951), Executive Order 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. We have determined that there are no tribal interests affected by this proposal.References Cited

A complete list of references cited is available on [*http://www.regulations.gov*](http://www.regulations.gov) under Docket Number FWS-R4-ES-2019-0070.Authors

The primary authors of this document are members of the Caribbean Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:Part 17 Endangered and Threatened Wildlife and Plants

1. The authority citation for part 17 continues to read as follows:Authority

16 U.S.C 1361-1407; 1531-1544; and 4201-4245; unless otherwise noted.

2. Amend § 17.12 in paragraph (h) by revising the entry for “Eugenia woodburyana” under FLOWERING PLANTS in the List of Endangered and Threatened Plants to read as follows:§ 17.12Endangered and threatened plants.

\* \* \* \* \*

(h) \* \* \*Scientific name Common name Where listed Status Listing citations and applicable rulesFlowering Plants \* \* \* \* \* \* \* Eugenia woodburyana No common name Wherever found T 59 FR 46715, 9/9/1994; [FEDERAL REGISTER CITATION OF FINAL RULE]; 50 CFR 17.73(e). 4d \* \* \* \* \* \* \*

\* \* \* \* \*

3. Revise § 17.73 to read as follows:§ 17.73Special rules—flowering plants.

(a) through (d) [Reserved]

(e) Eugenia woodburyana (no common name)—(1) Prohibitions. The following prohibitions that apply to endangered plants also apply to Eugenia woodburyana. Except as provided under paragraph (e)(2) of this section, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as provided in § 17.61(b).

(ii) ***Remove*** and reduce to possession the species from areas under Federal jurisdiction, as set forth at § 17.61(c)(1).

(iii) Maliciously damage or destroy the species on any areas under Federal jurisdiction, or ***remove***, cut, dig up, or damage or destroy the species on any other area in knowing violation of any law or regulation of the Territory or in the course of any violation of a Territorial criminal trespass law as set forth at at section 9(a)(2)(B) of the Act.

(iv) Engage in interstate or foreign commerce in the course of commercial activity, as provided in § 17.61(d).

(v) Sell or offer for sale in interstate or foreign commerce, as provided in § 17.61(e).

(2) Exception s from prohibitions. The following exceptions from prohibitions apply to Eugenia woodburyana:

(i) Persons that have been issued permits in accordance with the provisions set forth in § 17.72 may conduct activities as authorized by the permit.

(ii) Any employee or agent of the Service or of a State or Territorial Conservation Agency that is operating in a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, may, when acting in the course of official duties, ***remove*** and reduce to possession from areas under Federal jurisdiction members of Eugenia woodburyana that are covered by an approved cooperative agreement to carry out conservation programs.

(iii) Entities may engage in any act prohibited under paragraph (e)(1) of this section with seeds of cultivated specimens, provided that a statement that the seeds are of “cultivated origin” accompanies the seeds or their container.Aurelia Skipwith,Director, U.S Fish and Wildlife Service.[FR Doc. 2020-20300 Filed 10-20-20; 8:45 am]BILLING CODE 4333-15-P

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**End of Document**



[***This project maps bees around the globe. Here's why that matters***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61F5-2M11-JDG9-Y24X-00000-00&context=1516831)

Impact News Service

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**Length:** 1146 words

**Body**

Cologny: World Economic Forum has issued the following press release:

There are many more bee species than most people realise - more than 20,000 - and now, we know where to find them. This month, scientists made a giant leap toward protecting bees by mapping the diversity of one of nature’s most important pollinators for the first time.

Bee populations around the world are at risk due to human activities such as pesticide use and climate change. Understanding the distribution of bee species is critical to inform conservation and sustainable ***land*** management decisions. If we know which species depend on which ecosystem, we can better predict how they will react to shocks, such as changes in rainfall or farming techniques, and put in place measures to prevent their decline.Have you read?

Ugly species deserve biodiversity protections, too WWF: These are the biggest threats to the Earth's biodiversity How investing in nature can help tackle the biodiversity and climate crises

Pollinators are the foundation for human health and wellbeing. They sustain populations of wild plants that underpin ecosystem services, allow us to produce crops, ensure food security and support cultural values. The majority of plants rely on pollination by animals and up to $577 billion in annual global crops are at risk from pollinator loss.

Bees do much more than make honey, and there are more bee species than there are mammals and birds combined. They visit more than 90% of the leading crop types and are the top pollinator group in many countries. The United States has the most species of bees, but there are areas in Africa and the Middle East, for example, that have high levels of undiscovered diversity.

Although awareness of the importance of bees has been on the rise in policy circles and the general public our response has not kept up with the threats that they face. In the US, honey bee populations declined by 60% between 1947-2008, while in Europe, 12 wild bee species are critically endangered.Mapping bee hotspots

Using a comprehensive checklist of bee distribution and almost 6 million public bee records, an international team of researchers pioneered an insight into global patterns of bee diversity. Most plants and animals follow the same pattern, in which there is most biodiversity towards the tropics, and less towards the poles. Bees appear to be an exception to this rule. While there are fewer species towards the poles, there are also fewer near the equator. In areas where bees are less abundant, you see a rise in alternative pollinators such as wasps, cockroaches or moths.Relative species richeness of bees around the world.Relative species richeness of bees around the world.Image: Global Patterns and Drivers of Bee Distribution

The data of this study show that bees favour deserts and temperate environments over tropical regions. This is because trees provide bees with fewer food sources than low-lying plants and flowers. Additionally, bees do not like it too wet, unlike their ant cousins whose populations peak in tropical regions. As the study suggests, humidity may limit bee distribution due to damage to pollen resources.

This study provides a crucial step in assessing the impact of human activity on bees and tracking the potential decline of bee populations. It is hoped that it will form an important baseline for further research and ***targeted*** conservation efforts. The findings will help scientists and governments identify bee hotspots that are in areas of the world at risk from environmental degradation and damaging ***agricultural*** practices. The findings could also allow a better understanding of pollination services in analyses of ecosystem services. Equally, this study could be used to predict the effect of climate change on future bee distributions, especially as it impacts rainfall patterns.

When honeybees decline, beekeepers can order more. This is not the case for wild species. —Marie Quinney

Many lower-income countries depend on wild, not domesticated, species of bees for their crops, and research on these is very sparse. When honeybees decline, beekeepers can order more. This is not the case for wild species. Food security for those most vulnerable, therefore, relies on studies such as these that highlight lesser-known species and allow us to safeguard biodiversity and the services that are so central to human prosperity.Developing solutions for biodiversity

Declining populations of bees and other pollinators are not only a problem for people and governments. Businesses also have a responsibility to help develop solutions. Businesses have a direct impact on pollinator loss through harmful ***agricultural*** practices, for example. They also contribute indirectly to the loss of habitats and climate change through greenhouse gas ***emissions***.

Far from requiring purely altruistic motives, however, businesses have an economic incentive to address the issue. The loss of bees will directly affect business revenues in areas such as ***agriculture***, food transportation and healthcare due to the reduction in the availability of crops. Pollinator decline is, therefore, a material risk to business operations and should be accounted for in decision making, with businesses opting for nature-positive models.How does the World Economic Forum encourage biological diversity?How does the World Economic Forum encourage biological diversity?

In the last 100 years, more than 90 percent of crop varieties have disappeared from farmers’ fields, and all of the world’s 17 main fishing grounds are now being fished at or above their sustainable limits.

These trends have reduced diversity in our diets, which is directly linked to diseases or health risk factors, such as diabetes, obesity and malnutrition.

One initiative which is bringing a renewed focus on biological diversity is the Tropical ***Forest*** Alliance.

This global public-private partnership is working on ***removing*** deforestation from four global commodity supply chains – palm oil, beef, soy, and pulp and paper.

The Alliance includes businesses, governments, civil society, indigenous people and communities, and international organizations.

Enquire to become a member or partner of the Forum and help stop deforestation linked to supply chains.

Bees are some of the most important pollinators in the world. They ensure we are fed and also allow plants to do their job. If bees were to disappear, it would lead to a domino effect of the loss of plants, crops and, potentially, of entire ecosystems. By understanding the distribution of bee species, we are increasing our odds of successfully protecting such an critical player in natural and human systems. Putting them on the map, along with rhinos, tigers and pandas, lays the foundations for more efficient and effective conservation efforts and enable us to protect the ecosystems on which bees, and we, so desperately depend.

**Load-Date:** December 3, 2020

**End of Document**



[***Senate Committee Hansard: BILLS 22/02/2021***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:622M-2XN1-JDG9-Y3M0-00000-00&context=1516831)

Impact News Service

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**Length:** 7066 words

**Body**

Canberra: Parliament of Australia has issued the following senate Hansard:

I rise this morning to speak in favour of the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021. This is an important piece of legislation which this chamber needs to consider, because for far too long the plight of Australia's iconic furry friend the koala has been ignored. Last summer's bushfires ripped through parts of the Australian bushland in a way that we'd never seen before. Sixty-one thousand koalas were killed and much of their habitat was destroyed. This piece of legislation seeks to stop the further destruction of the limited amount of koala habitat that is left. For far too long, precious koala habitat has been allowed to be destroyed due to mining, big property development, logging and other types destruction. Couple that with the destruction of last summer's bushfires, fuelled by the climate crisis, and Australian koalas now face extinction. It is just unthinkable that, on the east coast of New South Wales, Australia's koala could be extinct within the next 30 years. It is just unthinkable that this iconic creature, which right around the world is considered so emblematic of Australia's wildlife, bushland and environment, could be gone, to exist only in zoos as a reminder of what used to be. We need to act now and we need to act fast. The biggest threat to Australia's koalas is the destruction of their homes, their habitat. As less and less habitat is available we see the koalas moving closer and closer into urban areas. This puts them at further risk of harm and injury. When the bushfires ripped through the Australian ***forest***, bushland and scrub this time last year, the images of burnt koalas, dead koalas and injured wildlife went around the world and shocked people right across the globe, because it was just such a fundamental destruction of what Australia is known for.

Under the 22-year-old environment laws currently in place in this country, under the EPBC Act, koalas have lost almost one million hectares of critical habitat. Overall at least 7.7 million hectares of critical habitat have been destroyed, specifically for mining and development, over the last two decades—enough is enough. There is not much home left for the koala. We need to protect that which exists. Of course, this is an important issue not just for the koala; this is important for the rest of Australia's wildlife and native species too, because if we are to protect koala habitat it protects the homes of many other animals as well. For far too long we have simply let rip, let log, let dig, let destroy Australia's precious places and our environment. If you destroy the bushland, if you log ***forests***, you're taking away the very homes of these animals.

At present, despite how at risk these animals are, the government refuses to guarantee that not one more hectare of critical koala habitat will be lost, and that is shocking. When everybody knows—in the government, in the minister's office, in the department, amongst the experts and those who work carefully and considerably and hard every day to protect our wildlife—that koalas are facing extinction, how can the government continue to allow the destruction of habitat? This will fast-track the extinction of this iconic species.

Indeed, the government has done the exact opposite. Despite 61,000 koalas being killed last year, the environment minister has continued to sign off on, give approval to and give a green light to the destruction of even more koala habitat going forward—doing the exact opposite to what needs to be done. It is not good enough to want to stand and have a photo with the cute koala at Australia Zoo or at Taronga or a number of the other wildlife sanctuaries and then to turn around and to sign the death warrant of these creatures by allowing the destruction of their homes from big mining companies and developers.

The environment minister's job is to protect the environment, to make sure there is a check and a balance on those who just wish to just cut, dig and destroy senselessly. These koalas need the protection of this environment minister, and currently the environment minister has failed. The Threatened Species Commissioner, the expert and the key adviser to the minister herself, told this Senate in November last year that the biggest threat to koalas was habitat loss and the degradation and fragmentation of their homes.

The environment minister knows what she needs to do. The environment minister knows what needs to be done to save these koalas from extinction. The environment minister needs to stop approving the destruction of their habitat through mining, development and logging projects. The ongoing destruction of koala habitat through ***land*** clearing for ***agriculture***, development, mining and forestry is currently unchecked and has been going on like this for decades and decades. And now we have a situation where, unless we act today, there will be no koalas in 30 years time. Perhaps there will be a few in zoos, perhaps there will still be an opportunity for a politician to have their photo shoot with a cute and cuddly koala, but there won't be any living in the wild and there won't be any in our Australian bushland.

The New South Wales parliament last year was so exercised by this issue that they conducted their own inquiry. They found evidence, time and time again, that, unless koala habitat was protected, these animals will become extinct. It just beggars belief that no-one in this place, no-one in the government, is seizing the opportunity to do the right thing. Saving Australia's koalas is not just important for protecting our wildlife. It is important in our further challenge in tackling climate change—because, as more and more koala habitat is destroyed, less and less ***forest*** and bushland is protected, thus making climate change even worse.

Last summer's 'climate fires' were a wake-up call to the Australian community. They were a wake-up call for all of us. We were pretending climate change is something out there in the distant future, but it was right here on our doorstep. Canberra itself was engulfed in hazardous smoke for weeks and weeks on end. Sydney, Australia's biggest city, was engulfed in toxic smoke for weeks and weeks on end. Towns and communities throughout the eastern seaboard, southern Victoria, the Gippsland region and my home state of South Australia were devastated by the fury of the flames. And while we might be able to rebuild, reconstruct our homes and put our communities back together—although that takes time—our native animals are gone forever. The three billion native animals destroyed in this fury of fire destruction are gone forever.

There is very little Australian koala habitat left. All this bill is seeking to do is put in place a moratorium to stop the minister from being able to approve any more destruction of it. There should be no more bulldozing of the trees that koalas live in, no more logging of the trees and the bushland that koalas and their fellow species rely on, no more destruction of koala habitat for the sake of a quick buck for the mining industry and big property developers. For far too long, these big corporations have brushed away the long-term impact of destroying these important pockets of bushland. 'Oh, koalas can go and live somewhere else,' they say. As the minister signs on the dotted line, she says: 'Yes, you beauty, you can log there; you can mine there; you can bulldoze there,' expecting that the koalas will simply be able to pack up their bags and move next door. We need this country to get serious about protecting our environment and what is left of it.

We lead the world, shamefully, when it comes to our list of threatened species and those that are already on the extinct list. That's not a league table I want Australia on and neither do most Australians. The Australian people ask us to debate a lot of complex issues in this place. This isn't one of them; this is not a complex issue. This makes perfect sense. There's very little habitat left. If we want to save Australia's koalas from extinction, we need to protect their homes. We need to stop the chainsaws and stop the bulldozers. We need to protect our iconic species not just for their sake but for the sake of every other species that relies on native bushland, native scrub and protection from destruction. I commend the bill to the Senate.

I too rise to speak on the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021, introduced by Senator Hanson-Young. I wish to acknowledge up-front her passion and deep interest in these issues. Having travelled as part of the Senate Environment and Communications References Committee to Kangaroo Island in the aftermath of the bushfires, I have seen her deep interest in this and her passion for addressing these issues.

When it comes to the legislation, though, I come back to the maiden speech I made in this place—that good intentions and passion alone don't necessarily make for good legislation. I do have some concerns with the amendments that have been proposed in this bill, which I will speak to now. As Senator Hanson-Young has said, the bill aims to introduce a moratorium on the clearing of koala habitat, and, if you go back to the EPBC Act and look at what critical habitat for vulnerable species, the koala in particular, is defined as, it's defined as any habitation that contains a food tree or a food source for koalas, so it's a fairly broad definition of what koala habitat is. The bill would prevent the minister from approving an action under the EPBC Act where that action consists of or involves the clearing of koala habitat. It also goes on to ***remove*** an exemption for regional ***forest*** agreements, which I'll come to a little later on. Specifically, section 18B refers to the concept of a significant impact on koalas as set out in the new section 527G and it applies this concept to section 18A of the EPBC Act. The effect then of section 18B in conjunction with 18A and 527G is that taking an action that has, will have or is likely to have a significant impact on koalas is prohibited. At the end of section 139 the bill goes on to insert a new subsection that has the effect of preventing the minister from approving an action consisting of or involving the clearing of koala habitat. As you'll recall, the definition of 'habitat' for vulnerable species, the koala in particular, is essentially any ***forest*** or other growth that has either emergent trees or trees that constitute a food source for koalas.

The concern in part for me comes back to my own state of South Australia. An exemplar is Kangaroo Island, to which, in the 1920s, a number of koalas, given that they are not native to Kangaroo Island, were introduced from Victoria. I think fewer than 20 were released on the island. They have bred extensively on Kangaroo Island. Before the fires of last year there were an estimated 50,000 koalas on Kangaroo Island, roughly half in native vegetation and roughly half in blue gum plantations. This immediately raises an issue with the prohibition in that, if the koalas have chosen to live in blue gum plantations because they provide a food source, then here we have a situation where what is essentially an introduced species to this island has chosen to live in and use as a food source a plantation timber, for which the natural expectation of somebody who's planted trees as a plantation is that they will be able to harvest those trees. But this prohibition would actually prevent a normal commercial activity of planting timbers for the purpose of harvesting because koalas have chosen to live in that area. So, fundamentally, there is a problem with the nature of the bill because it will interrupt not the logging of native ***forests*** or clearing of native areas but actually commercial operations that have seen a massive increase, through the presence of those trees, of a koala population.

Kangaroo Island was an interesting case even before the fires that went through last year and that were devastating to many landholders, property owners and wildlife because the koala population does not respond to environmental stress like kangaroos do. Scientists have studied them and made it clear that kangaroos, in the face of environmental stress, can actually regulate their population growth to adapt to those changing circumstances. What they've found with koalas is that koalas are not capable of that self-regulation, which means that over time they have created unsustainable pressures on the food sources on the island. This means they are literally eating themselves to starvation. There has been a long program, a long debate and discussion, in South Australia about how you deal with this burgeoning population. Culling is not an option. There has been some attempt at translocation back to the area where these koalas originally came from. Given that they are disease free—and certainly the only ones in South Australia and potentially nationwide that are disease free—it's a very good breeding stock to try to translocate. There have also been attempts at sterilisation. But importantly, as Senator Hanson-Young has indicated, the habitat that koalas use is also the habitat for other species. One of the great environmental concerns on Kangaroo Island is the overpopulation of koalas, which eat trees not just to the point where there is no more food for them to eat. If the trees are devoid of all leaves, they die, which means that the habitat for other native animals is actually being reduced. That has been a significant environmental concern in South Australia. Kangaroo Island is an exemplar of a case where there are reasons why this prohibition on the clearing of habitat has a commercial imperative. But there are also reasons why various controls may be required.

You can also go to other parts of South Australia. In the Adelaide Hills, for example, in the Mount Lofty Ranges, there is a population that is measured to be around 150,000 which is thriving. There are large contiguous ***forested*** areas and natural bushland, even down into the suburbs. In fact, the creek out the back of my own house has koalas that populate that and keep us awake at night with various territorial growling. But it indicates that there is a healthy population there, and this prohibition could prevent quite reasonable development of properties across a large swathe of area or pockets within that area that would have no material impact on koalas. So there are some fundamental concerns about the black-and-white nature of the prohibition which is placed in this bill.

The extant provisions recognise that there are areas which are complex. The guidelines published by the Department of the Environment, in relation to the EPBC Act, say:

The koala has one of the largest distributions of any terrestrial threatened species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). It occupies a variety of vegetation types … is capable of moving long distances and is variably affected by a range of threats. Determining significant impacts on the koala is therefore complex and varies between cases.

This shows that we do need to take account of the habitat of koalas and their population but a blanket ban is not the best way to manage that. There needs to be a scientific approach that understands the impact on the koala as well as other species, balancing that with developments—whether that be in industry or for housing or transport— and the authorities and minister need to be able to look at these case-by-case rather than being hamstrung by a blanket ban.

As the chamber would be aware, the EPBC Act is due for a reform and there are reforms underway. The Environment and Communications Committee reviewed late last year some of the first tranche of reforms to make it more effective, in terms of how we care for the environment and balance the needs of other parts of our society. It's worth pointing out that, in terms of the extant provisions, habitat protections and matters of ***land*** clearing are predominantly the responsibility of state governments. But, when it comes to threatened species, the EPBC Act does provide protection for threatened species and the koala is listed as one of those, particularly the combined populations of Queensland, New South Wales and the ACT, which are regarded as matters of national environmental significance.

So under that federal act, any action that's likely to have a significant impact on a matter of national environment significance, such as the koala, must receive approval from the government before it can proceed. In order to obtain approval, proposed developments are subject to an rigorous and transparent environmental assessment process under the EPBC Act. We heard a lot of evidence last year about the processes in that act and the fact that there are opportunities for improvement, and I would welcome those as we go forward. But at the heart of that act and those processes is the assumption and the principle that you treat the koala population, particularly on that east coast area, as a population of concern but you deal with each case according to its merits. I will come to the issue of the forestry agreements now, just in that context.

Between 2015 and 2017 the New South Wales Department of Primary Industries undertook a large-scale study on koala occupancy in north-east ***forests*** of New South Wales, including their response to timber harvesting. What they found was that koala occupancy was not influenced by timber harvesting intensity, time since harvesting, ***land*** tenure or landscape of harvesting or old growth ***forest*** extent. There were other factors sometimes associated with the forestry industry, but often not, that had a greater impact. So to have a blanket ban on exemptions for RFAs ignores what the science has collected, in terms of data.

So I am not denying that, particularly on the east coast, there is cause for concern, there is action that is required, but the substance of this bill and the operative measures which actually prevent—they have a hard prohibition—that don't allow the science for any particular business case to be considered when somebody comes for approval or, worse, in the case of something like Kangaroo Island, where there has been a commercial planting of trees that, by definition, have now become a habitat for koalas because they are a food source for koalas, would be that somebody who's made an investment to plant a plantation couldn't even harvest those trees because of the operation of this bill. So for those reasons, while I respect the good intentions and the depth of passion of Senator Hanson-Young, I cannot support this bill in the Senate.

One of the iconic images of Australia's bushfires is a firefighter sharing a water bottle with a scared and singed koala. That picture was shared around the world and, in part, that's because the koala is so intrinsically and recognisably Australian. The koala might not be on our crest but it is a national symbol. It has featured in countless tourist ads and has been taken back home on countless kitsch souvenirs. It is not only an essential component of the concept that the world has of us but also of the conception we hold about ourselves. In 1933 Dorothy Wall published Blinky Bill, the quaint little Australian. A year later in 1934, the Sydney Morning Herald called the koala Australia's 'national pet'. But right from the beginning, being Australia's national pet hasn't been enough to guarantee the koala's safety. In 1936 the Evening News in Rockhampton wrote:

It seems extraordinary that this animal which is so greatly admired, not only by overseas visitors, but by Australians, is being allowed to suffer extinction.

In the early part of the 20th century, the koala was ruthlessly hunted for its fur. The threats to its safety today are different but no less grave. The koala is facing habitat loss and mounting ecological pressure in a warming world. Being an iconic Australian animal will not be enough to save the koala without our help. Even before last summer's bushfires, koalas were in trouble. Koala populations in my home state of New South Wales have been in decline for decades. One study suggests that koala numbers may have dropped by as much as two-thirds over the last 20 years, just 20 years. Although estimates vary, there is no dispute that koalas are in real trouble in New South Wales.

A few years back, on a pleasant afternoon, I met volunteers from an organisation called Bangalow Koalas. They have planted over a thousand trees to generate koala corridors to compensate for key koala habitat lost to highways on the North Coast of New South Wales. These corridors act as both travel pathways for koalas and areas for them to live. The trees were planted on private ***land*** with support of local landowners and they want to see koalas protected. Those volunteers are stepping up to fill the void that has been left by the Commonwealth and the New South Wales government and their destructive actions. New South Wales now has fewer than 10 per cent of the nation's koalas and it is harrowing to know that koalas in the Pilliga have declined by 80 per cent by the 1980s. The New South Wales coalition government's policy agenda of increased ***land*** clearing, building highways through key koala habitat, has been a contributor to their decline, and the bushfires have only made things worse. The government's own estimate suggests that at least a quarter of koala habitat in eastern New South Wales has been affected by fire; 5,000 koalas may have died in the fires. A New South Wales parliamentary inquiry found that without urgent action koalas may be extinct—completely extinct—in New South Wales by 2055. Well, what was the response? What was the response from the Berejiklian government? Predictably enough, it was a self-interested internecine fight between the National Party and the Liberals.

In September last year, the Nationals threatened to leave the coalition over a very modest plan to protect koala habitat, which the New South Wales Deputy Premier branded a '***land*** lock-up' policy. It is staggering that the issue that the New South Wales Nationals sought to weaponise to blow up the government was the protection of koalas. It's actually hard to think of a more tone-deaf political position than that advocated by the Deputy Premier, but it's typical of the approach from a coalition that persistently makes policy decisions that threaten the New South Wales natural environment.

The state government's recklessness is visible from space, literally. The North Coast has one of the highest ***land***-clearing rates in the world. It has been identified as a deforestation hotspot on par with Brazil and the palm oil plantations of Indonesia. Early in my career I had the great privilege of working for Bob Debus, former New South Wales Labor Minister for the Environment, when he and Premier Carr passed legislation to protect hectares of woodland across New South Wales for conservation—350 new parks created in that government; between 1995 and 2011 more than three million hectares protected in the conservation system. It is so disappointing to watch the New South Wales government fail to implement anything remotely similar. In fact, their approach has been to hasten at every step the destruction of irreplaceable wildlife and their habitat.

Unfortunately, here in the Australian Senate, a private senator's bill is unlikely to be the solution. This bill has no chance of becoming law. Even if it were to pass the Senate, the government would never bring it on for a vote in the House of Representatives over in the other place. It is why being in government matters and it's why, as a conservationist, I am a member of and participate in a party of government. Labor would take a different approach to the approach outlined in this bill.

This bill is a blunt instrument. It introduces an indefinite moratorium on clearing koala habitat. It ***removes*** the exemptions from the EPBC Act for forestry agreements where there is a significant impact on koalas. What this means, in effect, is that large parts of the eastern seaboard would be affected by this bill because koala habitat is extensive throughout the region. Now, it's possible that this is the right solution. Maybe this is the workable solution for the communities of New South Wales, but we wouldn't have any idea about this because there is no evidence of any discussion at all in the development of this bill with the communities that it would affect. Indeed, what's lacking in this bill is any consideration whatsoever of local communities.

This bill would have an impact on people and their livelihoods. Every natural resource decision does, but this bill doesn't establish, contemplate or reference any mechanism for a conversation with community about how to approach this problem. It doesn't reference or contemplate any mechanism to balance competing demands for ***land*** use, and this should matter to conservationists as well as communities that are dependent on forestry. This approach runs the risk of undermining support for conservation in the rural and regional communities where koalas need that support most.

We know from experience in government that the best approach to conservation lies in creating lasting compacts that recognise the legitimate needs of local communities to sustain themselves through a local economy that will support them and their families. That kind of compact matters and the stakes are too high for the koalas for us to take any other approach. If there is anything that we've learnt from the last few years of politics here and abroad—years which have seen simply frightening developments in some examples—it's that politics requires an inclusive approach that brings people together, that brings local communities along with change.

Politics does not work when solutions are dictated from afar. And, when that happens, there are reactions which are sometimes uncontrollable, sometimes unpredictable and not helpful for democratic systems. Our democracy works best when we have honest and open conversations with communities—conversations that acknowledge, recognise and respond to the genuinely divergent and diverse interests in those communities, because people who haven't been listened to will find a way of making their voices heard.

This is the approach that Labor takes in relation to nature conservation. It's the approach we took to protect so many assets in our periods in government, here in the federal sphere and in state parliaments. Labor protected the Daintree and Kakadu, stopped drilling on the Great Barrier Reef and protected the Franklin and Antarctica. We created Landcare. We created the largest network of marine parks in the world. Labor reduced Australians' ***emissions***. Every major achievement in environmental protection in this nation's history has been delivered by a Labor government. Only Labor has the will and the capacity to protect Australia's environment.

At every stage, the coalition has failed to fulfil that role. The Commonwealth government is years overdue in making a threatened species recovery plan for the koala. It was initially due in 2015, five years ago. Labor's National Koala Conservation Strategy ran until 2014. It's yet to be replaced. We are still waiting for the government to make a decision on increasing the threatened listing status of the koala, and that is why Labor has called on the Morrison government to cease development in areas where the koala is listed as vulnerable until the formal assessment for up-listing the koala has been determined, a recovery plan for the koala is produced and a new National Koala Conservation Strategy is in place.

Labor has a real plan for protecting the koala. We need stronger protections. The koala, as a national icon, does need federal protections. We need tougher penalties. The federal environment laws should impose strict penalties for acts of deliberate animal death and a national approach. The government has to work with the states on a consistent approach to protecting the koala and it should undertake a comprehensive ecological audit to assess the damage to populations from bushfires.

But it's not just the koala that needs protection. Fewer than 40 per cent of threatened species have a recovery plan. The Morrison government doesn't know—it has no idea—which recovery plans are actually being implemented. Under the coalition, 170 out of 171 outstanding threatened species recovery plans are overdue, and the Morrison government has no plan to get them done. Bushfires didn't threaten just koalas in New South Wales. Native wildlife from Fraser Island to Kangaroo Island was affected, and that is why Labor called for the national ecological audit at the height of the fires, in January 2020. It took a whole year for government to respond.

Meanwhile, after spending millions of dollars and countless hours on the review, the government is pursuing second-rate so-called standards that are fundamentally inconsistent with the Samuel review's final report. This government appointed a highly respected Australian regulator and businessman, and then it encouraged environmental science, business, industry and legal stakeholders to devote a vast amount of time to a review that it seems it always intended to ignore.

Delay and neglect are the hallmarks of the Morrison government's approach to environment protection. It is simply not something that the government cares about one jot. All the Senate motions and private senators' bills in the world aren't enough to undo the harm that can be done by a Liberal government that sees our wilderness as unimportant, that sees wildlife as an impediment to development and that sees proper process as mere 'green tape'. We need real change, and the only way to protect koalas is the election of a federal Labor government.

I rise to speak to the bill introduced by Senator Hanson-Young to save the koala and to put a moratorium on clearing of koala habitat. The Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021 is an urgently needed bill. Our koalas face extinction by 2050. Make no mistake; it is the Liberals and Nationals sitting opposite us here, and the ones that sat opposite me in New South Wales, who are killing our koalas. It is your hands that have the blood of koalas on them.

I remember the joy of seeing my first koala in natural habitat. We used to frequently see these amazing and unique animals in our front yard in Port Macquarie during the day and hear them loudly grunting at night. But those days, sadly, are long gone. And this is a town which used to be the koala capital of New South Wales, if not Australia. If governments continue to make reckless, irresponsible and greedy decisions that keep pushing koalas to the brink of wipe-out, our future generations will only see them in museums, and that is an absolute tragedy.

Koalas across the state are being driven to extinction not by some natural phenomenon or some evolutionary phenomenon; they are being driven to extinction by rampant ***land*** clearing. They are being driven to extinction by human-made global warming. They are being driven to extinction by ecocide. The terrible reality is that where I see magnificent trees and beautiful bush with glossy black cockatoos, powerful owls, eastern water dragons and koalas, all the Liberals and Nationals and their political donors—big mining, big development and big ***agriculture***—see are dollar signs and a commodity to be ruthlessly used and abused. You are all environmental vandals.

The climate-induced bushfires of 2019 and 2020 destroyed more than 12 million hectares and killed more than a billion animals and devastated communities. The loss of koalas during and after New South Wales bushfires is one of the most significant biodiversity disasters in our history. Now, even when we have lost so much habitat and wildlife, even when swathes of our bushland and millions of animals have been destroyed, ***forests*** are being opened up for logging. This loss is made much worse, because of the disastrous New South Wales ***land*** clearing laws pushed by the Liberals to appease the Nationals that I and many others fought hard against. It's under these laws that 99 per cent of koala habitat can be chopped down. They have already resulted in a massive 13-fold increase in approvals and ***land*** clearing.

We already know that koala habitat is badly fragmented, making it even harder for the species to migrate and survive. New South Wales is leaving no stone unturned in making this even worse. They recently fast tracked the approval of the Brandy Hill quarry expansion, knowing full well that it will affect koalas and other endangered species such as the grey-headed flying fox. We know the Port Stephens koalas are at high risk of local extinction, yet they gave a green light for their destruction.

If you come further south, the Campbelltown local government area in south-western Sydney is unique as it supports a growing and chlamydia-free koala population in the Sydney Basin. But does the Liberal-National government give a damn? Of course they don't. Communities in south-west Sydney who care about these koalas are fighting the Lendlease Mount Gilead development in the Campbelltown LGA, which will destroy the current transit points of koalas between the Georges River and the Nepean River, and make it near impossible for koalas to travel between these river corridors.

The federal government has not lifted a finger to stop the destruction of koala habitat. In fact, you facilitated it. We know that only 10 per cent of the koala habitat cleared in New South Wales and Queensland between 2012 and 2017 was assessed by the federal government, despite national environmental laws requiring the protection of threatened species. Habitat clearing was again and again approved by states, and developers were not referred for assessment to any level of government. Surely these facts point to better and stronger oversight by the federal government, but, in the parallel universe that the Liberals and Nationals live in, they are doing the exact opposite. You want to hand over even more power to states. Your solution to this reckless destruction of the environment is the streamlining environmental approvals bill, which is much better described as the let's-kill-the-koalas-quickly bill. You want a one-stop-shop. You just want to fast track ***land*** clearing. You just want to fast track extinctions. I hope that the opposition and the crossbenchers care about these national treasures enough to support Senator Hanson-Young's bill to stop this major threat of ***land*** clearing and fragmentation facing koalas by putting a moratorium on clearing koala habitat. We will not be giving up our fight to save the planet or for all creatures, big and small, that call it home. I commend the bill to the Senate.

I rise to speak to the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021. The effect of the bill, if passed, is to introduce a moratorium on the clearing of koala habitat. The bill, in essence, prevents the minister from approving any action under the Environment Protection and Biodiversity Conversation Act that consists of or involves clearing of koala habitat. The bill also ***removes*** the exemption for regional ***forest*** agreements from the requirements of the act where they will have or are likely to have a significant impact on koalas. The bill seeks to do this technically, by adding, at the end of section 139, the words:

… the Minister must not approve an action consisting of or involving the clearing of koala habitat.

The bill further seeks to insert additional definitions, for 'koala', 'koala habitat' and 'koala habitat tree', and also expands on the definition or sheds some light on the application of the words 'significant impact'. 'Koala habitat'—and here I'm paraphrasing—means 'an area of vegetation in which koalas live and includes a koala habitat tree, an area of vegetation that consists primarily of koala habitat trees and which is reasonably suitable for sustaining koalas, and partially and completely cleared areas used by koalas to cross from an area mentioned in the previous sections of this definition'. 'Significant impact' includes:

… any substantial loss of genetic diversity, or any loss of connectivity or available koala habitat, of any population of koalas such that the population is placed at greater risk of extinction.

The effect of the amendments, if passed, create in me some reservations about efficacy. Whilst I acknowledge the strong passion of the mover and the mover's party, and in many ways I myself share many of those passions for saving and also increasing and renewing these habitats, I think the bill in its current form allows for the exercise of sufficient discretion by the minister; therefore, the moratorium does not really add anything to the application of the current act.

When I was reviewing the amendments I was reminded of an American writer whose political persuasions I don't actually follow. He said: 'The value of our ***forests*** and their spirits must never be forgotten, because under the layers of law and memory it is effectively the spirit of ourselves. We can't deny it and it must lead us into action.' As I said, I share many of the passions of the mover. But the government has done much for koalas in its funding, both pre the bushfires and post the bushfires. It has also initiated the Samuel review, which is still formulating its response to those recommendations. That government response must be based on proper consultation, so I think it's a little unfair of some honourable senators to describe us as vandals. I know many on the coalition benches who are as passionate as I am for the natural environment.

This weekend, in fact, I was in the Adelaide Hills, many parts of which have been devastated by bushfires, volunteering for a veterans not-for-profit, Disaster Relief Australia, which was clearing dead wood to allow for regeneration and also for the planting by farmers of the natural environment. As I said, it is unfair to describe modern farmers as environmental vandals. In fact, most of the custodians of the ***land*** and all of the farmers that I've worked with in this organisation are totally committed to regeneration. They need to have volunteers on their properties so that they can get that process underway as soon as possible, as well as reduce the fire risk of the dead wood.

I want to turn to the operating provisions of the existing act. As I've indicated, it's my view that the act already affords extremely strong protections for threatened species, particularly koalas, as they are listed in Queensland, New South Wales and the ACT, for particular protections, as being environmentally significant. Senator Fawcett has already set out, for the benefit of honourable senators, the circumstances in South Australia, my own state, and the fact that the inability of koalas to regulate their breeding has caused environmental issues, particularly on Kangaroo Island.

There are a number of processes under the existing act where applications need to be made for development. There are a number of provisions that restrict what the minister can and cannot do, but, in essence, the minister has discretion, based on scientific advice, either to protect or to approve economically sustainable development. In essence, this bill ***removes*** any discretion, which, I think, has been described by my Labor friends as a blunt instrument, and I would share that view.

Pre the bushfires, the government committed considerable funds to a variety of projects to support the habitat of koalas. More particularly, in early 2020, after the bushfires, the government took urgent action by providing an initial $50 million recovery package to support emergency interventions and recovery actions for the immediate survival of affected native animals and plants. That included up to $3 million for Taronga Zoo and other zoos for the treatment of injured wildlife and the establishment of insurance populations. In relation to koalas, funding was also provided for radio-tracking in burnt and unburnt landscapes to assess the impacts of rescue and rehabilitation on reintroduced koalas. More than $1 million in Commonwealth and New South Wales government combined funding was provided to assess the genetic value of koala populations. Further funds have been provided to directly support koala conservation and recovery efforts.

It's my view that the government, in an administrative sense, has a substantial commitment to the koala in its habitat. No-one on this side is arguing that it's not an iconic animal and one we wish to preserve—we wish to grow its habitat—but communities need to make decisions for themselves in relation to their development, and that development needs to be sensibly checked. That is why the Morrison government initiated an independent review of the act. Professor Samuel has made a variety of recommendations. The government has said, on record, that it's committed to a sensible, staged pathway for change in the reform process. Therefore, I reject the criticism that the Morrison government is not committed to the environment. Indeed, what government could be criticised if it has a full review of the act?

Whilst the review of the act has occurred—and the response is coming—it underpins my reservations for the technical provisions of the amendment bill that is currently before us. I've personally never been one who believes in the unnecessary restriction of a minister's discretion. Whilst the crossbenchers can be particularly critical of the actual decisions, ministerial discretion is just that—a discretion. I think it is unwise to ***remove*** a large chunk of the minister's discretion when, in essence, it can only be exercised within a very limited framework under the existing act.

Therefore, honourable members, can I ask you to reflect on this bill and also reflect on its shortcomings. Can I say that many on this side of the benches have a deep and abiding commitment to the environment and that we reject the description of 'vandals'.

**Load-Date:** February 23, 2021

**End of Document**



[***Green electricity does not pay off; Green activists and politicians claim that renewables are the cheapest source of energy. But why is there a need for compulsory regulation and subsidies? The really smart alternatives are being pushed aside***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61MW-F341-JBK9-23R5-00000-00&context=1516831)

Die Welt (English)

December 30, 2020 Wednesday

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**Section:** ECONOMY; Pg. 12; No. 304

**Length:** 2506 words

**Byline:** Björn Lomborg

**Body**

The German government has set a ***target*** of achieving greenhouse gas neutrality by 2050. Since Germany wants to abandon the use of nuclear energy, this essentially means that the nation will have to get almost all of its energy from renewable sources.

Such a goal is technically feasible, as many proponents like to point out. But just because something is technically feasible doesn't mean it's cheap, of course. For example, it would be technically feasible to offer all 83 million people in Germany a trip to the "International Space Station." But ruinously expensive. Feasibility means little without considering cost.

Green activists and politicians incessantly claim that renewable energy is cheaper than any other energy source and is taking over the world. This of course begs the question of why we still need to create forced regulations and spend hundreds of billions in subsidies to make this happen. Of course, if renewables were cheaper and capable of taking over the world right now, we wouldn't need any additional policies.

The easiest way to see this is when we talk about electricity. If we only calculate the cost of producing an additional kilowatt hour (kWh) of electricity, solar and wind power are often the cheapest. But this electricity is only available irregularly - when the wind blows or on cloudless days. Therefore, the power grid has to back up most of its electricity production with fossil fuels or batteries. Both of these add significantly to the real cost of renewables.

A surprisingly candid EU analysis from this year shows this clearly. It finds that from 2010 to 2018, the total capacity of fossil fuel power generation in the EU fell only slightly - by one percent. But renewable capacity increased by a staggering 72 percent over the same period. This, of course, is exactly the point that activists and politicians are boasting about: renewables are becoming cheaper and cheaper, supplying electricity to more and more parts of the EU.

But the analysis then looks at what would have happened if there had been no subsidies. It concludes that the phenomenal rise of renewables in the EU "would not have happened ". This analysis assumes that both renewable and fossil fuel subsidies would be removed. Clearly, ***removing*** seven billion euros in fossil fuel subsidies (such as tax incentives and price supports) would result in renewables doing even better.

But subsidies for renewables are much higher, at 92 billion euros a year. Now, some renewables would still have been bought in the early years. That's because the first, low-cost solar panels usually provide valuable electricity at midday, when consumption is highest, replacing what is then very expensive electricity generation. But overall, without subsidies, the EU would have bought 86 percent less wind and 89 percent less solar power.

Even from 2012, when renewables became cheaper, the analysis shows that the total amount of renewables in the EU would have remained the same. The reason: it simply wasn't economical to produce even more solar and wind power if you also had to pay for additional backup power. When all costs are taken into account, renewables are not cheaper and would not have increased at all in the EU since 2012 without subsidies.

A new study on wind energy in Europe and the US, published in November, makes it clear that renewables are still not cost-effective, even though they are getting cheaper. The study analyzed wind energy prices between 2008 and 2010, and 2014 and 2016, and found that larger and cheaper wind turbines have caused their average electricity generation costs to drop by 33 percent. That's great. Unfortunately, the value of the energy produced fell even faster, 43 percent. That's partly because wind turbines generate their electricity all at the same time, making it less and less valuable.

The net effect is that wind energy became cheaper, but actually less attractive because a larger portion of the cost of electricity must be subsidized. The study showed that between 2008 and 2010, new wind energy brought in an average of 85 percent of its annual cost through the sale of its electricity in all the European countries studied. So it needed a relatively modest 15 percent in subsidies. Optimists would no doubt have noted at the time that wind energy could become competitive if only wind turbines were a little more effective. That did indeed happen.

But at the same time, as electricity production declined in value, turbines were only able to recover 65 percent of their costs at the end of the period. Now 35 percent of the cost had to be covered by subsidies. Even though there is no complete data for German wind power, the cost of wind power in this country fell. But not nearly enough to cover the full cost. At the end of the period, the average wind turbine sold its electricity at a price that covered less than 46 percent of its costs. Consumers had to pay for the missing 54 percent through large subsidies, shows a new study published in the scientific journal Applied Energy.

So, no, renewables aren't ready to take over the world. They still command market prices below their costs, still need subsidies, still need regulatory help. But surely in the future green energy will become even cheaper and take over the world? There's a bit of truth and a lot of misdirection in this oft-stated hope. The problem is that as we produce more and more solar energy, almost all of it is fed into the grid at the same time during the cloudless midday hours. That makes it worth less and less. EU studies show that electricity from solar plants in Spain and Italy will only fetch half the average electricity price in 2050.

This is because electricity will no longer be produced when demand is greatest. In Germany, we are already seeing a similar trend. In 2014, solar plants earned back the average cost of electricity. But by 2020, their yield has dropped by 20 percent. The same is true for onshore wind power, which always arrives at the same windy times. The price will fall to 83 percent of today's level in Germany by 2050, according to the EU report. On January 1, 2018, strong winds and low electricity demand ensured that Germany briefly covered all of its electricity consumption from renewables for the first time. This moment was universally cheered.

But it also showed the problematic downside of renewables. Prices predictably went into negative territory because all the electricity produced had no marginal cost. A recent study shows that because of this, the attractiveness of wind and solar power could fall even further, even if their prices continue to fall. That's because these new renewables produce electricity on windy nights and sunny days - at times when it's least needed. So prices will fall even more frequently, and profits will be even lower.

In fact, several studies show that we will likely have to continue subsidizing solar and wind power up to 100 percent because the value of the electricity produced is falling faster than the necessary cost. A new study shows that renewable energy in Germany will have to be subsidized up to 100 percent as costs rise. And according to the study's findings, more subsidies will be needed after that "to prevent fossil fuels from coming back on the market."

And subsidies aren't the only cost. We also have to pay more for electricity when the wind isn't blowing and the sun isn't shining. That's partly because we'll use conventional power generation less often, which means a higher cost per kilowatt-hour. In part, costs will rise because we will increasingly need to rely on expensive batteries and other storage options. Studies show that this will increase the cost per kWh over time: A new peer-reviewed study shows that the total cost per kWh could nearly double long before we get 100 percent of our electricity from renewables.

So the claim that renewable energy is cheaper than fossil fuels is particularly misleading. Sure, solar power is cheaper on clear days, but it's useless at all other times. To actually produce electricity that is available 24/7 requires a much higher system cost. Over the past century, electricity prices have fallen dramatically due to advances in efficiency. But since the turn of the millennium, prices for EU households have doubled. In 2018, the total cost of electricity in the EU was around €250 billion. And on top of that, there were €92 billion in subsidies for renewable energy.

The fact is that activists and politicians are not only pushing for restrictive climate policies now, but also stressing that they will need to be regulated and subsidized for decades to come. This is blatant evidence that renewables are not cheaper overall and will remain dependent on heavy subsidies well into the future. So far, we've only talked about the easiest and least expensive challenge: getting 100 percent of electricity from renewables.

But this accounts for less than a third of Germany's ***emissions***. The other two-thirds from industry, heating, transport and ***agriculture*** are even more difficult to eliminate. In Germany, almost no oil is used in the electricity industry anymore. But overall, oil dominates total final energy consumption - it accounts for 41 percent in total German energy and 93 percent in transport. To reduce this share, all cars would have to become electric cars. That will be difficult and costly, partly because new electricity is more expensive. But it also means converting all trucks to electricity, which will be twice as hard.

Not only will we need more electricity to do that, but it will also disrupt transportation overall. Because the long charging times will make every truck much less productive. And we need to change so many other factors. For example, we need new ways to make fertilizer, cement, and for other industrial processes. We need to reduce livestock and eat less meat, install millions of heat pumps, make district heating CO2 free. And that's just the beginning of a long list. When most people hear that 17 percent of the EU's energy comes from renewables, they think of solar and wind. But in fact, two-thirds comes from the oldest fuel: wood.

The EU takes the fictitious position that biomass like wood pellets produces no CO2 at all. The truth is that wood actually emits more CO2 per kilowatt hour than coal, mainly because its combustion is less efficient. The EU position assumes that felled ***forests*** are replanted and so all the CO2 burned is reabsorbed. But ***forests*** are often not replaced. In this case, CO2 ***emissions*** are permanent and large, and even under optimal conditions, wood burned today will not become CO2 neutral until near or after the end of the century. Much of today's biomass comes from American ***forests***, leading to "biodiversity loss, deforestation and ***forest*** degradation," according to an EU report.

As the EU aims to move to 50 percent renewable energy by 2040, it expects nearly half of that energy to come from biomass. Much of it is grown to be burned. That takes up valuable farmland, drives up food prices and leads to more ***forest*** clearing elsewhere. To make Germany carbon-neutral in 2050, Agora has made a bold proposal: in just ten years, Germans should use less energy, get out of coal, bike and walk more, reduce fertilizer on farms, renovate old buildings, and make 80 percent of new cars electric.

In just ten years, Germany is supposed to return to the ***emissions*** levels of 1902 (and 1945 to 1946). In the following two decades, it is also supposed to reduce its ***emissions*** more than they increased in the 70 years from 1900 to 1970. Not only will that be insanely expensive, but everyone would have to make significant lifestyle cuts on top of that. No one really seems to want to find out how expensive this will actually be. Agora doesn't calculate the costs. Instead, they handily suggest that the cost would be equivalent to the additional investment costs during the economic miracle of the 1950s and 1960s. Those investment costs were five to seven percentage points of gross domestic product (GDP) higher than they are today. (Such costs tend to be on the low side of real economic models)

In Germany, public spending on health care is 7.2 percent of GDP. Spending on education and environmental protection is less than five percent. Add in all the spending on police, courts, and prisons, and the cost is still only 6.4 percent of GDP. Instead of going to zero spending, Germany could literally double spending on health care or education, environmental protection and public order.

In the coming year, costs of five percent of GDP would be equivalent to more than 160 billion euros, and by 2050 these annual costs would reach 250 billion euros. Over the next 20 years, they would add up to more than 6000 billion. But even if Germany actually succeeded in reducing its ***emissions*** to zero by 2050, that reduction would only lower global temperatures by 0.019 degrees Celsius in 2100 in the main UN climate model. That's an unmeasurable fifth of a tenth of a degree by the end of the century.

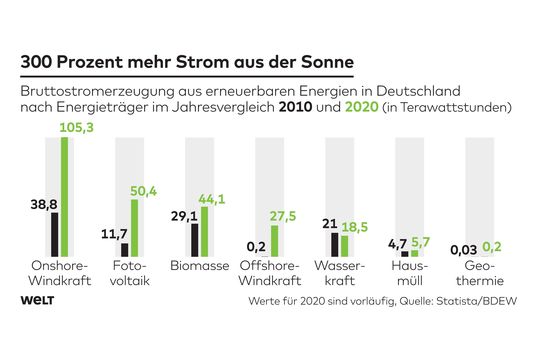
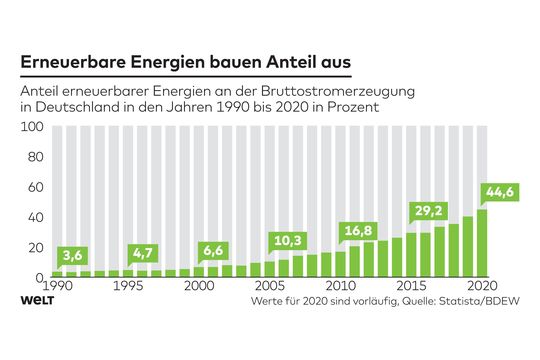
That's why Jim Hansen, the climate scientist who originally brought global warming to the world's attention in 1988 and Al Gore's longtime climate advisor, warns against renewable energy. He says, "Assuming that renewable energy will give us a quick exit from fossil fuels in the U.S., China, India, or the entire world is almost the equivalent of believing in the Easter Bunny and the Tooth Fairy. "

Cheap green energy is good for everyone - both the economy and the climate. Unfortunately, renewables aren't there yet. Most of the renewables being sold to us now or in the next few decades will be phenomenally expensive while doing pretty little to improve the climate. And their high cost will undermine future willingness to continue making huge sacrifices for insignificant results.

So forcing expensive renewables on the increasingly skeptical people of the rich world while the rest of the world like China, India, Africa, and Latin America simply try to get access to more reliable and cheaper energy is not the way forward. Instead, we need to invest in research and development to improve the price of new green energy. This applies to renewables as well as batteries, fusion, nuclear fission and the many other promising technologies that exist.

In this way we can actually create a world where green energy becomes the cheaper option. Instead of ruinous costs for the Germans and a few other well-meaning countries in the western world, this could actually get everyone to reduce CO2 ***emissions*** while strengthening their economies.

Dr. Björn Lomborg is President of the Copenhagen Consensus Center and Visiting Fellow at the Hoover Institution, Stanford University. His new book is "False Alarm: How Climate Change Panic Costs Us Trillions, Hurts the Poor, and Fails to Fix the Planet." This article is part of a six-part series Lomborg is writing exclusively for WELT on German energy, climate, and environmental policy. Translated from the English by Andrea Böll.



Document original

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**End of Document**



[***Council of the European Union: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulation (EU) No 1305/2013 of the European Parliament and of the Council ST 10439 2020 INIT03-09-2020***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60ST-X421-F0YC-N3T8-00000-00&context=1516831)

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**Body**

Brussels: Council of the European Union has issued the following document:

10439/20 LP/JU/TLU/ik 1LIFE.1 ENCouncil of theEuropean UnionBrussels, 3 September 2020(OR. en)10439/20AGRI 239AGRILEG 89AGRIFIN 66AGRISTR 60AGRIORG 58CODEC 759CADREFIN 213Interinstitutional File:2018/0216(COD)NOTEFrom: PresidencyTo: Special Committee on AgricultureNo. Cion doc.: 9645/18 + COR 1 + ADD 1Subject: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT ANDOF THE COUNCIL establishing rules on support for strategic plans to bedrawn up by Member States under the Common ***agricultural*** policy (CAPStrategic Plans) and financed by the European ***Agricultural*** GuaranteeFund (EAGF) and by the European ***Agricultural*** Fund for RuralDevelopment (EAFRD) and repealing Regulation (EU) No 1305/2013 of theEuropean Parliament and of the Council and Regulation (EU) No1307/2013 of the European Parliament and of the Council- Preparation of the Council debateWith a view to the meeting of the Special Committee on ***Agriculture*** on 7 September 2020,delegations will find in the Annex a Presidency background note on the green ambition of the futureCommon ***Agricultural*** Policy, including drafting suggestions.10439/20 LP/JU/TLU/ik 2ANNEX LIFE.1 ENANNEXGreen ambitions of the CAP1. Since the beginning of the CAP negotiations, Member States have repeatedly confirmed their ambition to increase the environmental and climate contribution of the CAP. However, many Member States stated that this higher environmental and climate ambition could only be reached with a stable budget for the CAP. The decision of the European Council of 21 July 2020 thus laid the foundations for the future CAP budget and at the same time reinforced the commitment to sustainable ***agriculture***. Moreover, the European Council´s decision grants flexibility between the two pillars of the CAP by allowing Member States to shift up to 42% of the funds from the first pillar to the second pillar, thereof 15% solelyfor environmental and climate purposes.2. From the Presidency's point of view the Council should now try to achieve agreement on the CAP package, which reflects the broadly shared commitment to a higher environmental and climate ambition. Therefore, the Presidency proposes the following package:a. Eco-schemes. The Presidency sees strong eco-schemes as a key instrument to increase the environmental and climate ambition of the CAP.In the discussions in the ***Agriculture*** Council on 20 July 2020, a mixed picture arose with regard to the mandatory nature of the eco-schemes, as well as with regard to a minimum budget for eco-schemes. Both supportive and critical Member States expressed strong concerns that unspent amounts could be lost if the realised expenditure did not match the minimum budget.From the Presidency's point of view, it is possible introduce a minimum budget for eco-schemes, while at the same time providing sufficient financial flexibility for Member States to avoid losses of unspent funds.10439/20 LP/JU/TLU/ik 3ANNEX LIFE.1 ENThe Presidency therefore proposes, that in the first two years (2023 and 2024) eco-scheme funds, which could unexpectedly not be spent due to an insufficient take-up and where the possibilities to allocate the funds by varying the unit amount for the eco-schemes are exhausted, can be used for other direct payment interventions. This pilot phase would give Member States additional flexibility. In subsequent years, sufficient experience should have been gained with regard to the acceptance of eco-schemes, so that interventions can be programmed more precisely and it can be ensured (where appropriate by revising the CAP strategic plan) that the realised expenditure for eco-schemes meets the minimum budget.From the Presidency's perspective, two other issues are important to allow for sufficient flexibility:Firstly, there must be sufficient room for manoeuvre in the variation of the unit amounts according to Article 89 of the Strategic Plan Regulation. The Presidency has presented a respective drafting proposal in the Council working group on 3rd September. The aim is to give Member States the possibility to explicitly take into account the objective of avoiding unspent funds when determining the possible adjustment of the unit amounts.Presidency proposal for eco-schemes• Mandatory introduction of eco-schemes for Member States,• Introduction of a minimum budget for eco-schemes,• Financial flexibility, especially in an introductory phaseThe Presidency's drafting proposals Articles 28, 81 and 86 can be found in Annex I.10439/20 LP/JU/TLU/ik 4ANNEX LIFE.1 ENSecondly, the financial flexibility provided by adjusting the unit amounts also depends on whether the payments under the eco-schemes are granted as additional income support (Article 28, (6a)), or as a compensation for cost and foregone income (Articles 28 (6 (b)). Granting the payments under Article 28 (6a) offers considerably more flexibility. From the Presidency´s point of view, further discussions based on practical examples that show in which cases and under what conditions payments can be granted under Article 28 (6a) might be useful.b. Conditionality. In order to achieve the desired higher environmental performance, the Presidency considers that an ambitious conditionality is necessary.In the ***Agriculture*** Council meeting on 20 July 2020, a majority of Member States supported the introduction of a uniform minimum share of productive/non-productive areas and features across the EU into the provisions of the conditionality, namely concerning GAEC 9. In the Presidency's view, the specification of such a minimum share must reflect on the one hand the higher environmental and climate ambitions, but on the other hand the different situation within Member States.Consequently, the Presidency proposes that the minimum percentage should be increased from 5% (as in the current greening) to [x]% with reference to arable ***land***.As it was strongly required by many Member States, it should be possible to count certain productive uses against the minimum share. For catch crops (and only for those), a weighting factor of 0.3 is proposed. For those Member States who wish to count exclusively non-productive areas and features against the minimum share, a lower minimum share (3%) could be envisaged.10439/20 LP/JU/TLU/ik 5ANNEX LIFE.1 ENThe majority of Member States support that, with a view to the higher level of environmental ambition, small farmers should also be subject to the rules of the conditionality. In order to reflect the specific nature of small holdings, the Council Working Group is currently discussing details regarding specific provisions in the context of controls and sanctions.c. Environmental and climate provisions in the second pillar: The Presidency proposes to maintain the compromise reached under the Croatian Presidency regarding the payments for areas with natural constraints. The compromise reintroduces the possibility to count the payments for areas with natural contraints against the 30% ring fencing for environmental and climate objectives in the second pillar.Presidency proposal for GAEC 9 and small farmersGAEC 9:• Introduction of an EU-wide uniform minimum share of non-productive areas and features on [x] % of arable ***land***,• possibility to count certain productive uses (catch crops and N-fixing crops without the use of plant protection products) against the minimum percentage (with a weighting factor of 0.3 for catch crops),• reduction to 3% of arable ***land*** for Member States wishing to take into account purely non-productive areas and features.Small farmers: Inclusion of small farmers into the conditionality with special arrangements for controls and sanctions.The Presidency's amendments to Annex III to the Strategic Plan Regulation can be found in Annex I to this paper.10439/20 LP/JU/TLU/ik 6ANNEX LIFE.1 EN3. Many Member States expressed deep concerns and questions about the necessary legal certainty concerning the process of approval of Member States’ strategic plans by the Commission. The Presidency has therefore inserted a corresponding legal clarification in Article 106 of the Strategic Plan Regulation (see Annex I).4. The Presidency considers the NDM as a central element of the new CAP Reform. In particular, the system of indicators needs to be clear and implementable to guarantee its success. At the same time, the Commission needs enough information and data to carry out the performance review and monitor the implementation of the CAP.Member States need certainty concerning the methodology and calculation of indicators to start with the interventions design, ***target*** setting and IT system development as soon as possible. In this light, the Presidency welcomes the fact that the Commission reopened discussions among experts for monitoring and evaluation in the relevant Expert Group and will hold a further detailed discussion on the indicator fiches at the beginning of October.In its drafting suggestion on the proposal for a CAP Strategic Plans Regulation (8409/20 REV1 + ADD1), the Croatian Presidency, based on the suggestions by several delegations, simplified the system of indicators, reduced administrative burden and extended Member States’ flexibility for designing their intervention logic.Building on this work and considering delegations' and the Commission's comments, the German Presidency identified the following issues for further discussion:i) The coverage of natural resources by one or more indicators (R.18)Several Member States have mentioned this question. Separate indicators could better reflect the importance and high ambition in the concerned areas. In order to address the contribution of the CAP to certain environmental and climate objectives, the Presidency invites delegations to give their view on splitting the result indicator R.18 10439/20 LP/JU/TLU/ik 7ANNEX LIFE.1 ENii) The inclusion of monitoring indicatorsThe monitoring indicators introduced by the Croatian Presidency are the numerators of result indicators. Some Member States felt this additional definition of a new indicator group to cause complication without adding adequate value. As methods for the calculation of indicators are laid down in the methodological details (Fiche) delegations are invited to consider the ***removal*** of these monitoring indicators.iii) A gap between indicator titles and the methodological details of the different indicators (Fiches)Furthermore, in terms of clarification the annex comprises several amendments in order to align titles of indicators to methodological details for the different indicators as laid down in the relevant Fiches.Against this background, the Presidency has prepared specific drafting suggestions (see Annex II) on which delegations are invited to share their views with a view to advancing work as much as possible, pending the work to be done in the relevant Commission Expert group.10439/20 LP/JU/TLU/ik 8ANNEX LIFE.1 ENAnnex I\*Compared to the Commission's initial proposal, added text is marked in bold and underlined and strikethrough is used for deleted text. Changes compared to the last consolidated text version of the HR Presidency are marked in yellow.1. Amendment of GAEC 9 • Minimum share of ***agricultural*** area [x]% of arable ***land*** devoted to: (i) non-productive areas and features or(ii) catch crops or nitrogen fixing crops, cultivated without plant protection products For Member States using only non-productive areas and features the minimum share is 3%. For catch crops a weighting factor of 0.3 is to be used.• Retention of landscape features• Ban on cutting hedges and trees during the bird breeding and rearing season• As an option, measures for avoiding invasive plant species2. Amendment of Article 28 (Schemes for the climate and the environment) 1. Member States {shall} provide support for voluntary schemes for the climate and the environment ('eco-schemes') under the conditions set out in this Article and as further specified in their CAP Strategic Plans.\* Due to the short notice, the Council Legal Service did not yet have the opportunity to scrutinise the drafting suggestions.10439/20 LP/JU/TLU/ik 9ANNEX LIFE.1 EN2. Member States {shall} support under this type of interventionArticle genuine farmers or groups of farmers who make commitments to observe, on eligible hectares, ***agricultural*** practices beneficial for the climate and the environment. If Member States decide to apply point (b) of paragraph 6 of this Article, commitments may be made either on eligible hectares or livestock units.3. Member States shall establish the list of ***agricultural*** practices beneficial for the climate and the environment. Those practices shall be designed to meet one or more of the specific environmental- and climate-related objectives laid down in points (d), (e) and (f) of Article 6, and may also contribute to objectives (h) and (i) of the same Article.4. Those practices shall be designed to meet one or more of the specific environmental- and climate-related objectives laid down in points (d), (e) and (f) of Article 6(1).5. Under this type of interventions Article, Member States shall only provide payments covering commitments which:(a) go beyond the relevant statutory management requirements and GAEC standards of good ***agricultural*** and environmental condition established under Section 2 of Chapter I of this Title;(b) go beyond the relevant minimum requirements for the use of fertilisers and plant protection products, animal welfare, as well as other relevant mandatory requirements established by national and Union law;(c) go beyond the conditions established for the maintenance of the ***agricultural*** area in accordance with point (a) of Article 4(1);(d) are different from commitments in respect of which payments are granted under Article 65.10439/20 LP/JU/TLU/ik 10ANNEX LIFE.1 EN6. Support for a particular eco-scheme shall take the form of an annual payment per for all eligible hectares or for the eligible hectares covered by the eco-schemes. and it Payments shall be granted as either:(a) payments additional to the basic income support as set out in Subsection 2 of this Section\*; or(b) payments compensating beneficiaries farmers or groups of farmers for all or part of the additional costs incurred and income foregone as a result of the commitments as set pursuant to made, which shall be calculated in accordance with Article 6576.Payments granted in accordance with point (b) of this paragraph may also take the form of an annual payment for the livestock units covered by the eco-schemes and may cover transaction costs.7. Member States shall ensure that interventions under this Article are consistent with those granted under Article 65.8. The Commission is empowered to adopt delegated acts in accordance with Article 138 supplementing this Regulation with further rules on the eco-schemes.3. Amendment of Article 81 (1) subparagraph 3: (financial allocations for types of interventions in the form of direct payments):For the purpose of Article 86(5), (6a) and (6b), the financial allocation of a Member State referred to in the first subparagraph after deduction of the amounts set out in [Annex VI] and before any transfers according to Article 15 is set out in [Annex VII].\* To be considered for a recital: 'incentivising and remunerating the provision of ecosystem services through ***agricultural*** practices beneficial to the environment and climate'.10439/20 LP/JU/TLU/ik 11ANNEX LIFE.1 EN4. Amendment of Article 86 (minimum and maximum financial allocations) – new paragraphs 6a and 6b(6a) Member States shall set out in their CAP Strategic Plan for the calendar years 2023 and 2024 an indicative financial allocation for schemes for the climate and the environment referred to in Subsection 4 of Section 2 of Chapter II of Title III of at least [x]% of the amounts set out in Annex VII.The indicative financial allocation shall not prevent Member States from using funds from this minimum financial allocation according to the first subparagraph as funds for other interventions in accordance with Article 88(3), where this is necessary to avoid funds being unused under the condition that all possibilities to use the respective funds for schemes for the climate and environment referred to in Subsection 4 of Section 2 of Chapter II of Title III have been exhausted.(6b) At least [x]% of the amounts set out in Annex VII for the calendar years 2025, 2026 and 2027 shall be reserved for schemes for the climate and the environment referred to in Subsection 4 of Section 2 of Chapter II of Title III.5. Amendment of Article 106 (Approval of the CAP Strategic Plan)1. Each Member State shall submit to the Commission a proposal for a CAP Strategic Plan, with the containingent the information referred to in Article 95 no later than 1 January 2020x.10439/20 LP/JU/TLU/ik 12ANNEX LIFE.1 EN2. The Commission shall assess the proposed CAP Strategic Plans on the basis of as regards the its completeness of the plans, the its consistency and coherence with the general principles of Union law, with this Regulation and the provisions adopted pursuant to it and with the Horizontal Regulation (EU) [HzR], their its effective contribution to the specific objectives set out in Article 6(1), the and its impact on the proper functioning of the internal market and distortion of competition, the level of administrative burden on beneficiaries and administration. The assessment shall address, in particular, the adequacy of the strategy of the CAP Strategic Plan, the corresponding specific objectives, ***targets***, interventions and the allocation of budgetary resources to meet the specific CAP Strategic Plan objectives through the proposed set of interventions on the basis of the SWOT analysis and the ex-ante evaluation. The assessment shall exclusively be based on acts with are legally binding on Member States.[…]10439/20 LP/JU/TLU/ik 13ANNEX LIFE.1 ENAnnex II (Drafting suggestions related to indicators)\*Compared to the Commission's initial proposal, added text is marked in bold and underlined and strikethrough is used for deleted text. Changes compared to the last consolidated text version of the HR Presidency are marked in yellow.Drafting suggestions in the legal text: Article Text as proposed by HRV Presidency with proposed changes ExplanationArt. 3 Definitions(i) '***targets***' means pre-agreedestablished values, set by Member States in the framework of their intervention strategies referred to in in point (b) of Article 95(1), to be achieved at the end of the period in relation to the result indicators used for performance review included under a specific objective;small typoArt. 7 Indicators 1a. In addition to the indicators listed in Annex I, Member States shall use monitoring indicators relevant for their CAP Strategic Plans which are necessary for the monitoring of implementation and for calculating of result indicators as referred to in Article 120.An additional definition of a new indicator group may be confusing without creating a significant added-value.As the methods for the calculation of indicators are laid down in the methodological details (indicator fiches), we propose to ***remove*** the additional Monitoring indicators.1b. Result indicators used for performance review, referred to in point (b) of paragraph 1, shall include any applicable at least the common result indicators set out in Annex XII. They InThe wording of Paragraph (1b) should be in line with Art. 99 (da).Clarification.\* Due to the short notice, the Council Legal Service did not yet have the opportunity to scrutinise the drafting suggestions.10439/20 LP/JU/TLU/ik 14ANNEX LIFE.1 ENaddition, Member States may also choose to include, for the same purpose, any other relevant result indicators as set out in Annex I or any other CAP Strategic Plan specific result indicators, as determined by the Member State concerned.Art. 91 CAP Strategic Plans[…]Based on the SWOT analysis referred to in Article 103(2) and an assessment of needs referred to in Article 96, Member States shall establish in the CAP Strategic Plans an intervention strategy as referred to in Article 97 in which relevant quantitative ***targets*** and milestones shall be set to achieve the relevant specific objectives set out to in Article 6. The ***targets*** shall be defined set using at least a the common set of result indicators set out in Annex XII, when appropriate for the intervention in the CAP Strategic Plan. In addition, Member States may choose to include, for the same purpose, any other relevant result indicators as set out in Annex I or any other CAP Strategic Plan specific result indicators, as determined by the Member State concerned.[…]It is necessary to clarify that all indicators in Annex XII do not need ***targets*** if there is no relevant intervention in the strategic plan that is connected to the indicator.To ensure consistency with Article 3, 7, 97, 99.Art. 120 Implementing powers for the performance frameworkThe Commission shall adopt implementing acts on the content of the performance framework. Such acts shall include the list of context indicators, other indicators needed for the appropriate monitoring and evaluation ofSee comment on Art. 710439/20 LP/JU/TLU/ik 15ANNEX LIFE.1 ENthe policy, the list of monitoring indicators, the methods for the calculation of indicators and the necessary provisions to guarantee accuracy and reliability of the data collected by Member States. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 139(2).Art. 121a Biennial performance review2. Where the reported value of one or more result indicators that are part of the performance review as set in point (da) of Article 99 reveals a shortfall of more than 45% from the respective milestone for financial year 202{3}, 40% for financial year 202{5} and 35% for financial year 202{7}, Member States shall submit justification for this deviation. Following the assessment of the justifications submitted, where necessary, the Commission may ask the Member State concerned to submit an action plan in accordance with Article 39(1) of Regulation (EU) [HzR], describing the intended remedial actions and the expected timeframe.To clarify that not all result indicators are included in the performance review.10439/20 LP/JU/TLU/ik 16ANNEX LIFE.1 ENDrafting suggestions Annex I:Compared to the last consolidated text version of the HR Presidency, added text is marked in bold and underlined and strikethrough is used for deleted text. All changes compared to that text are highlighted in yellow.Impact-Indicators Impact indicators as proposed by HR Presidency with proposed changes ExplanationI.16 Reducing nutrient leakage: Nitrates in ground waterSmall typoI.20 Enhancing provision of ecosystem services: Share of Utilised ***Agricultural*** Area (UAA) covered with landscape featuresWrite out of abbreviationI.27 Sustainable use of pesticides: Risks and impacts of pesticides\*\*\*\* „Directive on sustainable use of pesticides“ is not necessary and should be deletedResult-Indicators Result indicators as proposed by HR Presidency with proposed changes ExplanationR.2 Linking advice and knowledge systems: Number of advisors receiving support to be integrated within ***Agricultural*** Knowledge and Innovation Systems (AKIS)The purpose of the proposal is to clarify that only advisors that have received CAP support should be included in the indicator. It is only through the dedicated interventions that advisors will become more integrated within AKIS. R.17 Afforested ***land***: Share of ***land*** cover Area supported for afforestation (including agroforestry) and reforestationThe physical area seems more useful (than a percentage around 0, as the denominator is very large). It also relates more directly to national woodland creation ***targets*** which are usually expressed in additional hectares planted, so improves the clarity of contribution of CAP to other policies. No additional admin burden as the absolute figure is needed for the “share” anyway. R.18 Efficient resource management Improving soils: Share of Utilised ***Agricultural*** Area (UAA) under management supported commitments beneficial contributing to efficient management of natural resources such as water, for soil and air managementA merged indicator R.18 including water, soil and air is not supported by all Member States. Separate indicators could better reflect the importance and high ambitions in the concerned areas. R.19 Improving air quality: Share of UtilisedSee R.1810439/20 LP/JU/TLU/ik 17ANNEX LIFE.1 ENAgricultural Area (UAA) under supported commitments to reduce ammonia ***emission*** R.20 Protecting water quality: Share of Utilised ***Agricultural*** Area (UAA) under supported commitments for water qualitySee R.18 R.22 Sustainable water use: Share of Utilised ***Agricultural*** Area (UAA) under supported commitments to improve water balanceSee R.18 R.23 Investments related to environment natural resources: Share of farms benefitting from CAP investment support related to care for the natural resourcesThe purpose is to bring the title of the indicator in line with the content R.26 Protecting ***forest*** ecosystems Supporting sustainable ***forest*** management: Share of ***forest*** ***land*** under sustainable ***forest*** management and commitments supporting landscape, biodiversity to support ***forest*** protection and management of ecosystem servicesA change in title would better depict the coverage of the merged indicators (R.25 and R.26), while pointing clearly at the contribution to biodiversity.R.32 Developing the rural bioeconomy: Number of rural businesses including bio-economy businesses developed with CAP supportThe support to SMEs is mainly but not only related to the bio-economy. The widening seems necessary in order to avoid possible gaps in support to SMEs. R.33 Smart transition of Digitalising the rural economy: Number Share of rural population covered by a supported Smart Villages strategyiesSmart villages are not only about digitalisation and the indicator could be simplified.R.36 Limiting antimicrobial use: Share of livestock units (LU) concerned by supported actions to limit the use of antibiotics antimicrobials (prevention/reduction)More precise10439/20 LP/JU/TLU/ik 18ANNEX LIFE.1 ENOutput-Indicators Output indicators as proposed by HR Presidency with proposed changes Explanation O.1 Number of EIP (European Innovation Partnership) operational group projectsClarification, the support is paid per project and not per Operational Group. Ensure coherence with the fiche which already refers to projects O.4 Number of ha for basic income support for sustainabilityClarification, corresponds to the title of the foreseen intervention (Basic income support for sustainability) O.13 Number of ha (***agricultural*** excluding forestry) covered by environment/climate commitments going beyond mandatory requirementsThe modification “Excluding forestry” (instead of the reference to “***agriculture***”) seems more precise as non-***agricultural*** ***land*** can be eligible to AECMC O.14a Number of forestry units other than ha covered by environment/climate commitments going beyond mandatory requirementsThe latest text of article 65 allows for other units than hectares. However, this is wanted only for forestry environmental commitments and genetic resources (see O.17). O.17 Number of operations or units supporting genetic resourcesThe reference to operations is added, as it might not be clear to everybody that a unit can be an operation.O.18 Number of supported on-farm productive investments operations or units receiving support under EAFRDreceiving support' is redundant with 'supported', in addition specifying 'under EAFRD' is not necessary as output refer clearer to EAFRD interventions.O.20 Number of supported off-farm non-productive investments operations or units receiving support under EAFRDsee O.18 O.21 Number of supported off-farm productive investments operations or units receiving support under EAFRDsee O.18O.24 Number of supported producer groups/organisations receiving support under EAFRDsee 0.18O.26 Number of supported operations or units for generational renewal (excluding installation support)Potential clarification10439/20 LP/JU/TLU/ik 19ANNEX LIFE.1 ENDrafting suggestions Annex XII Objectives and indicators as proposed by HR Presidency with proposed changes Explanation Objectives Core set of indicatorsSupport viable farm income and resilience across the Union to enhance food securityR.4 Linking income support to standards and good practices: Share of Utilised ***Agricultural*** Area (UAA) covered by income support and subject to conditionalityNo changesEnhance market orientation and increase competitiveness, including a greater focus on research, technology and digitalisationR.9 Farm modernisation: Share of farms receiving investment support to restructure and modernise, including to improve resource efficiencyNo changesImprove the farmers' position in the value chainR.10 Better supply chain organisation: Share of farms participating in supported Producer Groups, Producer Organisations and quality schemes supported by the CAPNo changesContribute to climate change mitigation and adaptation, as well as sustainable energyR.12 Mitigation and adaptation to climate change: Share of Utilised ***Agricultural*** Area (UAA) and/or livestock units (LU) under support to reduce ammonia and GHG ***emissions***, maintaining/enhancing carbon storage, including commitments to improve climate change adaptation (with breakdown by mitigation and adaptation)No changesFoster sustainable development and efficient management of natural resources such as water, soil and airR.18 Efficient resource management Improving soils: Share of Utilised ***Agricultural*** Area (UAA) under management supported commitments beneficial contributing to efficient management of natural resources such as water, for soil and air managementR.19 Improving air quality: Share of Utilised ***Agricultural*** Area (UAA) under supported commitments to reduce ammonia emissionA merged indicator R.18 including water, soil and air is not supported by all Member States. Separate indicators could better reflect the importance and high ambitions in the concerned areas.10439/20 LP/JU/TLU/ik 20ANNEX LIFE.1 ENR.20 Protecting water quality: Share of Utilised ***Agricultural*** Area (UAA) under supported commitments for water qualityContribute to the protection of biodiversity, enhance ecosystem services and preserve habitats and landscapesR.27 Preserving habitats and species: Share of Utilised ***Agricultural*** Area (UAA) under management commitments supporting biodiversity conservation or restorationNo changesAttract and sustain young farmers and facilitate business development in rural areasR.30 Generational renewal: Number of beneficiaries setting up with support from the CAPNo changesPromote employment, growth, gender equality, social inclusion and local development in rural areas, including bio-economy and sustainable forestryR.31a LEADER coverage: Share of rural population covered by local development strategiesNo changesImprove the response of EU ***agriculture*** to societal demands on food and health, including safe and nutritious food produced in a sustainable way, food waste, as well as animal welfareR.37 Sustainable pesticide use: Share of Utilised ***Agricultural*** Area (UAA) concerned by supported specific actions which lead to a sustainable use of pesticides in order to reduce risks and impacts of pesticidesNo changesModernising the sector by fostering knowledge, innovation and digitalisation in ***agriculture*** and rural areas and encouraging their uptakeR.1 Enhancing performance through knowledge and innovation: Number of persons benefitting from support for advice, training, knowledge exchange, or participating in EIP operational groups or other cooperation groups/actions to enhance economic, environmental, climate and resource efficiency performanceThe deletion “to enhance economic, environmental, climate and resource efficiency performance” reflects the according change of R.1 in Annex I by the Croatian Presidency

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**End of Document**



[***COP26 President addresses UN Member States***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61YV-JRN1-JDG9-Y3JG-00000-00&context=1516831)

Impact News Service

February 9, 2021 Tuesday

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**Body**

London: UK Government has issued the following news release:

Excellencies, Secretary General, friends.

It is a real pleasure to speak to you all again to provide this regular update. And as you all know I am now devoting all of my time and energies to the role of COP26 President Designate, whilst continuing as a full member of the UK Government Cabinet.

I hope this tells you how seriously Prime Minister Boris Johnson and the whole of the UK Government are taking our role as incoming COP Presidency.

It recognises the stark facts in front of us. The facts as the Secretary General has just outlined. And the urgent need to increase our collective ambition across all elements of the Paris Agreement.

2020 saw record temperatures.

We saw fires raging across the world.

We saw storms intensifying.

In short, my friends, the climate crisis is closing in.

But, as the Secretary General noted, we are seeing some acceleration in climate action despite the pandemic, and of course at the Climate Ambition Summit the UK held with the UN and France in December, we heard from 75 leaders.

Who announced between them 45 Nationally Determined Contributions, 24 net zero pledges, and 20 adaptation commitments.

With many of the countries most vulnerable to climate change leading the way.

So I want to thank you, every one of you, who took part.

By the end of 2020, net zero was firmly established as the norm.

If you take into account President Biden’s recent announcements, over half of G20 countries and around 70 per cent of global ***emissions*** are now covered by net zero ***targets***.

And I hope I speak for all of us when I say: welcome back to the USA in our shared fight against climate change.

As I said at the Climate Ambition Summit. All this commitment is welcome. But it is not enough to meet the ambitions of the Paris Agreement.

Ambitions which we have collectively agreed.

So let’s be frank with ourselves, we still have some way to go. We are, as the Secretary General said, way off ***target***.

We need to do more, and we need to do it urgently.

So, in my speech to the Summit, I outlined four goals, I want us to work towards together, to get the world on track to make Paris a reality.

Today, I want to say a bit more about how we can do so.

First, we need to secure that step change in ***emissions*** reductions.

We all know what we need to do here:

This isn’t new. This is about net zero ***targets***; with aligned NDCs that keep that 1.5 degrees within reach; and policies like phasing-out coal power, to show that we are serious.

Secondly, we must strengthen adaptation.

I really welcome the Secretary General’s leadership here.

And the Climate Adaptation Summit, held by the Netherlands last month.

Where the UK Prime Minister Boris Johnson launched the new Adaptation Action Coalition.

This has been developed by the UK, and our friends in Egypt, Bangladesh, Malawi, the Netherlands, Saint Lucia and the UN.

With our Group of Friends on Adaptation and Resilience in New York.

The aim is to convert the political commitment generated through the Call to Action – which I was part of launching in 2019, at UNCAS – into practical reality.

I urge all countries to join this Coalition.

Please sign the Call to Action if you have not already done so.

As well as to focus on effective adaptation planning and setting out progress in Adaptation Communications.

Our third goal - a vital one - is to get finance flowing – both public and private. Particularly to developing countries. And especially to adaptation.

My message could not be clearer. Progress on public finance has sadly been too slow.

Woefully slow, say our friends in countries on the frontline of having to deal with climate change.

My fellow donor countries need to step-up and deliver the $100 billion a year in international climate finance that we have promised. As I’ve said before, this is a matter of trust and we must deliver.

Last month, the UK COP Presidency published our public finance priorities.

We want to work with all of you to make progress on these vital issues.

And I am also working to get both public and private finance moving.

And to make further progress in this area, the UK’s COP26 Presidency will hold a Climate and Development Ministerial at the end of March.

We will bring together Ministers representing donor countries and countries vulnerable to climate change.

To establish how we can ***remove*** barriers to climate action and development.

Together, we will look at four vital issues: access to finance; quantity & predictability of finance; the response to impacts; and fiscal space and debt.

And we will plan how to make progress on each of these areas, through events like the G7, IFI Spring Meetings, and the UN General Assembly.

Discussions will be informed by experts and civil society groups.

We will be working with regional chairs to make sure all regions are represented.

The event will also be open to observers from countries who are not directly participating.

The fourth and final goal is to enhance international collaboration around critical challenges and sectors. To make progress faster.

Our COP26 campaigns have established new forums.

Like the Energy Transition Council, and the Zero ***Emission*** Vehicle Transition Council. Which met for the first time last year.

We also have the ***Forest***, ***Agriculture*** and Commodity Trade Dialogues, which were launched publicly last week.

And I have to say we have seen a real appetite for cooperation. So I thank all countries involved.

On all of these four goals, major economies must show leadership.

Let me confirm to you that the UK will use its G7 Presidency to urge them to do so, as our Italian partners will with their G20 presidency.

Of course, the multilateral negotiations are at the heart of our plans.

They underpin each of the four goals I have outlined, and are absolutely key to fulfilling the Paris Agreement.

We must test solutions, and prepare the ground, ahead of COP26, so that we arrive in Glasgow ready to close a deal.

Last year, we did make progress virtually despite the pandemic. We had events like the UN Climate Change Dialogues and others.

But this year cannot simply be a repeat of the last.

As the Secretary General has outlined, we may not all be able to meet in person for some months.

But we know that we need to make progress faster. And so we need to seek creative ways of conducting our discussions that have inclusivity at their heart.

I am therefore consulting with the chairs of all the UNFCCC negotiating groups. And meeting international partners. To understand their positions.

As Ambassador Woodward pointed out, I have recently visited Ethiopia and Gabon and I will continue to travel where possible.

With our friends in Chile, we have initiated new monthly meetings, bringing together Heads of Delegation from every country, to chart the course to Glasgow together and to find possible solutions to negotiating issues.

Friends, I have to say this: this is a joint endeavour. An endeavour between all of us together.

So we are working with the UNFCCC to support parties’ connectivity. We are holding meetings at times that respect different time zones. And we are discussing how technology can help us move forward together.

We must continue to work creatively and flexibly, guided by the principles of transparency, inclusivity and common purpose, to make progress which is so vital.

So that when we do meet in person in November, we secure an outcome that delivers for each and every country. And that delivers for our planet as a whole.

And I look forward to working with all of you throughout 2021 to achieve this.

We all know what is at stake if we do not work now to secure the right outcomes at Glasgow.

Let me remind you: we have 266 days to go to COP26. Please, let’s work together.

Let’s make sure that every one of those days counts.

**Load-Date:** February 10, 2021

**End of Document**



[***Executive Order on Establishing The Wildland Fire Management Policy Committee January 14, 2021***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61SY-21B1-JDG9-Y14N-00000-00&context=1516831)

Impact News Service

January 15, 2021 Friday

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**Length:** 1609 words

**Body**

Washington: White House Administration has issued the following news release:

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. Purpose. Federal wildland fire management lacks a single focal point of responsibility for policy leadership and accountability for cost controls. While executive departments and agencies (agencies) have implemented Executive Order 13855 of December 21, 2018 (Promoting Active Management of America’s ***Forests***, Rangelands, and Other Federal ***Lands*** To Improve Conditions and Reduce Wildfire Risk), and similar Administration efforts, more must be done to continue to improve interagency coordination.

In contrast to effective ground-level coordination with States, including at the National Interagency Fire Center on suppression activity and the Wildland Fire Leadership Council (WFLC) on Federal-State policy coordination, agencies do not adequately or effectively coordinate with each other at the policy level to reduce hazardous fuels and wildfire severity. This order will ensure that agencies effectively work together in coordinating Federal wildland fire management policy to improve funding allocations for hazardous fuel projects, performance measures for suppression operations and hazardous fuels mitigation, procurement, Federal-State cooperation and cost sharing, cross-jurisdictional post-wildfire rehabilitation, monitoring of electric transmission lines and other critical infrastructure, and other functions.

Sec. 2. Policy. It is the policy of the United States to:

(a) Improve coordination among agencies on wildland fire management policy, implementation, and oversight issues;

(b) Reduce unnecessary duplication across the Federal Government by coordinating and consolidating existing wildland fire-related councils, working groups, and other formal cross-agency initiatives, as appropriate;

(c) Efficiently and effectively manage preparedness resources, initial attack response, extended attack and large-fire support, post-wildfire rehabilitation, and hazardous fuels at a cross-boundary, landscape scale;

(d) Promote integrated planning and procurement among agencies for Federal investments in wildland fire management infrastructure;

(e) Support workforce development and efforts to recruit, train, and retain Federal wildland firefighters to efficiently and effectively respond to wildfire on public ***lands***, and to protect life, property, and community infrastructure; and

(f) Coordinate Federal engagement with State, local, and tribal government entities, including Federal policy positions in the WFLC.

Sec. 3. Interagency Wildland Fire Subcabinet. To promote efficient and effective coordination across agencies engaged in Federal wildland firefighting and to facilitate coordinated and strategic wildland fire management actions, an interagency Wildland Fire Management Policy Committee (to be known as the Wildland Fire Subcabinet) is hereby established.

(a) The Wildland Fire Subcabinet shall be co-chaired by the Secretary of ***Agriculture*** and Secretary of the Interior (Co‑Chairs), and shall include the Secretary of Defense, the Secretary of Energy, the Secretary of Homeland Security, the Chairman of the Council on Environmental Quality (CEQ), the Director of the Office of Science and Technology Policy (OSTP), the Administrator of the Environmental Protection Agency (EPA), the Director of the National Economic Council (NEC), and the heads of such other agencies, or their designated representatives, as the Co-Chairs deem appropriate.

(b) The Wildland Fire Subcabinet shall meet quarterly.

Sec. 4. Reducing Inefficiencies and Duplication. Currently, several Federal wildfire-related councils, task forces, working groups, and other formal cross-agency initiatives (Federal interagency working groups) exist to address wildland fire management policy. Within 90 days of the date of this order, the Wildland Fire Subcabinet shall, to the extent practicable, identify all such Federal interagency working groups and provide recommendations to the Secretary of the Interior, the Secretary of ***Agriculture***, and the Director of the Office of Management and Budget (OMB) on coordinating and consolidating these Federal interagency working groups, as appropriate and consistent with applicable law.

Sec. 5. Improving Wildland Fire Management Policy Coordination, Implementation, and Oversight. Within 180 days of the date of this order, the Wildland Fire Subcabinet shall develop, publish, and implement a strategic plan addressing the issues described in this section. To implement this strategic plan, the Wildland Fire Subcabinet shall develop specific measurable goals, performance ***targets***, and dashboard reporting for consideration by each Federal agency represented on the Wildland Fire Subcabinet, using common data standards at the wildfire and hazardous fuels program level. This strategic plan shall address the issues described below:

(a) Effectively managing preparedness resources, initial attack response, extended attack and large-fire support, post‑wildfire rehabilitation, and hazardous fuels at a cross‑boundary, landscape scale;

(b) Developing and adopting additional hazardous fuels performance measures that go beyond the traditional output reporting of total acreage for fuel ***removal*** to transparently demonstrate a strategic focus on projects that, by consensus agreement, pose the highest risks to life, property, and community infrastructure;

(c) Developing and adopting additional wildland fire suppression operations performance measures for large wildfires, and for aviation asset deployment, that go beyond the traditional output reporting of acres burned, dollars spent, and gallons of retardant dropped to demonstrate strategic use of high-cost human capital, equipment, and aircraft as opposed to traditional reliance on overwhelming force;

(d) Developing and adopting new technologies to bring to bear cutting-edge management of the wildland fire program to improve the safety, efficiency, and effectiveness of suppression operations;

(e) Developing and adopting data-driven decision-making in order to support infrastructure, allowing for better integration of wildland fire research and development into ground-level suppression operations and hazardous fuel mitigation;

(f) Evaluating personnel policies to ensure that they allow for the year-round availability of a well-trained firefighting force at all levels, from apprentice to incident command, and the most efficient division of responsibility between line officers and incident commanders to support wildfire response and hazardous fuels reduction;

(g) Strengthening government and industry collaboration with critical infrastructure owners and operators, including electric utilities, to better manage and mitigate risks, improve and invest in technology research and development, deploy technologies in concert with the private sector, exchange lessons learned in training and monitoring capabilities, and share operational practices;

(h) Examining regulatory and other issues that negatively impact hazardous fuel reduction and post-wildfire rehabilitation program performance, including coordination across agencies on projects requiring compliance with the National Environmental Policy Act, 42 U.S.C 4321 et seq.;

(i) Coordinating among Federal ***land*** managers to assure efficient and consistent approaches between agencies to review and approve utility vegetation management actions to improve or maintain the reliability of the grid or reduce wildfire risk; and

(j) Developing a coordinated budget strategy that addresses the trade-offs between suppression, preparedness, post-wildfire rehabilitation, and fuels treatment to ensure a balanced commitment of resources and investment in areas at risk or affected by wildfire.

Sec. 6. Report. Within 1 year of the date of this order, and annually thereafter, the Wildland Fire Subcabinet shall update the Chairman of CEQ, the Director of OMB, the Director of OSTP, and the Director of the NEC on the status of the strategic plan and the specific actions identified in this order.

Sec. 7. Administration. The Department of ***Agriculture*** shall, to the extent permitted by law and subject to the availability of appropriations, provide administrative support as needed for the Wildland Fire Subcabinet to implement this order. The Departments of the Interior and ***Agriculture*** shall consult with WFLC, as appropriate, to effectively carry out the requirements of this order.

Sec. 8. Federal Advisory Committee Act. The members of the Wildland Fire Subcabinet should, pursuant to and consistent with the Federal Advisory Committee Act, as amended (5 U.S.C App.), and in the interest of obtaining advice or recommendations for the Wildland Fire Subcabinet, use their advisory committees, as appropriate.

Sec. 9. General Provisions. (a) Nothing in this order shall be construed to impair or otherwise affect:

(i) the authority granted by law to an executive department or agency, or the head thereof; or

(ii) the functions of the Director of the Office of Management and Budget relating to budgetary, administrative, or legislative proposals.

(b) This order shall be implemented in a manner consistent with applicable law and subject to the availability of appropriations.

(c) This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.

DONALD J. TRUMP

THE WHITE HOUSE,January 14, 2021.

**Load-Date:** January 18, 2021

**End of Document**



[***COP26 President addresses UN Member States***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61YM-X561-JDKC-R043-00000-00&context=1516831)

UK Government News

February 8, 2021 Monday 3:26 PM EST

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**Length:** 1306 words

**Body**

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Let's make sure that every one of those days counts. For any query with respect to this article or any other content requirement, please contact Editor at [*contentservices@htlive.com*](mailto:contentservices@htlive.com)

**Load-Date:** February 9, 2021

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FinancialWire

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(Distributed by M2 Communications ([*www.m2.com*](http://www.m2.com)))

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M2 PressWIRE

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M2 PressWIRE

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February 9, 2021 Tuesday

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**Length:** 1290 words

**Body**

Excellencies, Secretary General, friends.

It is a real pleasure to speak to you all again to provide this regular update. And as you all know I am now devoting all of my time and energies to the role of COP26 President Designate, whilst continuing as a full member of the UK Government Cabinet.

I hope this tells you how seriously Prime Minister Boris Johnson and the whole of the UK Government are taking our role as incoming COP Presidency.

It recognises the stark facts in front of us. The facts as the Secretary General has just outlined. And the urgent need to increase our collective ambition across all elements of the Paris Agreement.

2020 saw record temperatures.

We saw fires raging across the world.

We saw storms intensifying.

In short, my friends, the climate crisis is closing in.

But, as the Secretary General noted, we are seeing some acceleration in climate action despite the pandemic, and of course at the Climate Ambition Summit the UK held with the UN and France in December, we heard from 75 leaders.

Who announced between them 45 Nationally Determined Contributions, 24 net zero pledges, and 20 adaptation commitments.

With many of the countries most vulnerable to climate change leading the way.

So I want to thank you, every one of you, who took part.

By the end of 2020, net zero was firmly established as the norm.

If you take into account President Biden's recent announcements, over half of G20 countries and around 70 per cent of global ***emissions*** are now covered by net zero ***targets***.

And I hope I speak for all of us when I say: welcome back to the USA in our shared fight against climate change.

As I said at the Climate Ambition Summit. All this commitment is welcome. But it is not enough to meet the ambitions of the Paris Agreement.

Ambitions which we have collectively agreed.

So let's be frank with ourselves, we still have some way to go. We are, as the Secretary General said, way off ***target***.

We need to do more, and we need to do it urgently.

So, in my speech to the Summit, I outlined four goals, I want us to work towards together, to get the world on track to make Paris a reality.

Today, I want to say a bit more about how we can do so.

First, we need to secure that step change in ***emissions*** reductions.

We all know what we need to do here:

This isn't new. This is about net zero ***targets***; with aligned NDCs that keep that 1.5 degrees within reach; and policies like phasing-out coal power, to show that we are serious.

Secondly, we must strengthen adaptation.

I really welcome the Secretary General's leadership here.

And the Climate Adaptation Summit, held by the Netherlands last month.

Where the UK Prime Minister Boris Johnson launched the new Adaptation Action Coalition.

This has been developed by the UK, and our friends in Egypt, Bangladesh, Malawi, the Netherlands, Saint Lucia and the UN.

With our Group of Friends on Adaptation and Resilience in New York.

The aim is to convert the political commitment generated through the Call to Action - which I was part of launching in 2019, at UNCAS - into practical reality.

I urge all countries to join this Coalition.

Please sign the Call to Action if you have not already done so.

As well as to focus on effective adaptation planning and setting out progress in Adaptation Communications.

Our third goal - a vital one - is to get finance flowing - both public and private. Particularly to developing countries. And especially to adaptation.

My message could not be clearer. Progress on public finance has sadly been too slow.

Woefully slow, say our friends in countries on the frontline of having to deal with climate change.

My fellow donor countries need to step-up and deliver the $ 100 billion a year in international climate finance that we have promised. As I've said before, this is a matter of trust and we must deliver.

Last month, the UK COP Presidency published our public finance priorities.

We want to work with all of you to make progress on these vital issues.

And I am also working to get both public and private finance moving.

And to make further progress in this area, the UK's COP26 Presidency will hold a Climate and Development Ministerial at the end of March.

We will bring together Ministers representing donor countries and countries vulnerable to climate change.

To establish how we can ***remove*** barriers to climate action and development.

Together, we will look at four vital issues: access to finance; quantity predictability of finance; the response to impacts; and fiscal space and debt.

And we will plan how to make progress on each of these areas, through events like the G7, IFI Spring Meetings, and the UN General Assembly.

Discussions will be informed by experts and civil society groups.

We will be working with regional chairs to make sure all regions are represented.

The event will also be open to observers from countries who are not directly participating.

The fourth and final goal is to enhance international collaboration around critical challenges and sectors. To make progress faster.

Our COP26 campaigns have established new forums.

Like the Energy Transition Council, and the Zero ***Emission*** Vehicle Transition Council. Which met for the first time last year.

We also have the ***Forest***, ***Agriculture*** and Commodity Trade Dialogues, which were launched publicly last week.

And I have to say we have seen a real appetite for cooperation. So I thank all countries involved.

On all of these four goals, major economies must show leadership.

Let me confirm to you that the UK will use its G7 Presidency to urge them to do so, as our Italian partners will with their G20 presidency.

Of course, the multilateral negotiations are at the heart of our plans.

They underpin each of the four goals I have outlined, and are absolutely key to fulfilling the Paris Agreement.

We must test solutions, and prepare the ground, ahead of COP26, so that we arrive in Glasgow ready to close a deal.

Last year, we did make progress virtually despite the pandemic. We had events like the UN Climate Change Dialogues and others.

But this year cannot simply be a repeat of the last.

As the Secretary General has outlined, we may not all be able to meet in person for some months.

But we know that we need to make progress faster. And so we need to seek creative ways of conducting our discussions that have inclusivity at their heart.

I am therefore consulting with the chairs of all the UNFCCC negotiating groups. And meeting international partners. To understand their positions.

As Ambassador Woodward pointed out, I have recently visited Ethiopia and Gabon and I will continue to travel where possible.

With our friends in Chile, we have initiated new monthly meetings, bringing together Heads of Delegation from every country, to chart the course to Glasgow together and to find possible solutions to negotiating issues.

Friends, I have to say this: this is a joint endeavour. An endeavour between all of us together.

So we are working with the UNFCCC to support parties' connectivity. We are holding meetings at times that respect different time zones. And we are discussing how technology can help us move forward together.

We must continue to work creatively and flexibly, guided by the principles of transparency, inclusivity and common purpose, to make progress which is so vital.

So that when we do meet in person in November, we secure an outcome that delivers for each and every country. And that delivers for our planet as a whole.

And I look forward to working with all of you throughout 2021 to achieve this.

We all know what is at stake if we do not work now to secure the right outcomes at Glasgow.

Let me remind you: we have 266 days to go to COP26. Please, let's work together.

Let's make sure that every one of those days counts.

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[***Federal Register: Reissuance and Modification of Nationwide Permits Pages 2744 - 2877 [FR DOC #2021-00102]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61S2-NGY1-F0YC-N486-00000-00&context=1516831)

Impact News Service

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**Body**

Washington: Office of the Federal Register has issued the following notice: Department of Defense-----------------------------------------------------------------------Department of the Army, Corps of Engineers-----------------------------------------------------------------------33 CFR Chapter IIReissuance and Modification of Nationwide Permits; Final RuleFederal Register / Vol. 86, No. 8 / Wednesday, January 13, 2021 / Rules and Regulations[[Page 2744]]-----------------------------------------------------------------------DEPARTMENT OF DEFENSEDepartment of the Army, Corps of Engineers33 CFR Chapter II[Docket Number: COE-2020-0002]RIN 0710-AA84Reissuance and Modification of Nationwide PermitsAGENCY: Army Corps of Engineers, DoD.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: Nationwide Permits (NWPs) authorize certain activities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The NWPs help protect the aquatic environment and the public interest by providing incentives to reduce impacts on jurisdictional waters and wetlands while effectively authorizing activities that have no more than minimal individual and cumulative adverse environmental effects. In this final rule, the Corps is reissuing and modifying 12 existing NWPs and issuing four new NWPs. For these 16 NWPs, the Corps is also reissuing and modifying the NWP general conditions and definitions. The Corps is not reissuing or modifying the remaining 40 existing NWPs or finalizing proposed new NWP E at this time. Those 40 remaining NWPs continue to be in effect under the January 6, 2017, final rule and the existing general conditions and definitions in the 2017 final rule continue to apply to those permits.DATES: These 16 NWPs, the 32 general conditions, and the associated definitions will go into effect on March 15, 2021.ADDRESSES: U.S Army Corps of Engineers, Attn: CECW-CO-R, 441 G Street NW, Washington, DC 20314-1000.FOR FURTHER INFORMATION CONTACT: Mr. David Olson at 202-761-4922 or access the U.S Army Corps of Engineers Regulatory Home Page at [*https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/.SUPPLEMENTARY*](https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/.SUPPLEMENTARY) INFORMATION: Table of ContentsI. Background A. General B. Overview of Proposed Rule C. Overview of This Final Rule D. Status of Existing Permits E. Nationwide Permit Verifications F. Executive Order 13783, Promoting Energy Independence and Economic Growth G. Executive Order 13777, Enforcing the Regulatory Reform Agenda H. Executive Order 13921, Promoting American Seafood Competitiveness and Economic Growth I. 2018 Legislative Outline for Rebuilding Infrastructure in AmericaII. Discussion of Public Comments A. Overview B. Responses to General Comments C. Comments on Proposed Actions Under Executive Order 13921, Promoting American Seafood Competitiveness and Economic Growth D. Comments on the 2018 Legislative Outline for Rebuilding Infrastructure in America E. Comments on Regional Conditioning of Nationwide Permits F. Comments on Proposed ***Removal*** of the 300 Linear Foot Limit for Losses of Stream Bed G. Response to Comments on Specific Nationwide Permits H. Responses to Comments on the Nationwide Permit General Conditions I. Discussion of Proposed Modifications to Section D, District Engineer's Decision J. Discussion of Proposed Modifications to Section F, DefinitionsIII. Compliance With Relevant Statutes A. National Environmental Policy Act Compliance B. Compliance With Section 404(e) of the Clean Water Act C. 2020 Revisions to the Definition of ``Waters of the United States'' (i.e , the Navigable Waters Protection Rule) D. Compliance With the Endangered Species Act E. Compliance With the Essential Fish Habitat Provisions of the Magnuson-Stevens Fishery Conservation and Management Act F. Compliance With Section 106 of the National Historic Preservation Act G. Section 401 of the Clean Water Act H. Section 307 of the Coastal Zone Management Act (CZMA)IV. Economic ImpactV. Administrative RequirementsVI. ReferencesAuthorityNationwide Permits, Conditions, Further Information, and DefinitionsList of AcronymsBMP Best Management PracticeCEQ Council on Environmental QualityCWA Clean Water ActDA Department of the ArmyEFH Essential Fish HabitatESA Endangered Species ActFWS U.S Fish and Wildlife ServiceGC General ConditionNEPA National Environmental Policy ActNHPA National Historic Preservation ActNMFS National Marine Fisheries ServiceNPDES National Pollutant Discharge Elimination SystemNWP Nationwide PermitPCN Pre-construction NotificationList of Nationwide Permits Included in This Rule and General Conditions Nationwide Permits (NWPs)12. Oil or Natural Gas Pipeline Activities21. Surface Coal Mining Activities29. Residential Developments39. Commercial and Institutional Developments40. ***Agricultural*** Activities42. Recreational Facilities43. Stormwater Management Facilities44. Mining Activities48. Commercial Shellfish Mariculture Activities50. Underground Coal Mining Activities51. ***Land***-Based Renewable Energy Generation Facilities52. Water-Based Renewable Energy Generation Pilot Projects55. Seaweed Mariculture Activities56. Finfish Mariculture Activities57. Electric Utility Line and Telecommunications Activities58. Utility Line Activities for Water and Other SubstancesNationwide Permit General Conditions1. Navigation2. Aquatic Life Movements3. Spawning Areas4. Migratory Bird Breeding Areas5. Shellfish Beds6. Suitable Material7. Water Supply Intakes8. Adverse Effects from Impoundments9. Management of Water Flows10. Fills Within 100-Year Floodplains11. Equipment12. Soil Erosion and Sediment Controls13. ***Removal*** of Temporary Fills14. Proper Maintenance15. Single and Complete Project16. Wild and Scenic Rivers17. Tribal Rights18. Endangered Species19. Migratory Birds and Bald and Golden Eagles20. Historic Properties21. Discovery of Previously Unknown Remains and Artifacts22. Designated Critical Resource Waters23. Mitigation24. Safety of Impoundment Structures25. Water Quality26. Coastal Zone Management27. Regional and Case-by-Case Conditions28. Use of Multiple Nationwide Permits29. Transfer of Nationwide Permit Verifications30. Compliance Certification31. Activities Affecting Structures or Works Built by the United States32. Pre-Construction NotificationI. BackgroundA. General The U.S Army Corps of Engineers (Corps) issues nationwide permits (NWPs) to authorize activities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, where those activities will result in no more than minimal individual and cumulative adverse[[Page 2745]]environmental effects. NWPs were first issued by the Corps in 1977 (42 FR 37122) to authorize categories of activities that have minimal adverse effects on the aquatic environment, for the purpose of streamlining the authorization process for those minor activities. After 1977, NWPs have been issued or reissued in 1982 (47 FR 31794), 1984 (49 FR 39478), 1986 (51 FR 41206), 1991 (56 FR 59110), 1995 (60 FR 38650), 1996 (61 FR 65874), 2000 (65 FR 12818), 2002 (67 FR 2020), 2007 (72 FR 11092), 2012 (77 FR 10184), and 2017 (82 FR 1860). Section 404(e) of the Clean Water Act provides the statutory authority for the Secretary of the Army, after notice and opportunity for public hearing, to issue general permits on a nationwide basis for any category of activities involving discharges of dredged or fill material into waters of the United States for a period of no more than five years after the date of issuance (33 U.S.C 1344(e)). The Secretary's authority to issue permits has been delegated to the Chief of Engineers and his or her designated representatives. Nationwide permits are a type of general permit issued by the Chief of Engineers and are designed to regulate with little, if any, delay or paperwork certain activities in federally jurisdictional waters and wetlands, where those activities would have no more than minimal adverse environmental impacts (see 33 CFR 330.1(b)). The categories of activities authorized by NWPs must be similar in nature, cause only minimal adverse environmental effects when performed separately, and have only minimal cumulative adverse effect on the environment (see 33 U.S.C 1344(e)(1)). NWPs can be issued for a period of no more than 5 years (33 U.S.C 1344(e)(2)), and the Corps has the authority to modify or revoke the NWPs before they expire. Nationwide permits can also be issued to authorize activities pursuant to Section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322.2(f)). The NWP program is designed to provide timely authorizations for the regulated public while protecting the Nation's aquatic resources. The phrase ``minimal adverse environmental effects when performed separately'' refers to the direct and indirect adverse environmental effects caused by a specific activity authorized by an NWP. The phrase ``minimal cumulative adverse effect on the environment'' refers to the collective direct and indirect adverse environmental effects caused by all the activities authorized by a particular NWP during the time period when the NWP is in effect (a period of no more than 5 years) in a specific geographic region. These concepts are defined in paragraph 2 of section D, ``District Engineer's Decision.'' The appropriate geographic area for assessing cumulative effects is determined by the decision-making authority for the general permit (generally, the district engineer). Some NWPs include pre-construction notification (PCN) requirements. PCNs give the Corps the opportunity to evaluate certain proposed NWP activities on a case-by-case basis to ensure that they will cause no more than minimal adverse environmental effects, individually and cumulatively. Except for activities conducted by non-Federal permittees that require PCNs under paragraph (c) of the ``Endangered Species'' and ``Historic Properties'' general conditions (general conditions 18 and 20, respectively), if the Corps district does not respond to the PCN within 45 days of a receipt of a complete PCN, the activity is deemed authorized by the NWP (see 33 CFR 330.1(e)(1)). In fiscal year 2018, the average processing time for an NWP PCN was 45 days and the average processing time for a standard individual permit was 264 days. This difference in burden can incentivize project proponents to reduce the adverse effects of their planned activities that would otherwise require an individual permit under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, in order to qualify for NWP authorization. This reduction in adverse effects can therefore reduce a project's impact on the Nation's aquatic resources. There are 38 Corps district offices and 8 Corps division offices. The district offices administer the NWP program on a day-to-day basis by reviewing PCNs for proposed NWP activities. The division offices oversee district offices and are managed by division engineers. Division engineers have the authority, after public notice and comment, to modify, suspend, or revoke NWP authorizations on a regional basis to take into account regional differences among aquatic resources and to ensure that the NWPs authorize only those activities that result in no more than minimal individual and cumulative adverse environmental effects in a region (see 33 CFR 330.5(c)). When a Corps district receives a PCN, the district engineer reviews the PCN and determines whether the proposed activity will result in no more than minimal individual and cumulative adverse environmental effects, consistent with the criteria in paragraph 2 of section D, ``District Engineer's Decision.'' At this point, the district engineer may add conditions to the NWP authorization to ensure that the verified NWP activity results in no more than minimal individual and cumulative adverse environmental effects, consistent with processes and requirements set out in 33 CFR 330.5(d). See Section II.G for more information on regional conditions for the NWPs. For some NWPs, when submitting a PCN, an applicant may request a waiver for a particular limit specified in the NWP's terms and conditions. If the applicant requests a waiver of an NWP limit and the district engineer determines, after coordinating with the resource agencies under paragraph (d) of NWP general condition 32, that the proposed NWP activity will result in no more than minimal adverse environmental effects, the district engineer may grant such a waiver. Following the conclusion of the district engineer's review of a PCN, he/she prepares an official, publicly-available decision document. This document discusses the district engineer's findings as to whether a proposed NWP activity qualifies for NWP authorization, including compliance with all applicable terms and conditions, and the rationale for any waivers granted, and activity-specific conditions needed to ensure that the activity being authorized by the NWP will have no more than minimal individual and cumulative adverse environmental effects and will not be contrary to the public interest (see Sec. 330.6(a)(3)(i)). The case-by-case review of PCNs often results in district engineers adding activity-specific conditions to NWP authorizations to ensure that the adverse environmental effects are no more than minimal. These can include permit conditions such as time-of-year restrictions and/or use of best management practices and/or compensatory mitigation requirements to offset authorized losses of jurisdictional waters and wetlands so that the net adverse environmental effects caused by the authorized activity are no more than minimal. Any compensatory mitigation required for NWP activities must comply with the Corps' compensatory mitigation regulations at 33 CFR part 332. Review of a PCN may also result in the district engineer asserting discretionary authority to require an individual permit from the Corps for the proposed activity, if he or she determines, based on the information provided in the PCN and other available information, that the adverse environmental effects will be more than minimal, or otherwise determines that ``sufficient concerns for the environment or any other factor of[[Page 2746]]the public interest so requires'' consistent with 33 CFR 330.4(e)(2). During the review of PCNs, district engineers assess cumulative adverse environmental effects at an appropriate regional scale. Cumulative effects are the result of the accumulation of direct and indirect effects caused by multiple activities that persist over time in a particular geographic area (MacDonald 2000), such as a watershed or ecoregion (Gosselink and Lee 1989). Therefore, the geographic and temporal scales for cumulative effects analysis are larger than the analysis of the direct and indirect adverse environmental effects caused by specific activities. For purposes of the NWP program, cumulative effects are the result of the combined effects of activities authorized by NWPs during the period the NWPs are in effect. The cumulative effects are assessed against the current environmental setting to determine whether the cumulative adverse environmental effects are more than minimal. The district engineer uses his or her discretion to determine the appropriate regional scale for evaluating cumulative effects. For the NWPs, the appropriate regional scale for evaluating cumulative effects may be a waterbody, watershed, county, state, or a Corps district, as appropriate. The appropriate regional scale is dependent, in part, on where the NWP activities are occurring. For example, for NWPs that authorizes structures and/or work in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899, the appropriate geographic region for assessing cumulative effects may be a specific navigable waterbody. For NWPs that authorize discharges of dredged or fill material into non-tidal jurisdictional wetlands and streams, the appropriate geographic region for assessing cumulative effects may be a watershed, county, state, or Corps district. The direct individual adverse environmental effects caused by activities authorized by NWPs are evaluated within the project footprint, and the indirect individual adverse environmental effects caused by activities authorized by NWPs are evaluated within the geographic area to which those indirect effects extend. When the district engineer reviews a PCN and determines that the proposed activity qualifies for NWP authorization, he or she will issue a written NWP verification to the permittee (see 33 CFR 330.6(a)(3)). If an NWP verification includes multiple authorizations using a single NWP (e.g , linear projects with crossings of separate and distant waters of the United States authorized by NWPs 12 or 14) or non-linear projects authorized with two or more different NWPs (e.g , an NWP 28 for reconfiguring an existing marina plus an NWP 19 for minor dredging within that marina), the district engineer will evaluate the cumulative effects of the applicable NWP authorizations within the geographic area that she or he determines is appropriate for assessing cumulative effects caused by activities authorized by that NWP. As discussed above, the geographic area may be a waterbody, watershed, county, state, Corps district, or other geographic area. Further, the Corps' public interest review regulations at 33 CFR 320.4(a)(1) require consideration of cumulative impacts for the issuance of DA permits. Since the required public interest review and 404(b)(1) Guidelines cumulative effects analyses are conducted by Corps Headquarters in its decision documents for the issuance of the NWPs, district engineers do not need to do comprehensive cumulative effects analyses for NWP verifications. For an NWP verification, the district engineer needs only to include a statement in the administrative record stating whether the proposed activity to be authorized by an NWP, plus any required mitigation, will result in no more than minimal individual and cumulative adverse environmental effects. If the district engineer determines, after considering mitigation, that a proposed NWP activity will result in more than minimal cumulative adverse environmental effects, she or he will exercise discretionary authority and require an application for an individual permit. There may be activities authorized by NWPs that cross more than one Corps district or more than a single state. On May 15, 2018, the Director of Civil Works at Corps Headquarters issued a Director's Policy Memorandum titled: ``Designation of a Lead USACE District for Permitting of Non-USACE Projects Crossing Multiple Districts or States.'' \1\ This Director's Policy Memorandum identified lead districts for states that have more than one Corps district and established a policy for designating a lead district for activities that require Department of the Army permits that cross district or state boundaries. Under this policy, when the Corps receives an NWP PCN or individual permit application for such activities, a lead Corps district will be designated by the applicable Corps division office(s) using the criteria in the 2018 Director's Policy Memorandum, and that district will be responsible for serving as a single point of contact for each permit applicant, forming a Project Delivery Team comprising representatives of each of the affected districts, ensuring consistent reviews by the affected districts, and taking responsibility for identifying and resolving inconsistencies that may arise during the review. The list of lead districts for states is also used during the regional conditioning process for the NWPs. For that process the lead district is responsible for coordinating the development of the regional conditions and preparing the supplemental documents required by 33 CFR 330.5(c)(1)(iii). The Corps requests comments on whether there are efficiencies that can be adopted to improve the coordination and regional conditioning processes.--------------------------------------------------------------------------- \1\ This document is available at: [*https://usace.contentdm.oclc.org/digital/collection/p16021coll11/id/2757/*](https://usace.contentdm.oclc.org/digital/collection/p16021coll11/id/2757/) (accessed 3/12/2020).---------------------------------------------------------------------------B. Overview of Proposed Rule On September 15, 2020, the Corps published in the Federal Register (85 FR 57298) a proposed regulation to reissue with modification the existing NWPs and associated general conditions and definitions and to create five new NWPs (2020 Proposal). The Corps provided a 60-day public comment period which closed on November 16, 2020. Among other things, the Corps proposed the following: (1) To create two new NWPs to authorize certain categories of mariculture activities (i.e , seaweed and finfish mariculture) that are not currently authorized by NWP 48; (2) to divide the NWP that authorizes utility line activities (NWP 12) into three separate NWPs that address the differences in how different utility line projects are constructed, the substances they convey, and the different standards and best management practices that help ensure those NWPs authorize only those activities that have no more than minimal adverse environmental effects; (3) a new NWP which would authorize discharges of dredged or fill material into jurisdictional waters for the construction, expansion, and maintenance of water reuse and reclamation facilities; and (4) to ***remove*** the 300 linear foot limit for losses of stream bed from 10 NWPs (NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52). The Corps requested comment on these and all other aspects of the proposal.C. Overview of This Final Rule This final rule replaces 12 of the existing NWPs that were published in the January 6, 2017, final rule (82 FR 1860), specifically: NWP 12 (oil or natural gas pipeline activities; NWP 21 (surface coal mining activities); NWP 29[[Page 2747]](residential developments); NWP 39 (commercial and institutional developments); NWP 40 (***agricultural*** activities); NWP 42 (recreational facilities); NWP 43 (stormwater management facilities); NWP 44 (mining activities); NWP 48 (commercial shellfish mariculture activities); NWP 50 (underground coal mining activities); NWP 51 (***land***-based renewable energy generation facilities); and NWP 52 (water-based renewable energy generation pilot projects). This final rule issues four new NWPs: NWP 55 (seaweed mariculture activities); NWP 56 (finfish mariculture activities); NWP 57 (electric utility line and telecommunications activities); and NWP 58 (utility line activities for water and other substances). For the 16 NWPs included in this final rule, the Corps is also reissuing the general conditions and definitions, with some changes. The Corps is not reissuing or modifying the remaining 40 NWPs included in the 2020 Proposal or taking any action on the proposed new NWP E at this time. The general conditions and definitions published in the January 6, 2017, final rule (82 FR 1860) continue to apply to the 40 existing 2017 NWPs that continue to remain in effect after the final rule for the 16 reissued and new NWPs goes into effect on March 15, 2021. The 16 permits being finalized in this rule include permits proposed partly in response to E.O 13783, Promoting Energy Independence and Economic Growth, and E.O 13921, Promoting American Seafood Competitiveness and Economic Growth. The Corps is also reissuing NWPs 12 and 48 partly to address issues raised in two federal district court decisions: United States District Court for the District of Montana Great Falls Division's decision in Northern Plains Resource Council, et al., v. U.S Army Corps of Engineers, et al., (Case No. CV 19-44-GF-BMM) and the United States District Court, Western District of Washington at Seattle's decision in the Coalition to Protect Puget Sound Habitat v. U.S Army Corps of Engineers et al. (Case No. C16-0950RSL) and Center for Food Safety v. U.S Army Corps of Engineers et al. (Case No. C17-1209RSL).D. Status of Existing Permits When the Corps modifies existing NWPs, the modified NWPs replace the prior versions of those NWPs so that there are not two sets of NWPs in effect at the same time. Having two sets of NWPs in effect at the same time creates regulatory uncertainty if each set of those NWPs has different limits, requirements, and conditions because permittees may be unclear as to which limits, requirements, and conditions apply to their authorized activities. In addition, differences in NWP limits, requirements, and conditions between two sets of NWPs can create challenges for district engineers in terms of enforcement and compliance efforts. The Corps is modifying the expiration date for the 12 existing NWPs (i.e , NWPs 12, 21, 29, 39, 40, 42, 43, 44, 48, 50, 51, 52) that are issued in this final rule to March 15, 2021. The expiration date for the 12 existing NWPs and the 4 new NWPs issued in this final rule is five years after the date those NWPs go into effect. Activities authorized by the 2017 NWPs currently remain authorized by those NWPs until March 18, 2022. Under 33 CFR 330.6(a)(3)(ii), if the NWP is reissued without modification or the activity complies with any subsequent modification of the NWP authorization, the NWP verification letter (i.e , the written confirmation from the district engineer that the proposed activity is authorized by an NWP) should include a statement that the verification will remain valid for a period of time specified in the verification letter. The specified period of time is usually the expiration date of the NWP. In other words, for the 2017 NWPs, if the previously verified activity continues to qualify for NWP authorization under any of the 12 NWPs issued in this final rule, that verification letter continues to be in effect until March 18, 2022, unless the district engineer specified a different expiration date in the NWP verification letter. For most activities authorized by the 2017 NWPs, where the district engineer issued an NWP verification letter, the verification letter identified March 18, 2022, as the expiration date. As long as the verified NWP activities continue to comply with the terms and conditions of the 12 existing NWPs issued in this final rule, those activities continue to be authorized by the applicable NWP(s) until March 18, 2022, unless a district engineer modifies, suspends, or revokes a specific NWP authorization. Under 33 CFR 330.6(b), Corps Headquarters may modify, reissue, or revoke the NWPs at any time. Activities that were authorized by the 2017 NWPs, but no longer qualify for authorization under any of the 12 existing NWPs that are reissued in this final rule, continue to be authorized by the 2017 NWP(s) for 12 months as long as those activities have commenced (i.e , are under construction) or are under contract to commence in reliance upon an NWP prior to the date on which the NWP expires. That authorization is contingent on the activity being completed within twelve months of the date of an NWP's expiration, modification, or revocation, unless discretionary authority has been exercised by a division or district engineer on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 330.4(e) and 33 CFR 330.5(c) or (d). This provision applies to activities that were previously verified by the district engineer as qualifying for NWP authorization, but no longer qualify for NWP authorization under the modified or reissued NWP. The 16 NWPs issued in this final rule go into effect on March 15, 2021. The 2017 versions of the 12 NWPs reissued in this final rule expire on March 15, 2021. The 12 existing NWPs and 4 new NWPs issued in this final rule expire five years after March 15, 2021.E. Nationwide Permit Verifications Certain NWPs require the permittee to submit a PCN, and thus request confirmation from the district engineer prior to commencing the proposed NWP activity, to ensure that the NWP activity complies with the terms and conditions of the NWP. The requirement to submit a PCN is identified in the NWP text, as well as certain general conditions. General condition 18 requires non-federal permittees to submit PCNs for any proposed activity that might affect ESA-listed species or designated critical habitat, if listed species or designated critical habitat are in the vicinity of the proposed activity, or if the proposed activity is located in critical habitat. General condition 20 requires non-federal permittees to submit PCNs for any proposed activity that may have the potential to cause effects to any historic properties listed in, determined to be eligible for listing in, or potentially eligible for listing in, the National Register of Historic Places. In the PCN, the project proponent must specify which NWP or NWPs he or she wants to use to provide the required Department of Army (DA) authorization under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. For voluntary NWP verification requests (where a PCN is not required), the request should also identify the NWP(s) the project proponent wants to use. The district engineer should verify the activity under the NWP(s) requested by the project proponent, as long as the proposed activity complies with all applicable terms and conditions, including any applicable regional conditions imposed by the division engineer. All NWPs have the same general requirements: That the authorized activities may only cause no[[Page 2748]]more than minimal individual and cumulative adverse environmental effects. Therefore, if the proposed activity complies with the terms and all applicable conditions of the NWP the applicant wants to use, then the district engineer should issue the NWP verification unless he or she exercises discretionary authority and requires an individual permit. If the proposed activity does not meet the terms and conditions of the NWP identified by the applicant in his or her PCN, and that activity meets the terms and conditions of another NWP identified by the district engineer, the district engineer will process the PCN under the NWP identified by the district engineer. If the district engineer exercises discretionary authority, he or she should explain to the applicant why the proposed activity is not authorized by an NWP. Pre-construction notification requirements may be added to NWPs by division engineers through regional conditions to require PCNs for additional activities. For an activity where a PCN is not required, a project proponent may submit a PCN voluntarily, if he or she wants written confirmation that the activity is authorized by an NWP. Some project proponents submit permit applications without specifying the type of authorization they are seeking. In such cases, the district engineer will review those applications and determine if the proposed activity qualifies for NWP authorization or another form of DA authorization, such as a regional general permit (see 33 CFR 330.1(f)). In response to a PCN or a voluntary NWP verification request, the district engineer reviews the information submitted by the prospective permittee. If the district engineer determines that the activity complies with the terms and conditions of the NWP, he or she will notify the permittee. Activity-specific conditions, such as compensatory mitigation requirements, may be added to an NWP authorization to ensure that the activity to be authorized under the NWP will result in no more than minimal individual and cumulative adverse environmental effects. The activity-specific conditions are incorporated into the NWP verification, along with the NWP text and the NWP general conditions. In general, NWP verification letters will expire on the date the NWP expires (see 33 CFR 330.6(a)(3)(ii)), although district engineers have the authority to issue NWP verification letters that will expire before the NWP expires, if it is in the public interest to do so. If the district engineer reviews the PCN or voluntary NWP verification request and determines that the proposed activity does not comply with the terms and conditions of an NWP, he or she will notify the project proponent and provide instructions for applying for authorization under a regional general permit or an individual permit. District engineers will respond to NWP verification requests, submitted voluntarily or as required through PCNs, within 45 days of receiving a complete PCN. Except for NWP 49, and for proposed NWP activities that require Endangered Species Act section 7 consultation and/or National Historic Preservation Act section 106 consultation, if the project proponent has not received a reply from the Corps within 45 days, he or she may assume that the project is authorized, consistent with the information provided in the PCN. For NWP 49, and for proposed NWP activities that require ESA Section 7 consultation and/or NHPA Section 106 consultation, the project proponent may not begin work before receiving a written NWP verification. If the project proponent requested a waiver of a limit in an NWP, the waiver is not granted unless the district engineer makes a written determination that the proposed activity will result in no more than minimal individual and cumulative adverse environmental effects, and issues an NWP verification.F. Executive Order 13783, Promoting Energy Independence and Economic Growth Section 2(a) of E.O 13783 requires federal agencies to review their existing regulations that potentially burden the development or use of domestically produced energy resources, with particular attention to oil, natural gas, coal, and nuclear resources. For the Corps, the NWPs authorize activities associated with the development or use of domestically produced energy resources. In response to E.O 13783, Office of the Assistant Secretary of the Army (Civil Works) issued a report that reviewed 12 NWPs that authorize activities associated with the development or use of domestically produced energy resources. That report included recommendations for changes that could be made to nine NWPs to support the objectives of E.O 13783. The Office of the Assistant Secretary of the Army (Civil Works) issued its report on October 25, 2017, and the November 28, 2017, issue of the Federal Register (82 FR 56192) published a notice of availability for that report. Section 2(g) of E.O 13783 states that agencies should, as soon as practicable and as appropriate and consistent with law, publish for notice and comment proposed rules that would implement the recommendations in their reports. Section 2(g) further states that agencies shall endeavor to coordinate the regulatory reforms identified in their reports with their activities undertaken in compliance with E.O 13771, ``Reducing Regulation and Controlling Regulatory Costs.''G. Executive Order 13777, Enforcing the Regulatory Reform Agenda On February 24, 2017, the President signed E.O 13777, ``Enforcing the Regulatory Reform Agenda,'' which required agencies to evaluate existing regulations and make recommendations to the agency head regarding their repeal, replacement, or modification, consistent with applicable law. The E.O specified that agencies must attempt to identify regulations that eliminate jobs or inhibit job creation; are outdated, unnecessary, or ineffective; impose costs that exceed benefits; create a serious inconsistency or otherwise interfere with regulatory reform initiatives and policies; or meet other criteria identified in that Executive Order. Pursuant to this E.O , in the July 20, 2017, issue of the Federal Register (82 FR 33470) the Corps published a notice seeking public input from state, local, and tribal governments, small businesses, consumers, non-governmental organizations, and trade associations on its existing regulations that may be appropriate for repeal, replacement, or modification. Some of the changes to the NWPs in this proposal are intended to address some of the comments received in response to the July 20, 2017, Federal Register notice. Comments received in response to the July 20, 2017, Federal Register notice can be viewed at [*www.regulations.gov*](http://www.regulations.gov) in docket number COE-2017-0004.H. Executive Order 13921, Promoting American Seafood Competitiveness and Economic Growth On May 7, 2020, the President signed Executive Order 13921 on Promoting American Seafood Competitiveness and Economic Growth. Section 6(b) of the E.O , ``***Removing*** Barriers to Aquaculture Permitting,'' requires the Secretary of the Army, acting through the Assistant Secretary of the Army for Civil Works, to ``develop and propose for public comment, as appropriate and consistent with applicable law,'' NWPs authorizing finfish aquaculture activities and seaweed aquaculture activities in marine and coastal waters, including ocean waters beyond the territorial sea within the exclusive economic zone of the United States.[[Page 2749]]Section 6(b) of the E.O also requires the Secretary of the Army, acting through the Assistant Secretary of the Army for Civil Works, to ``develop and propose for public comment, as appropriate and consistent with applicable law,'' a proposed NWP authorizing multi-species aquaculture activities in marine and coastal waters, including ocean waters beyond the territorial sea within the exclusive economic zone of the United States. Section 6(b) of the E.O also requires the Secretary of the Army, acting through the Assistant Secretary of the Army for Civil Works to ``assess whether to develop'' NWPs for finfish aquaculture activities and seaweed aquaculture activities in other waters of the United States. Section 6(b) also requires the Secretary of the Army, acting through the Assistant Secretary of the Army for Civil Works, to assess whether to develop a United States Army Corps of Engineers NWP authorizing multi-species aquaculture activities in other waters of the United States. Instead of proposing a new, separate NWP for authorizing structures in coastal waters and federal waters on the outer continental shelf for multi-species aquaculture activities, the Corps proposed to include provisions allowing additional species to be cultivated with seaweed mariculture activities authorized under proposed new NWP A and finfish mariculture activities authorized under proposed new NWP B. In addition, the Corps invited public comment on whether a separate NWP should be issued to authorize structures or work regulated by the Corps for multi-species mariculture activities. As required by the Executive Order, the Corps proposed to issue two new NWPs: NWP A to authorize seaweed mariculture activities in navigable waters of the United States, including federal waters on the outer continental shelf, and NWP B to authorize finfish mariculture activities in these waters. Based on the reasons set out in the final rule, the Corps has decided to issue these two permits. These new NWPs authorize structures and work in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899. These new NWPs also authorize seaweed and finfish mariculture structures attached to the seabed on the outer continental shelf. Section 4(f) of the Outer Continental Shelf ***Lands*** Act of 1953 as amended (43 U.S.C 1333(e)), extended the Corps' Rivers and Harbors Act of 1899 section 10 permitting authority to artificial islands, installations, and other devices located on the seabed, to the seaward limit of the outer continental shelf (see 33 CFR 320.2(b)). On the outer continental shelf, the seaweed and finfish mariculture structures may be anchored to the seabed, and thus require section 10 authorization as devices located on the seabed. Each of these NWPs includes a provision on multi-trophic species mariculture activities in marine and coastal waters, including federal waters on the outer continental shelf. This provision for multi-trophic species mariculture gives flexibility to these NWPs to allow mariculture operators to propagate additional species, such as mussels, on their seaweed or finfish mariculture structures. Including this provision was an alternative to developing a separate NWP for multi-trophic species mariculture activities, and provides NWP authorization that is responsive to the E.O The Corps recognizes that some mariculture operators may choose to produce seaweeds or finfish exclusively. As discussed in this final rule, the Corps issued proposed new NWP A as NWP 55 and issued proposed new NWP B as NWP 56.I. 2018 Legislative Outline for Rebuilding Infrastructure in America On February 12, 2018, the Administration issued its ``Legislative Outline for Rebuilding Infrastructure in America.'' In Part 3 (Infrastructure Permitting Improvement), Principle I.C.1 recommends reforms for eliminating redundancy, duplication, and inconsistency in the application of clean water provisions. One of the recommended reforms was to make statutory changes to authorize Federal agencies to select and use NWPs without additional review by the Corps. Principle I.C.1 recommends allowing Federal agencies to move forward on NWP projects without submitting PCNs to the Corps. That principle also states that ***removing*** PCN requirements for Federal agencies would allow the Corps to focus on projects that do not qualify for NWPs, such as activities that require individual permits that have greater environmental impacts. Consistent with the recommendation included in the Legislative Outline, in the 2020 Proposal the Corps invited comment on whether it can use its existing authority to create specific procedures or conditions by which Federal agencies that want to use NWPs for regulated activities would not need to submit PCNs, consistent with applicable law. The Corps specified that, under such a mechanism, the Corps would retain under its authority for district engineers to modify, suspend, or revoke NWP authorizations (see 33 CFR 330.5(d)), and the right to take action to address situations where the Federal agency incorrectly determined that the NWP terms and conditions were met. The Corps sought public comment on whether to exempt federal agencies from PCN requirements under the theory that federal agencies may employ staff who are environmental experts and who already review these projects before submitting PCNs to the Corps to determine whether they meet the criteria for the applicable NWP. These environmental staff are responsible for ensuring that the agencies' proposed activities comply with applicable federal laws, regulations, and policies, as well as relevant Executive Orders. In the proposed rule the Corps stated that it understands that non-federal permittees that want to use the NWPs often hire consultants to help them secure NWP authorization in compliance with applicable federal laws, regulations, and policies and that these consultants may have similar expertise to staff at federal agencies. These consultants may provide general services to assist in securing NWP authorizations on behalf of their clients, or they may specialize in complying with specific laws and regulations, such as Section 7 of the Endangered Species Act, Section 106 of the National Historic Preservation Act, and the Essential Fish Habitat provisions of the Magnuson-Stevens Act. Non-federal permittees are not bound to comply with Executive Orders. Consistent with this legislative principle, the Corps requested comment on whether to modify the NWPs that require PCNs to limit the PCN requirement to non-federal permittees. The Corps requested that commenters provide their views on whether they support or oppose having different PCN requirements for Federal and non-Federal permittees, with supporting information to explain their views. After reviewing and considering public comments on this proposal, the Corps has determined not to finalize any change to PCN requirements for federal permittees.II. Discussion of Public CommentsA. Overview In response to the 2020 Proposal, the Corps received more than 22,700 comment letters, of which approximately 22,330 were form letters pertaining to the proposed ***removal*** of the 300 linear foot limit for losses of stream bed, the proposed changes to NWPs 21, 49, and 50, or the proposed reissuance of NWP 12. In addition to the various form letters, the Corps received[[Page 2750]]a few hundred individual comment letters. Those individual comment letters, as well as examples of the various form letters, are posted in the [*www.regulations.gov*](http://www.regulations.gov) docket (COE-2020-0002) for this rulemaking action. The Corps reviewed and fully considered all comments received in response to the 2020 Proposal.B. Responses to General Comments Many commenters expressed general support for the proposed rule, as well as the NWP program as a whole, and many commenters stated opposition to the proposed changes to the NWPs or the use of NWPs to authorize certain activities. Many commenters said that the NWP program should be discontinued. Many commenters objected to reissuing the NWPs ahead of schedule, stating that early reissuance of the NWPs presents an unnecessary burden and cost to the agency and the public. Many commenters stated that the proposed NWPs do not comply with the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act, the National Historic Preservation Act, the Magnuson Stevens Act, and other federal laws. Many commenters said that the NWP program is pushing species closer to extinction. The NWP program is an important component of the Corps Regulatory Program because it provides an efficient means of authorizing activities that result in no more than minimal individual and cumulative adverse environmental effects so that the Corps can devote more of its resources for evaluating proposed activities that require Department of the Army (DA) authorization that have the potential to cause more substantial adverse environmental effects. The grandfathering provisions in the Corps' NWP regulations at 33 CFR 330.6(a)(3)(ii) and 330.6(b) and as described in Section I.D, Status of Existing Permits, provide mechanisms to reduce regulatory burdens when the Corps modifies or reissues the NWPs to replace existing NWPs. The NWPs are issued in compliance with the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act, the National Historic Preservation Act, the Magnuson Stevens Act, and other applicable federal laws. Several commenters said that the proposal is not compliant with the regulations that govern NWPs. Several commenters stated that every NWP authorization should be announced through a public notice. Several commenters said that the Corps does not have the authority to enforce state conditions. One commenter stated that each NWP should include a state-level review prior to verification. One commenter asserted that the proposal violates the authority of individual states to resolve noncompliance with water quality standard permits. One commenter stated that the Corps should ensure compliance with Safe Water Drinking Act when verifying NWP eligibility. One commenter said that the proposed rule conflicts with efforts to update state general permits. The 16 NWPs issued in this final rule comply with the Corps' NWP regulations at 33 CFR part 330. The NWPs authorize only those activities that have no more than minimal individual and cumulative adverse environmental effects, so it is not necessary to issue public notices to announce the tens of thousands of NWP verification letters Corps districts issue each year. The Corps acknowledges that it does not have the authority to enforce conditions provided by states, except for those conditions added to the NWPs by water quality certifications by certifying authorities and Coastal Zone Management Act consistency concurrences issued by states, that are within the Corps' legal authority to enforce. States can take actions to enforce their own water quality requirements, including permits issued under Section 402 of the Clean Water Act. The Corps does not have the legal authority to enforce the Safe Water Drinking Act. The issuance or reissuance of the NWPs is independent of the issuance of general permits by states, or the issuance of state programmatic general permits by Corps districts. Several commenters said that the proposed rule did not allow sufficient time for adequate review by states and tribes. Several commenters requested additional time to review the proposed NWPs. One commenter said that the comment period should be extended by 180 days. One commenter stated that Corps divisions and districts should not solicit comments on proposed regional conditions concurrently with the public comment period of the NWP reissuance. Many commenters said that the Corps should have a lead district for every state. For the 2020 Proposal, the Corps provided a 60-day comment period, which is same duration the Corps has used for past rulemaking actions involving the issuance, reissuance, and/or modification of the NWPs. The Corps sent response letters to entities that made timely requests for extensions of the comment period for the 2020 Proposal. In the 2020 Proposal, the Corps did not propose a large number or substantial changes to the NWPs. Soliciting public comment on proposed regional conditions concurrently with the proposed issuance or reissuance of the NWPs is consistent with the Corps' NWP regulations at 33 CFR 330.5(b)(2)(ii). The Corps has a designated a lead district for each state; these districts have been identified since 2004. As discussed in Section I.A , the Corps issued a Director's Policy Memorandum on May 15, 2018, that further clarified its policy for designating a lead district for activities that require Department of the Army permits that cross district or state boundaries. One commenter stated that the Corps is required under Section 404(e) of the Clean Water Act to hold a public hearing, which it cannot meaningfully accomplish given the pandemic. One commenter said the NWPs should not allow losses of up to \1/2\-acre of waters of the United States in areas that have already been heavily impacted and should not be used in areas where critical and essential habitat exists for species that are federally threatened or endangered species. The Corps declined to hold a public hearing on the proposed NWPs because it determined that a public hearing was unlikely to provide additional information that would inform the Corps' decision on whether to issue these NWPs. Under the Corps' regulations at 33 CFR 327.4(b), requests for public hearing under this paragraph shall be granted, unless the Corps determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by holding a public hearing. The Corps received approximately 22,700 comments on the proposed rule, and it is unlikely that any statements provided during a public hearing would raise issues that are different that the issues or concerns discussed in the written comments received in response to the 2020 Proposal. The NWPs can be used in any area of the United States, except where the NWPs have been revoked by division engineers on a regional basis (e.g , to use a programmatic general permit instead of the NWPs) or suspended or revoked by district engineers on a case-by-case basis. The NWPs can be used in a variety of areas ranging from environmental settings that have been heavily impacted by human activities to environmental settings that have been shaped by fewer or less severe impacts caused by human activities. For those NWPs with a \1/2\-acre limit for losses of waters of the United States (e.g , NWPs[[Page 2751]]21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), PCNs are required for all proposed activities (except for maintenance activities under NWP 43 and losses of less than \1/10\-acre of waters of the United States for NWP 51), which gives district engineers the opportunity to review proposed activities in their current environmental setting and determine whether those activities will result in no more than minimal individual and cumulative adverse environmental effects. The ability for division and district engineers to modify, suspend, or revoke NWPs on a regional or case-by-case basis is a key tool for ensuring that the NWPs only authorize activities that cause no more than minimal individual and cumulative adverse environmental effects. There is substantial variation in aquatic resource types across the country, as well as a large amount of variability among geographic regions in the quantity of those resources. Those regional differences require division and district engineers to have the authority to tailor the NWPs to address regional and site-specific concerns. The NWPs can only be issued for a period of 5 years because of the statutory language in section 404(e) of the Clean Water Act, as well as the Corps' regulations at 33 CFR 330.6(b). Section 330.6(b) states that if ``an NWP is not modified or reissued within five years of its effective date it automatically expires and becomes null and void.'' The 5-year cycle for reissuing the NWPs provides sufficient time to make necessary changes to the NWPs to ensure that the NWPs only authorize those activities that result in no more than minimal individual and cumulative adverse environmental effects. Many commenters objected to the proposed NWPs, stating that they authorize activities that result in more than minimal individual and cumulative adverse environmental effects and that they do not authorize categories of activities that are similar in nature. Many commenters said that the Corps has not done any meaningful analysis of the cumulative effects from NWPs. A few commenters said that since the Corps does not require pre-construction notifications (PCNs) for all NWP activities, it could not ensure that NWP activities result in no more than minimal individual and cumulative adverse environmental effects. One commenter said that Corps districts should improve their tracking of cumulative impacts. A number of commenters opposed the NWPs, stating that they authorize activities associated with larger projects that have substantial environmental impacts. Several commenters said that the NWPs should either not authorize activities that impact streams and rivers occupied by anadromous salmon, or compensatory mitigation should always be required for those activities. One commenter stated that the NWPs should not be used in areas with substantial cumulative impacts, such as essential fish habitat and areas inhabited by ESA-listed species. Many commenters said that Corps should fund an independent evaluation of its methodology for assessing cumulative impacts. One commenter said that the proposal should be based on peer-reviewed scientific analysis. One commenter stated that the proposal should include a scientific support document. One commenter said that NWPs should only authorize activities with predictable environmental effects and outcomes. The NWP activities that do not require PCNs are those activities that have characteristics that do not result in more than minimal adverse environmental effects, such as small structures in navigable waters subject to section 10 of the Rivers and Harbors Act of 1899 or minor fills in waters of the United States associated with maintenance activities or temporary impacts. For the issuance or reissuance of these NWPs, the Corps has conducted the required cumulative effects analyses. In the national decision document for each NWP issued or reissued in this final rule, the Corps evaluated the cumulative impacts that are anticipated to occur during the 5-year period the NWPs are expected to be in effect. The cumulative impacts are evaluated against the current environmental setting or baseline, in accordance with typical practices for conducting environmental impact analyses. The Corps' public interest review regulations at 33 CFR 320.4(a)(1) and the Corps' general permit regulations at 33 CFR 322.2(f) and 323.2(h) require consideration of cumulative effects for the issuance of permits. For those NWPs that authorize discharges of dredged or fill material into waters of the United States, the Corps complies with the U.S EPA's regulations at 40 CFR 230.7(b)(3) for assessing cumulative impacts for the issuance of general permits. Section 230.7(b)(3) requires the permitting authority (e.g , the Corps) to predict cumulative effects by evaluating the number of individual discharge activities likely to be regulated under a general permit until its expiration, including repetitions of individual discharge activities at a single location. In its cumulative effects analyses for the issuance or reissuance of an NWP, the Corps goes further than estimating the number of times an NWP may be used to authorize activities during the 5-year period it is expected to be in effect by estimating the acreage of impacts and the acreage of compensatory mitigation required by district engineers during that 5-year period. In its analysis of the effects or impacts of the proposed issuance or reissuance of the NWPs under the Council of Environmental Quality's current NEPA regulations at 40 CFR 1508.1(g), the Corps also estimates the impacts that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action during the 5-year period the NWP is expected to be in effect. These analyses of effects and their associated estimates of authorized activities, authorized impacts to jurisdictional waters and wetlands, and compensatory mitigation required by district engineers, include NWP activities that require PCNs and NWP activities that do not require PCNs. The Corps disagrees that an independent evaluation of these approaches to cumulative effects is necessary, or that a peer-reviewed scientific analysis or a scientific support document should be prepared. The Corps follows existing federal regulations for assessing cumulative effects. In its evaluations of individual and cumulative adverse environmental effects of activities authorized by NWPs, the Corps considers reasonably foreseeable effects or impacts, especially those effects or impacts that are directly or indirectly caused by the activity authorized under the Corps' permitting authorities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. The NWP program provides a three-tiered approach to ensure compliance with Section 404(e) of the Clean Water Act. Those three tiers are: (1) the terms and conditions of the NWPs issued by Corps Headquarters; (2) the authority of division engineers to modify, suspend, or revoke NWPs on a regional basis; and (3) the authority of district engineers to modify, suspend, or revoke NWPs on a case-by-case basis. Section 404(e) of the Clean Water Act does not specify how broad or narrow a category of activity must be in order to be covered by a general permit. Therefore, that section of the Clean Water Act gives the Corps the discretion to identify categories of activities for the issuance of NWPs. The Corps interprets broadly the requirement for general permits to authorize categories of activities that are similar in nature, to provide program[[Page 2752]]efficiency, to keep the number of NWPs manageable, and to facilitate implementation by the Corps and project proponents that need to obtain Department of the Army (DA) authorization for activities that have no more than minimal adverse environmental effects. While the Corps recognizes that many NWP activities may be components of larger overall projects, the Corps' authorities under the NWP program are limited to discharges of dredged or fill material into waters of the United States that are regulated under Section 404 of the Clean Water Act, and structures and work in navigable waters that are regulated under Section 10 of the Rivers and Harbors Act of 1899. The Corps does not regulate other components of those larger overall projects, such as activities that occur in upland areas. In many cases, the NWPs are authorizing minor features that may be part of those larger overall projects but that still does not bring those larger upland features into the Corps' jurisdiction. Division engineers can impose regional conditions on the NWPs to protect rivers and streams inhabited by anadromous fish, including salmon. For those salmonids that are listed as endangered or threatened under the Endangered Species Act (ESA), general condition 18 requires PCNs for all NWP activities proposed to be undertaken by non-federal permittees that might affect those listed species or their designated critical habitat (or proposed species or proposed critical habitat), or that occur in their designated or proposed critical habitat. If a proposed NWP activity may adversely affect essential fish habitat, the district engineer will conduct essential fish habitat consultation with the NMFS. District engineers have the discretion to require compensatory mitigation to offset stream losses caused by NWP activities. After conducting ESA section 7 consultation or essential fish habitat consultation, the district engineer may determine that stream compensatory mitigation is necessary to ensure that the NWP activity results in no more than minimal individual and cumulative adverse environmental effects. A division engineer has the authority to modify, suspend, or revoke one or more NWPs in a geographic region if he or she determines that the use of that NWP or NWPs will result in more than minimal cumulative adverse environmental effects. One commenter said the NWPs should not authorize activities that result in adverse environmental impacts. One commenter stated that the terms and conditions of the NWPs should not be changed to be less protective of the environment. Several commenters said that public notices should be issued for NWP PCNs to disclose proposed NWP activities and increase public participation. A number of commenters suggested that NWPs should require no net loss of aquatic resources. A number of commenters asked why the proposed NWPs use the term ``no more than minimal adverse environmental effects'' instead of ``no more than minimal adverse effects on the aquatic environment.'' Section 404(e) of the Clean Water Act recognizes that activities authorized by general permits, including NWPs, will result in adverse environmental impacts, but limits those adverse impacts so that they can only be no more than minimal. The Corps has adopted terms and conditions for the NWPs to be sufficiently protective of the aquatic environment while allowing activities that result in no more than minimal adverse environmental effects to be conducted. Requiring public notices for PCNs would be contrary to the purpose of the general permit program established through section 404(e) of the Clean Water Act, for a streamlined authorization process for activities that result in no more than minimal individual and cumulative adverse environmental effects. In addition, it is unlikely that there would be any meaningful public comment submitted to Corps districts in response to public notices for the minor activities authorized by these NWPs that would warrant the reduction in permitting efficiency providing such a comment period would cause. Compensatory mitigation can only be required by the district engineer after he or she reviews the PCN and determines that compensatory mitigation is necessary to comply with the ``no more than minimal adverse environmental effects'' requirement for NWPs (see 33 CFR 330.1(e)(3)). There is no federal statute or regulation that requires ``no net loss'' of aquatic resources. The ``no overall net loss'' goal for wetlands articulated in the 1990 U.S EPA-Army Memorandum of Agreement for mitigation for Clean Water Act section 404 permits states that the section 404 permit program will contribute to that national goal. The 1990 Memorandum of Agreement only applies to standard individual permits, not to general permits. The NWP program provides valuable protection to the Nation's aquatic resources by establishing incentives to avoid and minimize losses of jurisdictional waters and wetlands in order to qualify for the streamlined NWP authorizations. A large majority of fills in jurisdictional waters and wetlands authorized by general permits and individual permits are less than \1/10\-acre (see Figure 5.1 in the Regulatory Impact Analysis for this final rule, which is available in the [*www.regulations.gov*](http://www.regulations.gov) docket (COE-2020-0002)). The 16 NWPs use the term ``no more than minimal adverse environmental effects'' to be consistent with the text of Section 404(e) of the Clean Water Act and 33 CFR 322.2(f)(1) for Section 10 of the Rivers and Harbors Act of 1899. When making no more than minimal adverse environmental effects determinations for proposed NWP activities, the district engineer considers the adverse effects to the aquatic environment and any other factor of the public interest (e.g , 33 CFR 330.1(d)). The district engineer also applies the 10 criteria listed in paragraph 2 of Section D, District Engineer's Decision. The use of the term ``no more than minimal adverse environmental effects'' does not expand the Corps' scope of analysis. The Corps' control and responsibility remains limited to the activities it has the authority to regulate, and the effects to the environment caused by those activities. Several commenters said that the proposed NWPs are not sufficiently protective of freshwater mussels. One commenter stated that the NWPs should be modified to provide additional protections to wilderness areas. Several commenters identified specific areas of the country where they were concerned that the use of the NWPs would authorize activities with adverse environmental impacts. Many commenters said that the NWPs have increased coastal communities' vulnerability to future flood events by accelerating wetland alteration following hurricanes. One commenter stated that the NWPs should be revoked in areas included under the Safe Drinking Water Act, such as public water systems source water areas. One commenter said that all NWPs should be subject to an acreage limit of \1/10\-acre. Impacts to freshwater mussels that are listed as endangered or threatened under the ESA are addressed through general condition 18 and the subsequent ESA section 7 consultations that occur when district engineers review PCNs and determine that a proposed NWP activity may affect listed mussels. Where there are concerns about the use of NWPs in wilderness areas and other specific waterbodies or geographic areas of the United States, division engineers can add regional conditions to the NWPs to restrict or prohibit their use in those areas. The Corps does not have the legal authority to address the[[Page 2753]]vulnerability of coastal communities to future flood events or the loss of wetlands in coastal areas due to erosion, subsidence, and sea level rise. Public water systems source water areas are generally watersheds, and the Corps does not have the authority to regulate activities in uplands in these watersheds that may affect water supplies for communities. For those NWP activities that require PCNs, district engineers can consider effects to water supplies caused by regulated activities, as one of the Corps' public interest review factors (i.e , water supply and conservation at 33 CFR 320.4(m)) that can be a basis for exercising discretionary authority. The Corps believes that the \1/2\-acre limit for the NWPs, the PCN review process, and the ability of division engineers to modify, suspend, or revoke the NWPs on a regional or case-specific basis is sufficient for ensuring that the NWPs that have the \1/2\-acre limit authorize only those activities that result in no more than minimal individual and cumulative adverse environmental effects. One commenter stated that implementing NWPs under the Navigable Waters Protection Rule (NWPR) will result in more than minimal impacts and not account for areas that were jurisdictional but are not under current rule. Many commenters said that the NWPs should include language clarifying that not all ditches constructed in adjacent wetlands are jurisdictional. Many commenters stated that the discussion of wetland jurisdiction in the NWPs should mirror that in the NWPR. Many commenters asserted that there are inconsistencies between the proposed NWPs and the NWPR. Several commenters said that the terminology in the NWPs should be consistent with the NWPR, especially the terms ``stream,'' ``tributary,'' and ``ephemeral.'' The NWPs are used to authorize activities in waters and wetlands that are jurisdictional under the Corps' permitting authorities: Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. If a project proponent wants to discharge dredged or fill material into a waterbody that is not subject to Clean Water Act jurisdiction under the NWPR, then DA authorization under an NWP or any other type of Corps permit is not required for that proposed discharge. The Corps declines to add language to this final rule regarding the jurisdictional status of ditches under the Clean Water Act because that jurisdictional status is more appropriately addressed through application of the provisions of the NWPR at 33 CFR part 328. Many of the NWPs can be used to authorize discharges of dredged or fill material into numerous wetland types that are subject to Clean Water Act jurisdiction under the NWPR. There are no inconsistencies between the proposed NWPs and the NWPR. The NWPs can be used to authorize specific activities in waters and wetlands that are subject to Clean Water Act jurisdiction under the NWPR. Some of the NWPs specifically authorize discharges of dredged or fill material into streams, so the Corps declines to replace the term ``stream'' with ``tributary.'' Under the NWPR, ephemeral features, including ephemeral streams are excluded from Clean Water Act jurisdiction. One commenter requested that the Corps issue a new NWP with no PCN requirements that authorizes emergency projects such as repair of significant leaks from canals, tunnels, and other features, culvert repair and replacement, critical pump plant repairs, and small scale urgent natural disaster mitigation projects. One commenter suggested that the Corps issue a new NWP to authorize natural disaster mitigation projects (e.g , fire or flood repairs or mitigation projects) with an acreage limit of \1/10\-acre. One commenter stated that the Corps should issue a new NWP to authorize aggregate mining activities, instead of NWP 44. One commenter said that the Corps should prioritize NWP verifications for time-sensitive maintenance and emergency work. One commenter stated that the proposal should include a list of typically exempted activities, such as ditch maintenance. One commenter said that that the NWPs should include a general condition to limit the spread of invasive/noxious species. The Corps declines to issue a new NWP to authorize the repair of leaks from canals, tunnels, and other features because NWP 3 can be used to authorize discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States to repair leaking structures or fills. The Corps also declines to issue a new NWP to authorize natural disaster mitigation projects. Some of these activities are already authorized by NWP 37, emergency watershed protection and rehabilitation activities. Some of these activities can also be authorized through the Corps' emergency permitting procedures at 33 CFR 325.2(e)(4). Nationwide permit 44 authorizes aggregate mining activities, so it is not necessary to issue another NWP to authorize those activities. District engineers currently have the authority to prioritize authorization of time-sensitive maintenance and emergency work, including the use of the emergency permitting procedures at 33 CFR 325.2(e)(4). Certain NWPs include notes that point to exemptions that may be related to authorized activities. The Corps declines to add a general condition to the NWPs to require permittees to take actions to limit the spread of invasive or noxious species because such a condition would not be reasonably enforceable and invasive or noxious species can spread through natural mechanisms outside the control of permittees. The Corps' regulations at 33 CFR 325.4(a) requires permit conditions to be directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable.(1) Status of Existing Permits In response to the 2020 Proposal, the Corps received comments concerning the status of existing NWP authorizations and how the issuance of the final rule may affect those existing authorizations. The Corps also invited public comment on changing the expiration date for the 2017 NWPs to avoid having two sets of NWPs in effect at the same time. Many commenters stated that current NWPs should expire on their original expiration date (i.e , March 18, 2022). Several commenters expressed support for the 2017 NWPs expiring the day before the new NWPs become effective in order to provide certainty and continuity without imposing burdens on permittees, provided that all activities authorized by the 2017 NWPs remain approved regardless of whether those activities meet the requirements of the new NWPs. These commenters also wanted to avoid having differing sets of NWPs in effect at the same time. Many commenters stated that the Corps proposed grandfathering procedure would cause uncertainty and disruption to those who are relying on the expiration date of the 2017 NWPs and the 12-month grandfathering period. A few commenters said that the grandfathering process and applicability was unclear. One commenter stated that previously verified activities should be allowed to continue under the 2017 NWPs unless the new NWPs are more restrictive. One commenter stated that if the NWPs issued in the final rule replaces the 2017 NWPs and the NWPs issued in the final rule go into effect before the 2017 NWPs were originally scheduled to expire on March 18, 2022, the Corps should notify all permittees who submitted PCNs or received NWP[[Page 2754]]verification letters under the 2017 NWPs. The Corps acknowledges that that these changes to the NWPs may cause uncertainty and disruption for some project proponents who have received NWP verifications from the Corps. However, the Corps believes this disruption will be limited because the activities affected by the changes to the 12 existing NWPs are likely to continue to qualify for NWP authorization. Further, project proponents can work with Corps districts to efficiently obtain NWP verifications under the reissued NWPs. The information previously submitted to Corps districts via PCNs can be used to provide NWP verifications for many of the activities that will be authorized by the new NWPs for different types of utility line activities that were previously authorized by NWP 12. It is impractical to require the Corps districts to reach out to all permittees who received NWP verifications under the 2017 NWPs that are reissued in this final rule because of the number of verified activities. Once an NWP verification has been provided there is no obligation for a permittee to undertake the work that has been permitted; therefore, there it is impractical for the Corps to follow-up on every verification to ascertain if the work has been completed and/or whether the project proponent still intends to proceed with the activity authorized under the NWP. One commenter asked what would happen to activities approved under the 2017 NWPs that would start construction prior to March 18, 2022, but after the implementation dated of the new NWPs. One commenter stated that activities that no longer qualify under the new NWPs but were verified under the 2017 NWPs should have 18 months to complete the authorized activity. One commenter questioned whether projects verified under the 2017 NWPs would still be valid as verified or would they be in non-compliance and require re-authorization either by NWP or by individual permit. If a project proponent received an NWP verification under one of the 2017 NWPs, and the activity continues to be authorized by one of the existing NWPs that was reissued, that activity continues to be authorized by the 2017 NWP until it expires on March 18, 2022, unless the district engineer specified a different expiration date in the NWP verification letter (see 33 CFR 330.6(a)(3)(ii)). In contrast to the grandfathering provision at 33 CFR 330.6(b), the grandfathering provided by section 330.6(a)(3)(ii) is not dependent on when the project proponent commences construction. If the activity is not authorized by the reissued NWP, then the project proponent has 12 months to complete the authorized activity after the 16 final NWPs go into effect as long as the project proponent has commenced construction or is under contract to commence construction before the new expiration date for the twelve 2017 NWPs that are reissued in this final rule (see 33 CFR 330.6(b)). The Corps' regulations at 33 CFR 330.6(b) specify a 12-month grandfathering period for activities that no longer qualify for authorization under the reissued NWP if the activity has commenced or is under contract to commence prior to the expiration of the NWP. To change that 12-month period to 18 months would require rulemaking to amend the regulation. The validity of the prior NWP authorization would depend on whether the activity continues to be authorized by any of the 16 NWPs issued in this final rule, and whether any of the grandfathering provisions in 33 CFR 330.6 apply. One commenter said that based on section 330.6(b) permittees should have until March 18, 2023 to complete projects authorized under the 2017 NWPs as long as they are under construction or contract to commence construction. One commenter stated that special emphasis should be placed on NWP 12 if it is split into three NWPs, to ensure that activities previously authorized under the 2017 NWP 12 continue to be permitted through the date specified in the verification letter. One commenter stated that the Corps should allow for a reasonable transition between existing activities authorized by an NWP and the new NWPs, for up to one year. As discussed above, electric utility line and telecommunications activities and utility line activities for water and other substances continue to be authorized by the 2017 NWP 12 for up to 12 months as long as the project proponent has commenced construction or is under contract to commence construction before NWPs 57 and 58 go into effect. Given the anticipated effective date of this final rule, the 12-month grandfathering provision is likely to end close to March 18, 2022. The Corps believes that the current regulations provide a reasonable transition from the 2017 NWPs to the 16 NWPs issued in this final rule.(2) Pre-Construction Notification Requirements A few commenters stated they are supportive of the reduction of the number of PCN thresholds under various NWPs. A few commenters said they are supportive of the ***removal*** of the 300 linear foot PCN threshold. Many commenters stated that they are opposed to reducing the number of PCN thresholds for the NWPs because they believe these PCN thresholds are necessary to ensure that the activities authorized by these NWPs have no more than minimal adverse environmental effects. A few commenters said that the lack of PCNs does not meet the national no-net-loss of aquatic resources goal because these losses are not being mitigated. A few commenters stated their opposition to the ***removal*** of the 300 linear foot PCN thresholds. Several commenters said that they are opposed to federal agencies not having to submit PCNs because it is contrary to the Clean Water Act. The changes to the PCN thresholds for the NWPs are discussed in the sections of the final rule that apply to each NWP. With the ***removal*** of the 300 linear foot limit for losses of stream bed, the Corps has also removed the ability of district engineers to waive that 300 linear foot limit on a case-by-case basis after reviewing PCNs. Activities can be authorized by NWPs with no compensatory mitigation requirements as long as those activities result in no more than minimal individual and cumulative adverse environmental effects. In FY 2018, approximately 11 percent of activities verified by district engineers as qualifying for NWP authorization required compensatory mitigation. There is no requirement in law or regulation for no net loss of aquatic resources. The requirement for what can be authorized by an NWP is that established by Section 404(e) of the Clean Water Act requiring activities authorized by NWPs to cause only minimal individual and cumulative adverse environmental effects. As discussed in Section II.D, the Corps is retaining PCN requirements for federal agencies that use the NWPs to authorize their activities. A few commenters said that PCNs should be required for all NWP activities to ensure the authorized activities are not affecting the environment adversely and to ensure the permittee is avoiding and minimizing impacts to the maximum extent practicable. One commenter stated that a PCN should be required to ensure compliance with Section 106 of the National Historic Preservation Act. One commenter said that the timing of the review process for a PCN is not identified in the proposed rule for any of the NWPs. The Corps establishes PCN thresholds for those NWP activities that have the potential to cause more than minimal[[Page 2755]]adverse environmental effects, to provide activity-specific review and allow district engineers to exercise discretionary authority and require individual permits for activities that will have more than minimal adverse environmental effects. General condition 20 establishes PCN requirements for proposed NWP activities that have the potential to cause effects to historic properties that are undertaken by non-federal permittees. The timing of the PCN review process is provided in general condition 32. One commenter stated that the Corps undertakes many actions under its permitting authorities for which the tribes and villages are not notified. One commenter asked how the Corps ensures no more than minimal adverse environmental effects if a default NWP authorization occurs after 45 days has passed after the district engineer receives a PCN. One commenter asked for clarification as to how the Corps ensures compliance for activities that do not require PCNs. One commenter requested that Corps Headquarters clarify to each of the Corps districts that it is up to the permittee to determine whether a PCN is required or not. In conjunction with the rulemaking process for the issuance of these NWPs, Corps districts have been conducting consultation and coordination with tribes to identify regional conditions and coordination procedures to ensure compliance with general condition 17, concerning tribal rights. Activities that qualify for the default authorization that occurs 45-days after the district engineer receives a complete PCN must comply with all conditions of the NWP, including the general conditions and any applicable regional conditions imposed by the division engineer. The permittee is responsible for reading the NWPs and all of their conditions to determine whether he or she is required to submit a PCN before proceeding with an authorized activity. One commenter said that for linear projects that are considered ``single and complete,'' where some crossings do not require PCNs, the permittee should not have to divulge the non-PCN crossing information to the Corps because the permittee is not required to provide the same level of documentation for non-PCN crossings, and the project proponent should be free to move forward with the non-PCN crossings. One commenter encouraged the Corps to implement a nationwide tracking and monitoring system for NWPs with PCN requirements to share information with cooperating resource agencies so that informed decisions can be made regarding changes to the NWP program. The information on the non-PCN crossings associated with a linear project is necessary so that the district engineer can consider all crossings of waters of the United States that require DA authorization when making his or her determination that the proposed NWP activities will result in no more than minimal cumulative adverse environmental effects. The information required by paragraphs (b)(4)(i) and (ii) of general condition 32 does not change these non-PCN crossings into those requiring PCNs. The Corps tracks all NWP verifications issued for activities that require PCNs and for activities reported to Corps districts through voluntary PCNs where the permittee seeks written verification even though he or she is not required to do so.(3) Climate Change Many commenters said that the Corps should consider climate change during the reissuance of these NWPs. One commenter stated that the Corps failed to analyze climate change, the risk of which will be exacerbated by the issuance of the NWPs. Some of these commenters stated that the Corps should consider increased energy consumption as a foreseeable indirect effect of the Corps' decisions for these NWPs. Several commenters asserted that the proposed changes to the NWPs will have significant impacts on the environment, including climate change. One commenter said that the cumulative impacts of stream and wetland losses from NWP activities must be considered in the context of the changing climate. Several commenters stated that the proposed NWPs help support the nation's investment of its infrastructure, including changes to infrastructure to address global climate change. The Corps has considered climate change during the reissuance of the NWPs, and each of the national decision documents includes a discussion of climate change. Although some activities authorized by various NWPs may be associated with energy production, distribution, and use, the Corps does not have the authority to regulate or control the production, distribution, or combustion of hydrocarbons and other materials are sources of carbon dioxide and other greenhouse gases that contribute to global climate change. Permittees may use equipment during the construction of the NWP activity that emits carbon dioxide and other greenhouse gases, but those ***emissions*** occur during the construction period for the authorized activity and have an insignificant contribution to cumulative greenhouse gas ***emissions*** in the region. The activities authorized by NWPs may result in permanent or temporary impacts to wetlands and streams, and the discharges of dredged or fill material into waters of the United States and structures and work in navigable waters of the United States are only a subset of the variety of human activities that change the quantity and quality of wetlands, streams, and other aquatic resources. Those other human activities are discussed in section 4.0 of the national decision documents for these NWPs. Some activities authorized by the NWPs, such as utility line activities, bank stabilization activities, living shorelines, and aquatic resource restoration activities contribute to adaptation to climate change.C. Comments on Proposed Actions Under Executive Order 13921, Promoting American Seafood Competitiveness and Economic Growth In response to the 2020 Proposal, the Corps received comments on its proposed actions under Executive Order 13921, Promoting American Seafood Competitiveness and Economic Growth. The comments on proposed NWPs A and B for seaweed mariculture activities and finfish mariculture activities, respectively, are discussed in Section II.G of this final rule. In response to the section of the 2020 Proposal on E.O 13921, the Corps received a few comments on aquaculture in other waters of the United States, but those commenters seemed to think that the mariculture NWPs might also authorize aquaculture activities in those other waters (e.g , freshwater lakes, ponds, and wetlands). The new NWPs 55 (seaweed mariculture activities) and 56 (finfish mariculture activities) limit those activities to estuarine and marine waters. These new NWPs also authorize multi-trophic mariculture activities.D. Comments on the 2018 Legislative Outline for Rebuilding Infrastructure in America In the 2020 Proposal, the Corps requested comment on whether to modify the NWPs that require PCNs to limit the PCN requirement to non-federal permittees. The Corps requested that commenters provide their views on whether they support or oppose having different PCN requirements for Federal and non-Federal permittees, with supporting information to explain their views. After considering the comments received in response to the proposal based on the 2018 Legislative Outline[[Page 2756]]for Rebuilding Infrastructure in America, for the final NWPs the Corps decided to continue to subject both federal permittees and non-federal permittees to the same PCN requirements. Overall, the comments received in response to this aspect of the proposed rule did not support a reasoned and defensible rational for establishing different PCN requirements for federal and non-federal entities that use the NWPs to authorized activities that require DA authorization under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The comments the Corps received did not provide a substantive basis for establishing different PCN requirements for federal permittees and non-federal permittees, or establishing that federal permittees generally have a better record than non-federal permittees for complying with the NWPs and complying with related laws such as the Endangered Species Act and the National Historic Preservation Act. While the Corps would retain its enforcement authorities under the proposal, continuing to require federal agencies to submit PCNs is a more efficient means of ensuring that the NWPs authorize only those activities that result in no more than minimal individual and cumulative adverse environmental effects. Many commenters opposed the proposal to ***remove*** PCN requirements for federal permittees that want to use the NWPs to authorize their activities, because it would apply different PCN requirements and standards to federal versus non-federal permittees. Some of these commenters said this change may result in inadvertent violations. Some of these commenters stated that applying different PCN requirements for federal and non-federal permittees has no rational basis, and PCN requirements should be based on the regulated activity, not who undertakes the regulated activity. After reviewing the comments received in response to this aspect of the proposal, the Corps agrees that there is no substantive basis for establishing different PCN requirements for federal and non-federal permittees. The Corps is thus retaining the existing PCN requirements for federal permittees. Many commenters questioned whether federal agencies employ environmental experts qualified to review the projects before submitting the PCNs to the Corps and ensure that those federal agencies comply with applicable laws, regulations, and policies. Some these commenters said that expertise is inconsistent in terms of presence and depth among different federal agencies. They stated that staff at Corps districts are the best equipped with the technical knowledge and familiarity to administer the program and provide compliance oversight. The Corps agrees that knowledge regarding environmental laws and regulations, and experience in preparing environmental documentation to demonstrate compliance with environmental laws, varies among people as a whole, and is not dependent on whether they work for a federal government agency. As discussed in the 2020 Proposal, many non-federal permittees seek the assistance of environmental consultants to help them obtaining DA authorization through the NWP authorization process. Many commenters pointed out that PCNs allow the NWP program to meet the goal of no more than minimal individual and cumulative adverse impacts to the environment. Many of them said that exempting activities undertaken by federal agencies would reduce the ability of the Corps to track the cumulative effects of the NWP program. Many commenters expressed concerns with the Corps not assessing compensatory mitigation for federal permittees. They said there would be no mechanism for oversight and assurance that mitigation is completed and legally binding. Some of these commenters stated that federal permittees would have no incentive to avoid and minimize impacts and it is a clear conflict of interest for federal agencies, as they are incentivized to ensure their projects are permitted with as little cost as possible. The Corps is continuing to require PCNs from federal permittees, so there will be no change in the number of PCNs. District engineers will still review PCNs and require compensatory mitigation and other forms of mitigation when necessary to ensure that NWP activities result in no more than minimal individual and cumulative adverse environmental effects. Regarding the proposed definition of non-federal permittee, several commenters asked about the circumstances under which a non-federal permittee would be considered a federal permittee, and whether federal funding or some other federal nexus involving a local partner would be a factor. Some commenters inquired whether a state or local agency who has been delegated NEPA authority be considered a non-federal permittee. Several commenters said that there would need to be a clearer definition to help identify federal permittees who would no longer have to submit PCNs for proposed NWP activities. Because the Corps is retaining PCN requirements for federal agencies, it declines to speculate on how it would have implemented the proposal. Several commenters stated that delegation of the section 404 permitting program to another federal agency is not likely to be legally permissible and might expose the Corps to litigation. Some of these commenters said that case law suggests that such delegation of a federal agency's statutory authority is not allowed, especially in the absence of memorandum of agreement between agencies. Not requiring PCNs from federal permittees for NWP activities is not be a delegation of the section 404 permitting program. The Corps continues to implement the NWP program and take actions necessary ensure that NWP activities comply with the terms and conditions of those authorizations, including potential actions identified in its enforcement regulations at 33 part CFR 326. Several commenters did not support the inclusion of state departments of transportation (DOTs) that have been assigned NEPA responsibilities in the category of federal permittees that would not have to submit PCNs for proposed NWP activities. Some of these commenters said that state DOTs may forgo internal mitigation programs if PCNs were no longer required and district engineers would not have the ability to impose mitigation requirements on NWP activities through conditions added to the NWP authorization. Some commenters said that long-term linear transportation projects are some of the biggest contributors of turbidity in the nation's waterbodies and can have permanent impacts to streams and wetlands. Some DOTs already have funding agreements with the Corps in most states to provide supplemental staff that are required to implement impartial decision-making and are overseen and reviewed by non-funded regulators to ensure transparency and fairness. A few commenters said that if these critical safeguards be removed, DOTs will not be impartial or unbiased, and could undermine the environmental protections provided by the PCN process. Since the Corps is not changing the PCN requirements for federal permittees, it declines to speculate on how it would have implemented the proposed definition of ``non-federal permittee'' and other aspects of the proposal. A few commenters stated that ***removing*** PCN requirements for federal permittees could limit the ability of states to ensure that state water quality standards are being met under Section[[Page 2757]]401 of the Clean Water Act. If PCNs are not required, the regulatory scope of water quality protection shifts from pre-impact permitting review to more resource intensive field compliance, creating a burden on the regulatory entities responsible for protection of water quality. Pre-construction notifications ensure that NWP activities are consistent with water quality standards, water quality management plans/continuing planning process, total daily maximum loads, and anti-degradation policy. The PCN requirements do not affect the requirements of Section 401 of the Clean Water Act. If a certifying agency does not issue water quality certification for the issuance of an NWP that does not require pre-construction notification, the project proponent is still required to obtain an activity-specific water quality certification or waiver for the proposed discharge. A few commenters stated that the further an agency's focus is from natural resource management, the input from state fish and wildlife agencies is more critical. These commenters said that the participation of state natural resource agencies in the PCN review process helps ensure potential impacts to state trust resources are considered, and ensures public trust property is not taken without compensation. The Corps does not coordinate PCNs with state natural resource agencies, except for a few exceptions. Those exceptions are identified in paragraph (d) of general condition 32. Several commenters pointed out that both federal and state projects are causes of some of the nation's largest wetland losses. These commenters said that if PCN requirements are removed, there will be no way to assess the impacts of these large-scale projects and it would result in huge aquatic resource losses. Several commenters stated that few federal agencies have the level of experience in working with and consulting tribes and said that PCNs should continue to be required in order to provide communication between the potentially impacted tribe, the Corps, and the federal agency regarding any potential impacts to tribal ***lands*** and resources. Since the Corps is retaining PCN requirements for federal permittees, these concerns have been addressed. A commenter said that the preamble to the proposed rule explains that the PCN process also provides a database to inform renewal of NWPs. A couple of commenters stating that the Corps' assumption that non-federal entities, such as private entities, non-profits and even state governments do not possess the same or higher expertise than the federal government is arbitrary and unfair. One commenter stated that there has been an erosion of positions within agencies along with the required expertise for such environmental reviews. Since the Corps is retaining PCN requirements for federal permittees, there is no need to speculate on how it would have implemented the proposal. A couple of commenters said that Section 313 of the Clean Water Act states in no uncertain terms that all federal agencies ``shall be subject to, and comply with, all federal, state, interstate, and local requirements respecting the control and abatement of water pollution in the same manner, and to the same extent, as any nongovernmental entity.'' A couple of commenters stated that ***removal*** of the PCN requirements for federal permittees would make it difficult for states to identify violations and impossible for the Corps to ensure that the conditions of the permits are being property implemented, especially since recent changes to the EPA's regulations for Clean Water Act Section 401 water quality certifications, which preclude certifying authorities from monitoring and enforcing conditions of permitted activities. Since the Corps is retaining PCN requirements for federal permittees, there is no need to respond to these comments. One commenter requested clarification regarding use of the phrase ``NEPA responsibility for all federal highway project in the state'', and asked whether the Corps intended to only provide federal permittee status to those NEPA assignment states who accept all federal highway projects in the state. One commenter stated that state transportation agencies would gain efficiency by elimination of PCNs for many small projects. A few commenters supported the proposal and believe it will streamline review and approval of permitting while allowing the Corps to focus on individual permitting needs. Several commenters supported the proposed definition of ``non-federal permittee'' including the inclusion of state DOTs. The Corps is not adopting the proposed definition of ``non-federal permittee'' so it is not necessary to address the comments on the proposed definition. One commenter supports the PCN process and encourages the Corps to work with state agencies for additional options such as reducing comment periods to reduce overall time constraints associated with Corps permitting. Several commenters suggested that there should be a certification process through which individuals receive training by the Corps and demonstrate that they have sufficient knowledge to preserve the intent of the NWPs. They said the Corps should develop a set of criteria that each entity needs to meet to demonstrate proficiency to allow the entity to be exempt from submitting PCNs for proposed NWP activities. The Corps does not solicit comments from state agencies on proposed NWP activities, except for certain NWP activities identified in paragraph (d) of general condition 32. The Corps does support the development of a certification process for potential users of the NWPs. Certain NWPs do not require the submission of PCNs but for those that do, district engineers will continue to review and render decisions on those actions. One commenter suggested that the Corps exempt private companies that are undertaking projects in conjunction with, or in response to, federal projects. One commenter stated that the Corps should clarify whether states, or entities acting with or on behalf of states, would be exempt from the requirement to submit PCNs when operating under the Surface Transportation Block Grant Program, which allows states to implement road projects and other projects using federal money with some amount of regulatory oversight by the Federal Highways Administration. A couple commenters suggested that if the Corps does not require PCNs for activities undertaken federal permittees, the PCN requirements for all applicants could be included as regional conditions to the NWPs. The Corps is retaining the PCN requirements for federal permittees, therefore it declines to speculate on how it would have implemented the proposal. One commenter suggested modifying the PCN exemption to only encompass federal, state, or local agencies that have established their credentials for application of the NWP program. One commenter suggested an exemption from PCN requirements for federal permittees when pre-construction notification is required solely as a result of federal consultation thresholds noted in the NWP general conditions. One commenter suggested there would be a benefit in including a statement clarifying that state transportation agencies with NEPA delegation are the federal leads in terms of ESA Section 7 and NHPA 106 compliance. One commenter stated that most DOTs strive for consistency and implement NEPA requirements on all projects, which ensures compliance with federal regulations and allows previously non-[[Page 2758]]federal aid projects to become federal aid projects when additional federal funds become available. One commenter suggested that if this proposal is enacted, the Corps should provide specific standards for professional qualifications similar to 36 CFR part 61, Appendix A. The Corps is retaining the PCN requirements for federal permittees, so it declines to speculate on how it would implement the proposal. One commenter stated that to the extent there is a perception of delay caused through federal administrative shortfalls and backlogs, a greater level of funding for Corps staff and offices would be a better investment in reducing perceived delays. This commenter said that exchanging one federal staff funding shortfall for another agency with less expertise would not produce a net gain in permitting efficiency while complying with the duty to authorize only those impacts that will have minimal adverse effects on the environment. One commenter suggested that the Corps evaluate whether a PCN requirement should be based on qualifications rather than the federal status of a permittee. This commenter said that an audit process could be implemented to verify past and continued quality of the applicant's work. One commenter suggested the Corps focus on how to improve staff training and the mechanics of the PCN process so that it is completed in a reliable, transparent, and effective manner within the designated time frames. The Corps is retaining the PCN requirements for federal permittees, so these concerns have been addressed.E. Comments on Regional Conditioning of Nationwide Permits Under Section 404(e) of the Clean Water Act, NWPs can only be issued for those activities that result in no more than minimal individual and cumulative adverse environmental effects. For activities that require authorization under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 403), the Corps' regulations at 33 CFR 322.2(f) have a similar requirement. Since it can be difficult for the Corps to draft national NWPs in such a way that they account for regional differences, an important mechanism for ensuring compliance with these requirements is regional conditions imposed by division engineers to address local environmental concerns. Effective regional conditions help protect local aquatic ecosystems and other resources and help ensure that the NWPs authorize only those activities that result in no more than minimal individual and cumulative adverse effects on the environment and are not contrary to the public interest. Corps regional conditions are added to the NWPs by division engineers in accordance with the procedures at 33 CFR 330.5(c). Water quality certification (WQC) and Coastal Zone Management Act (CZMA) consistency concurrence regional conditions are also added to the NWPs if an appropriate certifying authority issues a water quality certification or CZMA consistency concurrence with special conditions prior to the finalization of the issued, reissued, or modified NWPs. Corps regional conditions approved by division engineers cannot ***remove*** or reduce any of the terms and conditions of the NWPs, including general conditions. Corps regional conditions cannot lessen PCN requirements. In other words, Corps regional conditions can only be more restrictive than the NWP terms and conditions established by Corps Headquarters when it issues or reissues an NWP. The Corps' regulations for establishing WQC regional conditions for the NWPs are located at 33 CFR 330.4(c)(2). If, prior to the issuance or reissuance of NWPs, a state, authorized tribe, or EPA issues a Clean Water Act section 401 water quality certification with conditions, the division engineer will make those water quality certification conditions regional conditions for the applicable NWPs, unless he or she determines that a specific condition in a water quality certification issued for the issuance of an NWP does not comply with 40 CFR 121.7(d)(2). If the district engineer makes such a determination, then he or she will consider that condition waived under 40 CFR 121.9(b) after written notice is provided to EPA and the certifying authority consistent with 40 CFR 121.9(c). For more information on compliance with Section 401 of the CWA, refer to Section III.G For CZMA consistency concurrences issued by a state for the issuance of an NWP, if the division engineer determines those CZMA concurrence conditions do not comply with 33 CFR 325.4, then the conditioned CZMA consistency certification will be considered an objection, and the project proponent will need to request an activity-specific CZMA consistency concurrence from the state (see 15 CFR 930.31(d)) under subpart D of 15 CFR part 930. Corps regional conditions may be added to NWPs by division engineers after a public notice and comment process and coordination with appropriate federal, state, and local agencies, as well as tribes. After Corps Headquarters publishes in the Federal Register the proposal to issue, reissue, or modify NWPs, all district engineers issue local public notices to advertise the availability of the proposed rule in the Federal Register and to solicit public comment on proposed regional conditions and/or proposed revocations of NWP authorizations for specific geographic areas, classes of activities, or classes of waters (see 33 CFR 330.5(b)(1)(ii)). As discussed above, regional conditions are an important tool for taking into account regional differences in aquatic resources and their local importance and for ensuring that the NWPs comply with the requirements of Section 404(e) of the Clean Water Act, especially the requirement that activities authorized by NWPs may only result in no more than minimal individual and cumulative adverse environmental effects. Regional conditions are modifications of the NWPs that are made by division engineers. Regional conditions can only further condition or restrict the applicability of an NWP (see 33 CFR 330.1(d)). Under 33 CFR 330.5(c)(1)(i), the first step of the Corps' regional conditioning is for district engineers to issue public notices announcing proposed regional conditions, and to solicit public comment on those proposed regional conditions, usually for a 45-day comment period. Those public notices also solicit suggestions from interested agencies and the public on additional regional conditions that they believe are necessary to ensure that the NWPs authorize only those activities that have no more than minimal adverse environmental effects. The district public notices are generally issued shortly after Corps Headquarters publishes the proposed NWPs in the Federal Register. After the public comment period ends for the district public notices, the Corps district evaluates the comments and begins preparing the supplemental documents required by 33 CFR 330.5(c)(1)(iii) for each NWP. Each supplemental document will evaluate a specific NWP on a regional basis (e.g , by Corps district geographic area of responsibility or by state) and discuss the need for regional conditions for that NWP. Each supplemental document will also include a statement by the division engineer that will certify that the NWP, with approved regional conditions, will authorize only those activities that will have no more than minimal individual and cumulative adverse environmental effects. The supplemental documents may cover a[[Page 2759]]Corps district, especially in cases where the geographic area of responsibility for the Corps district covers an entire state. The supplemental documents may cover a state when there is more than one Corps district in the state, and the lead Corps district for that state is responsible for preparing the supplemental documents. If more than one Corps district operates in a state, the lead district is responsible for preparing the supplemental documents and coordinating with the other Corps districts. The supplemental documents include an evaluation of public and agency comments, with responses to those comments, to show that the views of potentially affected parties were fully considered (33 CFR 330.5(c)(1)(ii)). The supplemental document also includes a statement of findings demonstrating how substantive comments were considered. After the supplemental documents are drafted by the district, they are sent to the division engineer for review along with the district's recommendations for regional conditions. The division engineer may approve the supplemental documents or request changes to those supplemental documents, including changes to the regional conditions recommended by the district. After the division engineer approves the regional conditions and signs the supplemental documents, the district issues a public notice on its website announcing the final Corps regional conditions and when those regional conditions go into effect (see 33 CFR 330.5(c)(1)(v)). Copies of the district's public notice are also sent to interested parties that are on the district's public notice mailing list via email or the U.S mail. The public notice will also describe, if appropriate, a grandfathering period as specified by 33 CFR 330.6(b) for those who have commenced work under the NWP or are under contract to commence work under the NWP (see 33 CFR 330.5(c)(1)(iv)). A copy of all Corps regional conditions approved by the division engineers for the NWPs are forwarded to Corps Headquarters (see 33 CFR 330.5(c)(3)). Under the current regulations, Corps Headquarters does not have a formal role in the development and approval of Corps' regional conditions by division engineers. However, Corps Headquarters provides templates for the supplemental documents required by Sec. 330.5(c)(1)(iii), to promote consistency in those supplemental documents. If requested by district and division offices, Corps Headquarters also provides advice on appropriate Corps regional conditions for the NWPs. The Corps is a highly decentralized organization, with most of the authority for administering the regulatory program delegated to the 38 district engineers and 8 division engineers (see 33 CFR 320.1(a)(2)). District engineers are responsible for the day-to-day implementation of the Corps Regulatory Program, including the evaluation of applications for individual permits, evaluating PCNs for proposed NWP activities, evaluating notifications for activities authorized by regional general permits, responding to requests for approved and preliminary jurisdictional determinations, conducting compliance and enforcement actions, and other tasks. Division engineers are responsible for overseeing implementation of the Regulatory Program by their districts, and making permit decisions referred to them by district engineers under the circumstances identified in 33 CFR 325.9(c). Under that section of the Corps' regulations, a division engineer can refer certain permit applications to the Chief of Engineers for a decision. Other than making permit decisions under the circumstances listed in Sec. 325.9(c), Corps Headquarters is responsible for development of regulations, guidance, and policies. When a state, authorized tribe, or EPA issues a WQC for the issuance of an NWP and that WQC includes conditions, those conditions become conditions of the NWP authorization, unless one or more conditions is waived because they do not meet the criteria at 40 CFR 121.7(d)(2). The processes for states, approved tribes, and EPA to issue WQCs for the issuance of the NWPs, are separate from the Corps' regional conditioning process under 33 CFR 330.5(c), and are governed by state, tribal, or EPA, regulations. The Corps' current regulations for water quality certification for the NWPs are found at 33 CFR 330.4(c), and those regulations provide a process for WQC conditions becoming conditions of the NWPs when WQCs are issued for the NWPs before the NWPs are issued by Corps Headquarters. When a state issues a general CZMA consistency concurrence with conditions for an NWP, those conditions become CZMA regional conditions if, after recommendation by the district engineer, the division engineer determines those conditions are acceptable under 33 CFR 330.4(d)(2). The processes for states to issue general CZMA consistency concurrences for the NWPs, are separate from the Corps' regional conditioning process under 33 CFR 330.5(c), and are governed by Department of Commerce regulations. When the final WQCs and CZMA consistency concurrences are issued, District and division engineers will review those WQCs and CZMA consistency concurrences and determine which conditions become conditions for the final NWPs. Division engineers will then finalize any Corps regional conditions. After division engineers finalize Corps regional conditions, Corps districts will issue public notices announcing the final regional conditions and the final WQCs and CZMA consistency concurrences for the issuance of the NWPs. The Corps will post copies of the district public notices announcing the final Corps regional conditions and final WQC/CZMA conditions in the regulations.gov docket (docket number COE-2020-0002), under ``Supporting and Related Material.'' At present, districts manage their own processes for soliciting public comment on their regional conditions. In general, they make solicitations of public comment available on their own website and do not always make the comments they receive publicly available. To further improve the nationwide transparency of the regional conditioning process, the Corps is considering revising the regulations governing the regional conditioning process at 33 CFR 330.5(c). Specifically, the Corps is considering whether to require the districts to post and solicit public comment on notices proposing regional conditions in separate dockets at [*www.regulations.gov*](http://www.regulations.gov). Even though such changes were outside the scope of this action, the Corps solicited public comment on whether to implement this or a similar requirement relating to the regional conditioning process and any factors we should consider in a future rulemaking. While the comments relate to matters that were outside the scope of this action, the Corps appreciates the helpful suggestions it received from the public. The Corps will consider them as we continue to examine whether changes may be necessary to the regulations governing the regional conditioning process. Several commenters said that regional conditions are excessive and/or unnecessary. Several commenters requested that Corps Headquarters review and concur with regional conditions before they are finalized. A few commenters said that regional conditions may be appropriate in some cases in specific areas of the country. A few commenters said that rationale and justification for regional conditions should be made available to the public. A few commenters recommended that Corps Headquarters provide detailed[[Page 2760]]guidance to district offices regarding how to develop regional conditions. A few commenters said that Corps districts are inconsistent on how they create regional conditions. A couple of commenters said that current regional conditions should not change. One commenter said that regional conditions should be specific to watersheds or ecoregions and not differ between districts. The Corps believes that regional conditions are necessary to tailor the NWPs on a regional basis to ensure that the NWPs authorize only those activities that result in no more than minimal individual and cumulative adverse environmental effects. Under the Corps' current regulations at 33 CFR 330.5(c), division engineers have the authority to add regional conditions to the NWPs and Corps Headquarters has no role in that approval process. The supplemental documents division engineers prepare for adding regional conditions to the NWPs require consideration of the comments received on the district's public notices on the proposed regional conditions and a statement of findings showing how substantive comments were considered by the division engineer (see 33 CFR 330.5(c)(1)(iii)). Regional conditions do not need to be consistent across districts, among divisions, or nationally because they are intended to address specific regional issues or concerns for the aquatic environment or any of the Corps' public interest review factors. If regional conditions are specific to watersheds, differences in regional conditions among districts are inevitable because different watersheds are likely to have different resource concerns and different factors affecting what adverse environmental effects might be considered more than minimal. One commenter stated that Corps districts should be able to develop and identify appropriate regional conditions. One commenter said that the proposed changes to regional conditions will ***remove*** coordination processes with state partners. One commenter remarked that the proposed changes will result in a disproportionate impact to floodplains and flood-prone areas. One commenter said that the regional conditions for NWPs 12, C, and D should be the same in each region. One commenter stated that there is inconsistency between whether or not Corps districts consider oil and gas natural pipelines as utility lines in regional conditions. Corps districts identify regional conditions, and make recommendations to division engineers. The approval authority for regional conditions lies with the division engineer (see 33 CFR 330.5(c)). Regional conditions can provide for coordination with state partners, and that coordination may be removed as regional conditions are considered for a new set of NWPs. The Corps does not have the authority to regulate floodplains and flood-prone areas per se. The Corps has the authority to regulate discharges of dredged or fill material into waters of the United States, and those waters and proposed discharges may be located in floodplains or flood-prone areas. Having identical regional conditions for NWPs that authorize utility line activities would be contrary to the intent of regional conditions, which is to address regional differences in aquatic resources and ensure that the NWPs authorize only those activities that result in no more than minimal individual and cumulative adverse environmental effects. Oil and natural gas pipelines are a type of utility line and regional conditions are intended to address specific resource concerns. One commenter said that regional conditions should include programmatic compliance with other federal laws. One commenter stated that regional conditions should be used to require in-kind mitigation and adopt impact and mitigation thresholds or associated methodologies. One commenter said that regional conditions should be developed to provide additional protection for species of concern and cultural/historical sites. One commenter asserted that regional conditions should be developed to require tribal consultation for every permit. One commenter said that regional conditions should prohibit work during spawning period for fish of cultural concern or which would jeopardize wild rice beds. Regional conditions may be helpful in ensuing programmatic compliance with other federal laws. Regional conditions can also be used to specify mitigation requirements for the NWPs. Regional conditions can help provide protection for listed species, historic properties, and cultural resources, often by adding PCN requirements to help ensure that required consultations for those resources are undertaken. Decisions on whether and how to consult with tribes on proposed NWP activities are made on a case-by-case basis by district engineers. Regional conditions may add time-of-year restrictions on authorized activities to ensure that those activities have no more than minimal adverse effects on fish spawning or rice beds. Several commenters requested greater transparency in the process of establishing regional conditions, saying that public notices, rationales for regional conditions, and comments received on proposed regional conditions should be available on separate dockets at [*www.regulations.gov*](http://www.regulations.gov). Several commenters requested revisions to governing regulations to require posting of any proposed additions of, changes to, or revocations of regional conditions in separate dockets on [*www.regulations.gov*](http://www.regulations.gov). Several commenters requested that the Corps create and maintain a single, national website where all proposed and final regional conditions can be viewed. The Corps will consider these comments when it prepares the next rulemaking for the issuance of NWPs. A few commenters said that public notice processes for regional conditions should be consistent between districts. A few commenters stated that districts are inconsistent and limit comment by requiring subscriptions to respective mailing lists rather than publishing notices in the Federal Register or on [*www.regulations.gov*](http://www.regulations.gov). One commenter said that public notices for regional conditions should be published in the Federal Register. Two commenters asked for the same level of written justification for adoption of regional conditions that is required to reissue or modify the NWPs. One commenter said that publication of these documents on separate web pages or dockets is redundant and unnecessary. One commenter stated that that comments received on regional conditions should be posted to a web page. One commenter stated that the Corps analyses for regional conditions do not satisfy statutory requirements. Two commenters said that it is difficult to find public notices or regional conditions on district web pages. The public notice process for regional conditions is consistent among all Corps districts, because the public notice process is described in the Corps' regulations at 33 CFR 330.5(c)(1). The current regulations governing the regional conditioning process relies on public notices, and does not include provisions requiring the publication of notices in the Federal Register. During the next rulemaking process for the NWPs, the Corps will decide whether to use [*www.regulations.gov*](http://www.regulations.gov) for managing and posting public comments received on proposed regional conditions. Each Corps district is responsible for managing its own web pages, and regional conditions apply to a particular Corps district, so it is appropriate for Corps districts to post public notices for regional conditions proposed for their districts on their web pages.[[Page 2761]]F. Comments on Proposed ***Removal*** of the 300 Linear Foot Limit for Losses of Stream Bed In the proposed rule, the Corps proposed to ***remove*** the 300 linear foot for losses of stream bed from NWPs 21 (Surface Coal Mining Activities), 29 (Residential Developments), 39 (Commercial and Institutional Developments), 40 (***Agricultural*** Activities), 42 (Recreational Facilities), 43 (Stormwater Management Facilities), 44 (Mining Activities), 50 (Underground Coal Mining Activities), 51 (***Land***-Based Renewable Energy Generation Facilities), and 52 (Water-Based Renewable Energy Generation Pilot Projects). All of these NWPs have a \1/2\-acre limit for losses of non-tidal waters of the United States, including non-tidal wetlands and non-tidal streams. With the exception of NWPs 43 and 51, these NWPs require pre-construction notification for all activities. Nationwide permit 43 does not require PCNs for maintenance of existing stormwater management facilities, as long as those maintenance activities are limited to restoring the original design capacities of the stormwater management facility or pollutant reduction green infrastructure feature. Nationwide permit 51 does not require PCNs for activities that result in the loss of \1/10\-acre or less of waters of the United States. Therefore, district engineers will review all proposed activities for these on a case-by-case basis, except for the NWP 43 and 51 activities identified above. When reviewing these PCNs, district engineers apply the 10 criteria in paragraph 2 of Section D, District Engineer's Decision, to determine whether the proposed activities will result in no more than minimal individual and cumulative adverse environmental effects. In the proposed rule, the Corps presented a number of reasons for these proposed changes to NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52. The Corps' rationale comprises four categories of considerations: (1) The Corps employs several tools in the NWP Program to ensure that NWP activities result only in no more than minimal individual and cumulative adverse environmental effects; (2) ***removing*** the 300 linear foot limit would provide consistency across the numeric limits used by the NWP Program for all categories of non-tidal waters of the United States (i.e , jurisdictional wetlands, streams, ponds, and other non-tidal waters); (3) it would further the objective of the NWP Program stated in 33 CFR 330.1(b) (i.e , to authorize with little, if any, delay or paperwork certain activities having minimal impacts), by providing equivalent quantitative limits for jurisdictional wetlands, streams, and other types of non-tidal jurisdictional waters, and NWP authorization for losses of jurisdictional stream bed that have no more than minimal individual and cumulative adverse environmental effects; and (4) using acres or square feet (i.e , an area-based metric) instead of linear feet is a more accurate approach to quantifying losses of stream bed and also serves as a better surrogate for losses of stream functions when a functional assessment method is not available or practical to use. After reviewing the comments received in response to the proposed rule, for the reasons discussed below the Corps has decided to ***remove*** the 300 linear foot limit for losses of stream bed from the 10 NWPs listed above. The comments received in response to the proposed rule are summarized below. The Corps' responses to those comments are also provided along with the comment summaries. Retaining the \1/2\-acre limit for losses of non-tidal jurisdictional waters and wetlands in these 10 NWPs while ***removing*** the 300 linear foot limit for losses of stream bed will help further Congressional intent with respect to Section 404(e) of the Clean Water Act when that provision was enacted into law in 1977. Section 404(e) authorizes the Corps to issue, after notice and opportunity for public hearing, general permits on a state, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if the Corps determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment. Section 404(e) does not prescribe any particular approaches for ensuring that activities authorized by general permits result in no more than minimal individual and cumulative adverse environmental effects, thus the Corps developed the PCN process and provided division and district engineers with the authority to modify, suspend, or revoke NWP authorizations on a regional or activity-specific basis after the NWPs are issued by Corps Headquarters. General permits provide a process for authorizing, with minimal paperwork and delays, activities that have no more than minimal individual and cumulative adverse environmental effects. General permits are an important tool for the Corps managing its personnel and workload so that it can focus its efforts on evaluating permit applications for proposed activities that have the potential to cause more than minimal adverse environmental effects. ***Removing*** the 300 linear foot limit for losses of stream bed under these 10 NWPs provides equivalent quantitative limits for all categories of non-tidal jurisdictional waters, including non-tidal ``tributaries,'' ``lakes, ponds, and impoundments of jurisdictional waters,'' and ``adjacent wetlands'' (see 33 CFR 328.3(a)). These non-tidal waters will continue to be subjected to the \1/2\-acre limit for losses of non-tidal waters. Except for NWPs 43 and 51, these NWPs require PCNs for all authorized activities, and district engineers will review these PCNs to determine which activities can be authorized by an NWP and which activities should require individual permits. When reviewing a PCN, the district engineer has the authority to exercise discretionary authority to modify, suspend, or revoke the NWP authorization (see 33 CFR 330.1(d)). When a district engineer reviews a PCN, and if she or he determines that the proposed activity would have more than minimal individual or cumulative net adverse effects on the environment or otherwise may be contrary to the public interest, he or she will either modify the NWP authorization to reduce or eliminate those adverse effects, or instruct the prospective permittee to apply for a regional general permit or an individual permit (Sec. 330.1(d)). To determine whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects, the district engineer will apply the 10 criteria in paragraph 2 of Section D, District Engineer's decision. Those ten criteria for making minimal adverse environmental effects determinations are: (1) The direct and indirect effects caused by the NWP activity; (2) the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal; (3) the environmental setting in the vicinity of the NWP activity; (4) the type of resource that will be affected by the NWP activity; (5) the functions provided by the aquatic resources that will be affected by the NWP activity; (6) the degree or magnitude to which the aquatic resources perform those functions; (7) the extent that aquatic resource functions will be lost as a result of the[[Page 2762]]NWP activity (e.g , partial or complete loss); (8) the duration of the adverse effects (temporary or permanent); (9) the importance of the aquatic resource functions to the region (e.g , watershed or ecoregion); and (10) mitigation required by the district engineer.If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to help determine whether the proposed activity will result in no more than minimal adverse environmental effects. The ***removal*** of the 300 linear foot limit for losses of stream bed will help increase administrative efficiency by providing a mechanism to authorize, through the NWP Program activities that result in the loss of greater than 300 linear feet of jurisdictional stream bed, but less than \1/2\-acre of non-tidal jurisdictional waters. Under the 2017 NWPs, filling or excavating more than 300 linear feet of a perennial stream bed requires an individual permit even under circumstances where the loss of the stream bed would result in no more than minimal individual and cumulative adverse environmental effects. Under this final rule, district engineers would review PCNs for proposed losses of jurisdictional stream bed (plus any other losses of non-tidal waters of the United States) that are less than \1/2\-acre and determine whether those proposed activities can be authorized by one of these 10 NWPs. If, for a particular PCN, the district engineer determines that the individual and cumulative adverse environmental effects would be more than minimal, he or she will exercise discretionary authority and require an individual permit. This approach provides administrative efficiency by providing a mechanism for district engineers to distinguish which proposed activities should be authorized by an NWP versus which activities should require individual permits with a public notice and comment process and activity-specific evaluations under NEPA, the public interest review, and the Clean Water Act section 404(b)(1) Guidelines. This approach also adds efficiency in terms of reducing processing times and paperwork for proposed activities that have no more than minimal adverse environmental effects and that are likely to generate few, if any, public or agency comments in response to a public notice for an individual permit application. When more activities that result in no more than minimal adverse environmental effects can be authorized by an NWP, there can be more staff and other resources for Corps districts to devote to undertaking other tasks, such as the review and approval of mitigation banks and in-lieu fee programs and overseeing their operation, conducting compliance actions to ensure that authorized activities are being conducted in accordance with the terms and conditions of their DA authorizations, and conducting approved and preliminary jurisdictional determinations that help project proponents plan and design their proposed projects to avoid and minimize impacts to jurisdictional waters and wetlands. Another benefit of ***removing*** the 300 linear foot limit for losses of jurisdictional stream bed and shifting the quantification of losses of jurisdictional stream bed towards the \1/2\-acre limit for losses of non-tidal waters of the United States is more accurate accounting of the impacts of activities authorized by these 10 NWPs. The discharges of dredged or fill material authorized by these NWPs occur over an area of a river or stream bed and also may include impacts to other aquatic resources such as wetlands or open water areas (e.g , lakes or ponds). The discharge to a river or stream has a length and a width, and the width can vary depending on the physical characteristics of the impact area, the type of activity being conducted (e.g , bank stabilization, channel excavation, channel realignment), and other factors. To be regulated under Section 404 of the Clean Water Act, a discharge of dredged material involves any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States that is incidental to any activity, including mechanized ***land*** clearing, ditching, channelization, or other excavation (see 33 CFR 323.2(d)(1)(iii)). A regulated discharge of fill material involves the addition of fill material into waters of the United States that has the effect of either replacing any portion of a water of the United States with dry ***land*** or changing the bottom elevation of any portion of a water of the United States (see 33 CFR 323.3(e) and (f)). The direct impacts of these activities are most accurately quantified on an area basis, not a linear basis, to inform a district engineer's decision on whether a proposed activity should be or is authorized by an NWP and to track cumulative impacts. Accurate quantification of stream bed losses authorized by an NWP is an important component of determining whether a proposed NWP activity will result in no more than minimal individual adverse environmental effects. (See item 1 above from paragraph 2 of Section D, District Engineer's Decision: Understanding ``the direct and indirect effects caused by the NWP activity.'') Accurate quantification of stream bed losses is also important for tracking cumulative impacts of activities authorized by an NWP, both on a national and regional basis, and for determining whether a particular NWP activity will contribute to more than minimal cumulative adverse environmental effects. (See item 2 of paragraph 2 of the District Engineer's Decision: ``The cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal.'') As discussed in the 2020 Proposal (85 FR 57316), discharges of dredged or fill material into jurisdictional streams can cause losses of stream bed along only a portion of the stream bed (e.g , bank stabilization projects that involve discharging fill along the edge of the stream, with no fill in the rest of the stream bed) or across the entire stream bed (e.g , excavating the stream bed to mine aggregates) along a stream reach. A wide variety of activities involving filling or excavating stream bed may be authorized by these NWPs, such as bank stabilization, channel realignment, culvert installation or replacement, stream channel restoration, the installation of grade control structures (e.g , rock), fills for footings for bridges, livestock crossings, utility line crossings, and temporary fills for construction and access. Quantifying losses of stream bed in linear feet does not distinguish between filling or excavation activities that occur only in a portion of the stream bed along an ordinary high water mark versus filling or excavation activities that occur in the entire stream bed, from ordinary high water mark to ordinary high water mark. Accurate quantification of losses of stream bed and losses of other types of jurisdictional waters and wetlands is also important for monitoring and evaluating the cumulative adverse environmental effects caused by NWP activities. In response to the 2020 Proposal, numerous commenters criticized the Corps' assessment of cumulative effects for the NWPs. An essential step in conducting a cumulative effects analysis for an NWP is estimating how many times that NWP may be used during the period the NWP is in effect, the quantity of jurisdictional waters and wetlands that may be lost or[[Page 2763]]directly altered by the activities authorized by that NWP, whether those losses or alterations are permanent or temporary, and what, if any compensatory mitigation is being used to offset those losses. The Corps provides those estimates in its national decision documents, and those estimates are more robust if they use a common metric, so that it is possible to calculate total losses and offsets during the period the NWP is in effect. Division engineers have discretionary authority to modify, suspend, or revoke NWP authorizations on a regional basis (33 CFR 330.5(c)) to help ensure that the NWPs are only used to authorize activities that have no more than minimal individual and cumulative adverse environmental effects. For example, if a Corps district determines, in a particular watershed, county, Corps district, or other geographic region, that cumulative losses of stream bed authorized by NWPs may be approaching a level that might exceed the ``no more than minimal cumulative adverse environmental effects'' threshold, the Corps district can request that the division engineer modify, suspend, or revoke the relevant NWP authorizations in that region. The division engineer can add regional conditions to the appropriate NWPs to restrict or prohibit their use in particular categories of waters, or suspend or revoke the NWP authorization so that those NWP(s) can no longer be used to authorize regulated activities in that geographic region. The division engineer's authority to modify, suspend, or revoke NWP authorizations on a regional basis can also be used to sort out which activities can be authorized by an NWP versus which activities should require individual permits. District engineers have discretionary authority to modify, suspend, or revoke NWP authorizations on a case-specific basis (see 33 CFR 330.5(d)) to help ensure that NWPs are only used to authorize specific activities that have no more than minimal individual and cumulative adverse environmental effects. A district engineer can add conditions to an NWP authorization to reduce potential adverse environmental effects that might be caused by a proposed NWP activity, such as mitigation requirements to avoid or minimize direct and indirect effects caused by that activity. One example is a time of year restriction to prevent discharges of dredged or fill material from occurring during spawning seasons for fish or other aquatic organisms. Another example of a permit conditions to help reduce adverse environmental effects caused by an NWP activity might be to require the use of certain best management practices. A district engineer might also add permit conditions to the NWP authorization to require compensatory mitigation to offset losses of waters of the United States caused by the NWP activity. As the Corps implements this final rule, it will continue to rely on these administrative tools that have long been used with these 10 NWPs to help ensure that authorized activities will result in no more than minimal individual and cumulative adverse environmental effects. Those tools are the \1/2\-acre limit for losses of non-tidal waters of the United States, the pre-construction notification requirements and associated activity-specific review by district engineers, the regional conditions that can be added by division engineers, and the activity-specific conditions that can be added by district engineers when reviewing individual PCNs. The proposal was made in accordance with the recommendations in the report issued by the Office of the Assistant Secretary of the Army (Civil Works) in response to E.O 13783 on ways to streamline the NWPs. In the proposed rule, the Corps invited public comment on the proposal to ***remove*** the 300 linear foot limit and to rely on the \1/2\-acre limit, the PCN process, the proposed modification of the ``mitigation'' general condition (general condition 23), and other tools to comply with the statutory and regulatory requirement that activities authorized by an NWP must result in no more than minimal individual and cumulative adverse environmental effects. The Corps also invited comment on whether there are situations where quantifying losses of stream bed in linear feet might more accurately represents the actual amount of stream bed filled or excavated as a result of an NWP activity and would result in more defensible determinations on whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects. In the proposed rule, the Corps asked commenters to provide information that would help illustrate or explain how and under what circumstance using a linear foot measure to quantify losses of stream bed would be more accurate than using square feet or acres to quantify the amount of authorized impacts. The Corps also invited comment on the legal, regulatory, policy, or scientific bases for imposing different numeric limits on jurisdictional stream bed losses versus losses of non-tidal jurisdictional wetlands or other types of non-tidal jurisdictional waters. Commenters were encouraged to provide supporting information in the form of citations to laws, regulations, and policies, and the scientific literature, because substantive information would be valuable in assisting the Corps in preparing the final NWPs. The Corps also requested comment on an alternative hybrid approach to establishing consistent quantitative limits for losses of stream bed authorized by NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52. Under the proposed hybrid approach, losses of stream bed would continue to be quantified in linear feet as long as the activities authorized by these NWPs would result only in the loss of stream bed. There would be linear foot limits for losses of stream bed by stream order identified using the Strahler (1957) method, and the mean stream widths identified by Downing et al. (2012). If a proposed NWP activity would result in the loss of jurisdictional stream bed plus other types of waters of the United States, such as non-tidal jurisdictional wetlands, the losses of waters of the United States would be quantified in acres and subjected to the \1/2\-acre limit. In the preamble to the proposed rule, the Corps provided a table for the hybrid approach (see 85 FR 57321). A critical component of effectively applying the hybrid approach is identifying the correct stream order for the stream segment that is proposed to be filled or excavated as a result of the proposed NWP activity. In this hybrid approach, the linear foot limits would only apply to losses of stream bed. If a proposed NWP activity would result in a combination of losses of jurisdictional stream bed and other types of waters of the United States, such as non-tidal jurisdictional wetlands, then the \1/2\-acre limit would apply to the combined losses of stream bed and non-tidal wetlands, to keep those losses below \1/2\-acre. In conjunction with the proposal to ***remove*** the 300 linear foot limit for losses of stream bed, the Corps proposed to ***remove*** the provisions in these NWPs regarding the ability of district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed when the applicant submits a PCN and requests a waiver of that 300 linear foot limit. On April 21, 2020, EPA and the Department of the Army published a final rule to define ``waters of the United States'' entitled the Navigable Waters Protection Rule (85 FR 22250). On June 22, 2020, the Navigable Waters Protection Rule became effective in all states and jurisdictions except for the State of Colorado due to a federal[[Page 2764]]district court-issued stay in that state. The rule revised the definition of ``waters of the United States'' at 33 CFR 328.3 such that ephemeral features, including ephemeral streams, are categorically excluded from jurisdiction under the Clean Water Act (see 33 CFR 328.3(b)(3)). Therefore, there would be no need to request waivers for losses of ephemeral stream bed (regardless of length) since NWP authorization (or any other form of DA authorization) will not be needed to authorize discharges of dredge or fill material into ephemeral streams. See Section III.C, for more discussion on the potential impact of the Navigable Water Protection Rule on the NWPs. In addition, the Corps proposed to ***remove*** the agency coordination process for seeking input from federal and state agencies on whether the district engineer should grant the waiver of the 300 linear foot limit requested by an applicant for an NWP verification. ***Removing*** the waiver provision may reduce costs to permittees by reducing the amount of time the district engineer needs to make her or his decision. For example, the district engineer would not have to wait up to 25 days (see paragraph (d)(3) of the ``pre-construction notification'' general condition (GC 32) to make the decision on whether to issue the NWP verification. ***Removal*** of the agency coordination for these activities is also likely to reduce administrative costs to the Corps, by reducing the amount of staff time needed to send copies of PCNs to the agencies and summarizing and responding to agency comments. ***Removal*** of the waiver provision and associated agency coordination would also free up additional time for Corps staff to review other PCNs, other permit applications, and other regulatory actions such as jurisdictional determinations and compliance activities. As mentioned above, under the Navigable Waters Protection Rule, ephemeral streams are not ``waters of the United States.'' See 33 CFR 328.3(b)(3). Therefore, it should be noted that this would likely reduce the current number of waivers and required interagency coordination process from state and federal agencies, since the current waivers apply only to certain intermittent streams. Many commenters opposed the ***removal*** of the 300 linear foot limit for losses of stream bed. Many commenters supported the proposed change, stating that calculating losses of stream bed in acres is a more accurate measure of those losses since acreage takes both the length and width of the stream channel into account when determining the amount of stream bed filled or excavated by an NWP activity. Several commenters in favor of the proposed change expressed concern with how this change would affect mitigation banks and credit calculations for future and past permits. Several commenters believed this change would continue to ensure that the activities authorized by these NWPs would result in no more than minimal impacts. As discussed above, the Corps is ***removing*** the 300 linear foot limit for losses of stream bed from NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 for the reasons discussed in this final rule to increase the efficiency of the NWP program, utilize a metric that more accurately reflects the amount of impact, and to allow NWP authorization of losses of stream bed where district engineers determine that those losses would have no more than minimal adverse environmental effects after reviewing PCNs. Quantifying losses of stream bed in acres or square feet will be more accurate, provide a more substantial and defensible basis for decision-making by district engineers on PCNs for these activities, and provide more accurate data for the Corps to track cumulative impacts of the activities authorized by these NWPs. The ***removal*** of the 300 linear foot limit will not affect the ability of district engineers to require compensatory mitigation or other forms of mitigation for losses of stream bed. In addition, it should not have a substantial effect on mitigation banks that have already been approved and mitigation banks that may be approved in the future. Depending on how existing mitigation banks quantify the credits they produce, there may have to be some technical changes in how credit transactions occur between mitigation bank sponsors and permittees, to determine the appropriate number of stream credits that are needed to offset a permitted loss of stream bed. A few commenters supported the ***removal*** of the 300 linear foot limit because the district engineer retains the ability to exercise discretionary authority to require individual permits if the adverse environmental effects caused by a proposed activity would be more than minimal. These commenters also said they support the ***removal*** of the 300 linear foot limit as long as Corps divisions and districts can continue to develop and use regional conditions in districts that have specific resource concerns. The PCN process is an administrative tool that helps ensure that activities authorized by NWPs cause no more than minimal individual and cumulative adverse environmental effects, by providing activity-specific review of these activities by district engineers before they are authorized by an NWP. The \1/2\-acre limit is another tool that helps ensure that activities authorized by these NWPs have no more than minimal adverse environmental effects. In geographic areas where there are concerns about cumulative losses of headwater streams and the functions they provide, division engineers can add regional conditions to these NWPs to reduce the acreage limit from \1/2\-acre to a lower acreage limit, such as \1/4\-acre or \1/10\-acre. In addition, division engineers can add regional conditions to these NWPs to lower the threshold for requiring stream compensatory mitigation from \3/100\-acre to a different acreage threshold. Many commenters expressed concerns with ***removing*** the 300-linear foot limit on loss of stream bed for these NWPs, stating that this change would allow much larger impacts to smaller stream channels since they typically have smaller widths and therefore a permittee could impact a much longer length of stream before reaching the \1/2\-acre limit. Many commenters said that a linear foot measurement was more appropriate for calculating stream impacts and losses than an acreage-based system because streams are fundamentally linear features in the landscape. Many commenters stated that the Corps has not provided any scientific rational or reasoning behind this change and even the scientific studies cited by the Corps were not interpreted appropriately. As discussed above, the Corps will rely on other, existing protective mechanisms within the NWPs to ensure that the activities authorized by these NWPs will result in no more than minimal individual and cumulative adverse environmental effects. Those tools include the \1/2\-acre limit, the PCN requirements for these NWPs, and the ability of division and district engineers to further condition or restrict the applicability of an NWP in situations where they have concerns for the aquatic environment under the Clean Water Act section 404(b)(1) Guidelines or for any factor of the public interest (see 33 CFR 330.1(d)). While rivers and streams have a strong linear component, they also vary substantially in width. Discharges of dredged or fill material into waters of the United States that cause losses of waters of United States through the filling or excavation of stream beds occur over an area, and using acres or square feet to quantify losses of stream bed is more informative to determinations of minimal effects and[[Page 2765]]accurate in data accounting than using linear feet. The potential losses of stream functions, and whether those losses are more than minimal, can be addressed through the PCN review process. When determining whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects, district engineers will apply the 10 criteria in paragraph 2 of Section D, District Engineer's Decision. Decisions regarding quantitative limits for the NWPs are administrative decisions because the legal threshold for general permits (``no more than minimal individual and cumulative adverse environmental effects'') is a subjective threshold. Applying this subjective threshold to complex ecological systems requires a district engineer to exercise his or her judgment as to whether that threshold is crossed for particular NWP activity. Another tool that the Corps added to this final rule to help ensure that the activities authorized by these NWPs will result in no more than minimal individual and cumulative adverse environmental effects is the addition of a \3/100\-acre threshold for stream compensatory mitigation in paragraph (d) of the mitigation general condition (general condition 23). The \1/10\-acre wetland mitigation threshold in general condition 23 has been effective in providing incentives for project proponents to reduce wetland losses well below the \1/2\-acre limit to avoid the costs of providing wetland compensatory mitigation. As shown in figure 5.1 of the Regulatory Impact Analysis for this final rule, more than 80 percent of losses of waters of the United States verified by district engineers in fiscal year 2018 as qualifying for NWP authorization were less than \1/10\-acre. The losses of waters of the United States in figure 5.1 include losses of stream bed, which were quantified in acres. The Corps anticipates that the \3/100\-acre stream compensatory mitigation threshold will also be an effective incentive to permittees to reduce losses of stream bed to avoid the costs of providing stream compensatory mitigation to offset losses of greater than \3/100\-acre of stream bed. For NWP activities that require PCNs, district engineers continue to have discretion to require stream compensatory mitigation for losses of stream bed above or below the \3/100\-acre threshold in paragraph (d) of general condition 23. Several commenters also questioned the Corps' use of the study by Downing et al. (2012), which examined stream channels all over the world, stating that stream channels may be narrower in the United States (citing an average width in the United States of 2.6 feet). Several commenters stated support of a hybrid approach in lieu of an acreage calculation, but were concerned about the variability of stream order classifications and the availability of tools to Corps districts to implement that approach in an effective and defensible manner. One of these commenters noted that LiDAR is not available in all areas of the country. Many commenters opposed the proposed `hybrid approach' in the preamble in which stream impact limits would vary by stream order by applying a mean stream width. Some of these commenters asserted that a linear foot metric is still likely a more accurate and easier method since determining stream order is highly varied along with determining a stream width. The Corps acknowledges that the study by Downing et al. (2012) does not fully represent the variability in stream dimensions. One of the purposes of using the information in that study was to demonstrate how a linear foot limit for losses of stream bed results in disparate differences in the amount of stream bed that can be filled or excavated under an NWP depending on where an affected stream reach is located in a tributary network (i.e , a headwater stream versus a stream segment located further downstream in a watershed). In a study of headwater streams in North America and New Zealand, using field surveys of headwater streams instead of the published data and satellite imagery used by Downing et al. (2012), Allen et al. (2018) found a typical width of 1.05 feet for headwater streams. The Corps agrees that the hybrid approach proposed in the preamble to the 2020 Proposal would not be an efficient or effective approach to establishing quantitative limits for these 10 NWPs. There is not sufficiently accurate mapping of headwater streams in the United States to implement such a hybrid approach, and the hybrid approach would not take into account regional variability in stream geomorphology. The Corps does not agree that a linear foot metric is easier or more accurate than an acreage-based metric. The area of stream bed filled or excavated as a result of an NWP activity is already calculated by the Corps to record impacts to aquatic resources, and it represents the amount of stream bed lost as a result the discharges of dredged or fill material regulated under Section 404 of the Clean Water Act. Many commenters also questioned how stream width was to be measured (ordinary high water mark to ordinary high water mark versus stream bed/bottom) which could also produce variability in how an acreage limit would be applied. Many commenters recognized that the measures for small and large streams should be different but until a more appropriate metric is developed, acreage should not be used in lieu of linear feet since it would be inappropriate to adopt a measure that better represents larger stream systems while the overwhelming majority of impacts occur to smaller streams and are therefore better represented for the time being by a linear foot measurement. Stream width should be measured from ordinary high water mark to ordinary high water mark, perpendicular to the longitudinal direction of the stream channel. That is consistent with the definition of ``stream bed'' in Section F of the NWPs. Commenters did not suggest a more accurate method for quantifying impacts to small and large streams in their comments. Establishing different metrics for small versus large streams also presents challenges in terms of consistently determining what constitutes a small stream versus a large stream, which has the potential for being an arbitrary distinction and would add another layer of complexity to the NWP program. Many commenters noted that smaller stream channels provide important ecological functions and values and they provided numerous references to scientific studies that document the importance of these stream channels as linear systems in the landscape. Some of these commenters said impacts to small stream channels were more severe and/or permanent (e.g , complete losses by filling entire stream reaches) and noted that small streams are more susceptible to fragmentation impacts, are harder to restore/mitigate, and have compounding effects to downstream waters when impacts are cumulative and more than minimal. Many commenters noted that, in general, disproportionate impacts already occur to these smaller order stream channels because it is easier from an engineering standpoint and ultimately less costly to impact them versus larger order stream channels, and that ***removing*** the 300 linear foot limit would provide even less incentive to avoid and minimize impacts to these important resources. The ecological functions of smaller stream channels are to be considered by district engineers when they review PCNs for proposed activities involving filling or excavating stream beds. When evaluating PCNs, district engineers consider the 10 criteria in paragraph 2[[Page 2766]]or Section D, District Engineer's Decision. Those criteria include: The environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity, and the importance of the aquatic resource functions to the region. Division engineers can add regional conditions to the NWPs to impose lower acreage limits or other restrictions to address concerns about potential losses of smaller stream channels and the functions they provide, including cumulative impacts to those smaller stream channels. The Corps acknowledges that, because of their size, smaller stream channels may be more susceptible to proposed development activities and other activities involving discharges of dredged or fill material into waters of the United States. Project proponents are less likely to fill larger stream channels because of the water that flows towards those larger stream channels, but other activities such as bank stabilization, excavation activities in the stream bed, and realigning stream channels may be authorized by these NWPs. ***Removing*** the 300 linear foot limit and relying on the \1/2\-acre limit and PCN review process to identify activities that require individual permits helps the Corps implement its permit program more effectively, to efficiently authorize activities with no more than minimal adverse environmental effects via NWP, and focusing more of its resources on evaluating individual permit applications for activities that are likely have more substantial environmental impacts. Many commenters said that this change would allow more than minimal impacts because of the disproportionate length of impacts to headwater streams that would be allowed now under the NWP program, which is said to be counter to and inconsistent with the goal and purpose of the NWP program. Many commenters questioned how the Corps could reconcile and justify this change based on the long-standing history of the 300-linear foot limit for losses of stream bed in the NWP program. Many commenters stated that individual permits should be required for proposed impacts to more than 300 linear feet of stream bed, to allow for the public and federal, state, and local resource agencies to comment on proposals to fill or excavate several thousand feet of stream bed. The Corps will be relying on other, existing protective mechanisms within the NWPs to ensure that these NWPs authorize only those activities that have no more than minimal adverse environmental effects. The NWP program has changed over time as new information is considered and alternative ways of implementing the program are identified to further the program's objective of regulating, ``with little, if any, delay or paperwork certain activities having minimal impacts'' (33 CFR 330.1(b)). The ***removal*** of the 300 linear foot limit, continued application of the \1/2\-acre limit, plus the ability of division and district engineers to exercise their discretionary authority to modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis, respectively, will ensure that activities that would cause more than minimal adverse environmental effects will be evaluated through the individual permit process. Many commenters expressed concern about other changes within this proposal, when combined with the ***removal*** of the 300 linear feet limit would eliminate agency coordination with federal and state resource agencies under paragraph (d) of general condition 32. One commenter said that when reviewing the number of individual permits issued versus activities authorized under NWPs that even with what the commenter considers the more stringent 300-linear foot limit in place there is no justifiable need for reducing regulatory burden since the number of individual permits is so small compared to NWP verifications and this change would likely not result in any significant decrease in number of individual permits or regulatory burden. For the 10 NWPs that had the 300 linear foot limit for losses of stream bed, the agency coordination process in paragraph (d) of general condition 32 was limited to requests for waivers of the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Ephemeral streams are not waters of the United States (see 33 CFR 328.3(b)(3)) and therefore not subject to jurisdiction under Section 404 of the Clean Water Act. In its Regulatory Impact Analyses for the proposed and final rules, the Corps acknowledges that the ***removal*** of the 300 linear foot limit is likely to result in a modest increase in NWP authorizations (174 per year), and a commensurate decrease in the number of activities that require individual permits. However, a modest reduction in the number of individual permits that must be processed each year can help improve administration of the Corps Regulatory Program and allow the Corps to devote more time and resources to working with project proponents to reduce the environmental impacts of activities that have the potential to result in more substantial impacts to jurisdictional wetlands and waters. Many commenters said that the proposed \1/10\-acre mitigation threshold for losses of stream bed was not an adequate tool for ensuring no more than minimal adverse environmental effects based on the disproportionately large amount of impacts to smaller headwater streams that would need to occur before compensatory mitigation was required. Many commenters expressed concern about the potential for increased likelihood for out-of-kind mitigation being provided to offset headwater stream impacts if mitigation is based on an acreage or other area-based metric for losses of stream bed. These commenters said that out-of-kind mitigation would likely increase because it would be the only option available to permittees due to fewer stream credits being generated and available as mitigation bankers and other mitigation providers adapt to this change and the uncertainty in the market that this change might create. The comments received on the proposed \1/10\-acre threshold for stream mitigation are discussed in the section of this preamble that discusses the comments received on general condition 23. In response to those comments, the Corps reduced the threshold for stream mitigation from \1/10\-acre to \3/100\-acre. As explained in the discussion of general condition 23 below, this change in the stream mitigation threshold aligns with current practice for stream mitigation requirements in the NWP program, and the recommendations for the stream mitigation threshold provided by commenters. The Corps uses a watershed approach for compensatory mitigation (see 33 CFR 332.3(c)). The goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites (see 33 CFR 332.3(c)(1)). A watershed approach considers how the types and locations of compensatory mitigation projects will provide the desired aquatic resource functions, and will continue to function over time in a changing landscape (33 CFR 332.3(c)(2)(i)), and may involve the use of out-of-kind mitigation. Under a watershed approach, other approaches to stream restoration may be used to generate stream credits besides headwater stream channel reconfiguration projects. These other approaches may include process-based[[Page 2767]]stream restoration activities such as dam ***removal***, culvert replacements, levee setbacks or ***removals***, riparian area restoration, allowing beavers to construct dams to aggrade incised channels, or installing structures that mimic beaver dams to aggrade incised channels (Beechie et al. 2010) to generate compensatory mitigation credits for activities authorized by these NWPs. The use of beaver dams or structures to aggrade incised stream channels may result in wetland/stream complexes for which an area-based credit metric may be more appropriate than a linear foot-based metric. Focusing on restoring stream functions can be more ecologically successful in improving stream functions than form-based restoration approaches such as channel reconfiguration that have had questionable success in restoring degraded streams (Palmer et al. 2014). The stream credits generated by channel reconfiguration projects in headwater streams can be quantified in linear feet or acres, because the Corps' compensatory mitigation regulations do not mandate a specific approach for quantifying stream credits. Section 332.8(o)(1) states that the principal units for credits and debits are acres, linear feet, functional assessment units, or other suitable metrics of particular resource types. The preamble to the 2008 mitigation rule states that ``district engineers retain the discretion to quantify stream impacts and required compensatory mitigation in terms of area or other appropriate units of measure'' (73 FR 19633). The Corps received many comments and questions about how these changes would likely negatively affect long-standing stream mitigation accounting and the mitigation banking industry in general. These commenters said that a linear foot metric has always been used for stream assessment methodologies and the basis for mitigation accounting systems, and many commenters stated that changing this metric would be unnecessarily burdensome and costly to stream restoration professionals and likely result in fewer stream restoration projects. One commenter stated that the proposed change would not increase mitigation opportunities in larger or higher order stream channels as proposed since the restoration of larger streams is more complex than smaller streams and is dependent on many variables to include funding availability, site selection, engineering and design considerations, mitigation requirements associated with the project, market incentives, and the inability to control future impacts in the headwaters which can jeopardize the larger stream restoration project. As stated in the previous paragraphs, the Corps' regulations do not require use of a linear foot metric for stream assessment methodologies or for quantifying stream impacts or compensatory mitigation credits. The ***removal*** of the 300 linear foot limit for losses of stream bed and the changes to general condition 23 are likely to benefit the mitigation banking industry by providing more opportunities for stream restoration projects that can generate stream credits to offset losses of stream bed authorized by the NWPs and other types of DA permits. The Corps acknowledges that some efforts will need to be made to address differences in accounting systems, but mitigation providers including mitigation bank sponsors and in-lieu fee program sponsors should be able to estimate the amount of stream credits quantified in linear feet that are needed to offset an specific acreage of stream bed lost as the result of an NWP activity. The district engineer can assist in these determinations to ensure that the amount of stream mitigation credits is roughly proportional to the authorized losses of stream bed. Several commenters said that establishing a stream compensatory mitigation threshold of \1/10\-acre would allow approximately 1,675 linear feet of a first order stream channel with a 2.6-foot wide channel to be impacted under these NWPs before any compensatory mitigation would be required, which does not meet the Corps' mandated goal of no net loss to aquatic resources and would cause more than minimal effects to these aquatic resources. In response to public comment, the Corps has modified paragraph (d) of general condition 23 to change the proposed \1/10\-acre threshold for stream mitigation to \3/100\-acre to make the threshold more consistent with current practice and the recommendations made by commenters. The reasons for changing the proposed \1/10\-acre stream mitigation threshold to \3/100\-acre are provided in the discussion of general condition 23 below. There is no mandated goal of no net less to aquatic resources in any law or regulation that applies to the Corps' NWP Program. Compensatory mitigation, including stream compensatory mitigation, is required for NWP activities on a case-by-case basis to ensure that the authorized activities result in no more than minimal adverse environmental effects. District engineers determine when compensatory mitigation is required for NWP activities. In prior versions of the NWPs, the Corps had no threshold for requiring compensatory mitigation for losses of stream bed, so those commenters were referring to district practices. Corps districts determined on an activity-specific basis when stream mitigation is necessary for specific NWP activities. One commenter asserted that based on ORM2 data analyzed for stream channel impacts, that the proposed \1/10\-acre stream compensatory mitigation threshold would result in the loss of an additional 130,000 linear feet of headwater streams in which no mitigation would be provided. Several commenters expressed concerns about how this change would affect current mitigation banks that were in the process of being approved and inquired whether all previously executed mitigation banking instruments would need modification to continue to operate and sell credits to permittees. One commenter said that the proper regulatory tool to rectify the disparity between stream impacts versus stream mitigation would be the 2008 mitigation rule and requiring higher mitigation ratios and not revision of these NWPs. The 2017 NWPs and prior NWPs had no threshold for requiring stream mitigation for NWP activities. The proposed addition of the \1/10\-acre stream mitigation threshold in paragraph (d) of general condition 23 is a new threshold. That threshold has been reduced to \3/100\-acre in response to many commenters that provided calculations to support the reduction. Many commenters did not take into account the ability of district engineers to require stream compensatory mitigation for losses of stream bed less than the acreage threshold specified in paragraph (d) of general condition 23. This is similar in practice to the \1/10\-acre wetland mitigation threshold in paragraph (c) of general condition 23, where district engineers also have had the authority to require wetland compensatory mitigation for wetland losses less than \1/10\-acre. Several commenters recommended delaying these changes to allow for more time to study potential effects and one commenter requested that due to the potential for significant environmental effects, an environmental impact statement should be prepared for this propose change. One commenter said that the Corps already converts stream loss/impacts to acreage in their Regulatory Program database (ORM2) for accounting purposes and asked would the change from linear feet to acreage even be needed in the first place. Several commenters said that the current 300-linear foot threshold was[[Page 2768]]too high and should be even further reduced. The Corps is only ***removing*** a quantitative limit from these 10 NWPs, and is not changing stream compensatory mitigation requirements aside from establishing an acreage threshold in paragraph (d) of general condition 23 that is generally consistent with current agency practice. Under the waiver provision in the 2017 version of these 10 NWPs, district engineers could waive the 300 linear foot limit for losses of intermittent and ephemeral stream beds, but the loss of stream bed could not exceed \1/2\-acre. Therefore, it has been a long-standing practice in the NWP program to quantify of losses of stream bed in acres. The ***removal*** of the 300 linear foot limit and the change to general condition 23 does not require an environmental impact statement. As one commenter recognized, the Corps tracks losses of stream bed in its ORM2 database in acres. Several commenters seemed to misunderstand the PCN requirements of these NWPs and believed that the proposed changes implied that no notification would be required for any losses of waters of the United States less than \1/10\-acre for any of these NWPs and that the \1/10\-acre mitigation threshold was the same as the PCN threshold. This misunderstanding resulted in many comments concerned about the Corps not even knowing what impacts are occurring if PCN thresholds are not triggering activity-specific review of these activities by district engineers, and stated that this change would allow activities with more than minimal adverse environmental effects to occur. Several commenters said that the rulemaking process for the NWPs in cases where the Corps does not review PCNs the authorization is automatically issued in some cases with no mitigation proposed. These commenters stated that not requiring PCNs could cause more than minimal impacts. The \1/10\-acre stream mitigation threshold proposed in paragraph (d) of general condition 23 is not the same as the \1/10\-acre PCN threshold in NWP 51. If activities are authorized by NWPs without the requirement to submit PCNs, then compensatory mitigation is not required for those NWP activities, because compensatory mitigation requirements must be imposed by district engineers by adding conditions to the NWP authorization. However, it should be noted that all activities authorized by these 10 NWPs require PCNs, except for certain activities authorized by NWPs 43 and 51. Nationwide permit 43 does not require PCNs for the maintenance of stormwater management facilities. Nationwide permit 51 does not require PCNs for the loss of \1/10\-acre or less of waters of the United States. Many commenters said that the ***removal*** of the 300 linear foot limit would result in a loss of critical habitat for many aquatic species listed under the Endangered Species Act which have cultural and economic importance to tribes. One commenter stated that the ***removal*** of the 300 linear foot limit could result in long reaches of streams channels upstream of tribal ***lands*** being developed which could cause, without any notification to the affected tribes, downstream changes to tribal ***lands*** in terms of stream flow, water quality, subsistence of water use, or cultural water use. Several commenters asked how the tools that the Corps mentioned in the proposed rule as safeguards, such as the PCN review process, regional conditions, activity-specific permit conditions, and use of discretionary authority, prevent more than minimal adverse environmental effects. Several commenters oppose the proposed ***removal*** of the 300 linear foot limit because it could essentially be a `tipping point' for a headwater stream system, and that there would be no way to recover the functions and values lost to that system because of approval of large impacts to streams. The ***removal*** of the 300 linear foot limit does not affect how compliance with Section 7 of the ESA is conducted for the NWPs. If the district engineer reviews a PCN for a proposed activity authorized by NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, or 52, and determines that activity may affect listed species or designated critical habitat, she or he will conduct section 7 consultation with the U.S FWS or NMFS as appropriate. Activities authorized by these NWPs must also comply with general condition 17, tribal rights. During the rulemaking process for these NWPs, Corps districts have been consulting or coordinating with tribes to identify regional conditions and coordination procedures to help ensure compliance with general condition 17. As discussed in the proposed rule, the PCN review process, regional conditions, and activity-specific conditions have been used successfully for years to ensure that activities authorized by the NWPs result in no more than minimal adverse environmental effects. Tipping points are difficult to identify, and if they can be identified, they are likely to vary from watershed to watershed. One commenter said that headwater streams warrant more protection because of their relative importance in providing habitat, hydrologic, and water quality benefits to downstream waters, and said that replacing a linear metric with an area-based metric will reduce protection of headwater streams. This commenter stated that most nutrient and hydrologic inputs to streams occur along the borders of riparian zones and streams, so impacts to streams should be quantified in linear feet. In addition, this commenter noted that the longer total stream length and higher nitrogen ***removal*** efficiency of lower order streams is the main reason stream length is so important to water quality and why headwater streams are much more important to water quality functions in stream networks than are higher order streams. This commenter said that headwater streams are being lost at high rates, and that more losses of these streams will result in increases of eutrophication of downstream waters, more downstream flooding, and more transportation of pollutants to downstream waters. This commenter stated that using area as a quantitative limit for both headwater streams and higher order rivers will decrease protection and diminish the ecological importance of headwater streams. This commenter concluded that the current linear foot limit is appropriate for streams because they are linear systems that interact with their landscapes along linear borders. The Corps believes that an appropriate level of protection can be provided to headwater streams through the \1/2\-acre limit, the PCN process, and the ability of division and district engineers to modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis, respectively. When reviewing PCNs, district engineers will apply the 10 criteria identified in paragraph 2 of Section D, District Engineer's Decision. In regions where there are concerns that the use of the NWPs may result in more than minimal cumulative adverse effects to headwater streams and the functions they provide, division engineers can add regional conditions to these NWPs to establish an acreage limit lower than \1/2\-acre or revoke one or more of these NWPs. Headwater streams are not provided any special status under the Corps' regulations or the U.S EPA's Clean Water Act Section 404(b)(1) Guidelines. The only streams that are special aquatic sites under the 404(b)(1) Guidelines are riffle and pool complexes (see 40 CFR 230.45), and many headwater streams are not riffle and pool complexes. For the reasons provided above, the Corps has removed the 300 linear foot limit from NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52.[[Page 2769]]G. Response to Comments on Specific Nationwide Permits(1) NWP 12. Oil or Natural Gas Pipeline Activities The Corps proposed to modify this NWP to limit it to oil or natural gas pipeline activities, and issue two new NWPs to authorize electric utility line and telecommunications activities (proposed new NWP C, now designated as NWP 57) and utility line activities for water and other substances (proposed new NWP D, now designated as NWP 58). The Corps also invited public comment on national construction standards and best management practices that could be incorporated into the text of NWP 12 to help ensure that this NWP authorizes only those activities (i.e , discharges of dredged or fill material into waters of the United States and/or structures or work in navigable waters of the United States) that result in no more than minimal individual and cumulative adverse environmental effects.General Comments Some commenters expressed their support for dividing NWP 12 into three separate NWPs while some commenters objected to that aspect of the proposed rule. Many commenters stated that the Corps should reissue NWP 12 in its current form. One commenter said that the 2017 NWP 12 contains sufficient PCN thresholds and conditions to provide appropriate environmental protections. One commenter objected to the proposed modifications to NWP 12 made in response to E.O 13783, Promoting Energy Independence and Economic Growth, stating that these changes would make it easier for oil and gas pipeline activities to occur at the expense of the environment. Several commenters said that the Corps should limit the number of activities authorized by this NWP because continuing to authorize these activities contributes to cumulative effects to natural resources. After reviewing the comments received in response to proposed NWPs 12, C, and D, the Corps is finalizing and issuing these NWPs. Nationwide permit 12 authorizes oil or natural gas pipeline activities, NWP 57 authorizes electric utility line and telecommunications activities, and NWP 58 authorizes utility line activities for water and other substances. These NWPs are issued to fulfill the objective of the NWP program, which is to authorize, with little, if any, delay or paperwork certain activities having no more than minimal impacts (33 CFR 330.1(b)). The proposed modifications to NWP 12 were made, in part, to respond to the direction provided by E.O 13738, which is to revise existing regulations that ``unduly burden the development of domestic energy resources beyond the degree necessary to protect the public interest or otherwise comply with the law.'' In this NWP, the Corps has retained the terms and conditions that are necessary to ensure that the activities authorized by this NWP result in no more than minimal individual and cumulative adverse environmental effects. The Corps acknowledges that the use of the NWPs to authorize activities during the 5-year period the NWP is in effect results in some cumulative adverse environmental effects, but the limits, PCN requirements, general conditions, and the ability of division and district engineers to modify, suspend, and revoke NWP authorizations all help to ensure that this NWP causes no more than minimal cumulative adverse environmental effects at the national, regional, and site scales. A few commenters stated that the proposed NWP 12 would result in reduced opportunities for the Corps and for the public to evaluate the impacts of oil and natural gas pipeline activities on water resources and the environment in general. One of these commenters said that the Corps should provide additional opportunities for public involvement. One commenter stated that public participation opportunities during the NWP permitting process are sufficient; and expanding the existing requirements at the district level would cause unwarranted delays in permitting. One commenter suggested that the Corps should notify the public of proposed NWP 12 activities. A few commenters said that pipelines can cause significant direct and indirect impacts to fish and wildlife habitat and water quality associated with an increase in watershed runoff. The public is provided an opportunity to comment on the Corps' proposal to issue, reissue, or modify an NWP when Corps Headquarters publishes its proposed rule in the Federal Register to start the public comment period. However, after an NWP is issued, there is no public comment process for specific NWP activities. If, for a proposed oil or natural gas pipeline activity, the district engineer exercises discretionary authority and requires an individual permit for that activity, the public will have an opportunity to provide comments in response to the public notice issued by the Corps district. When reviewing PCNs for proposed oil or natural gas pipeline activities, district engineers consider the potential direct and indirect impacts on fish and wildlife habitat and water quality, as well as other public interest review factors identified in 33 CFR 320.4(a)(1). One commenter said that natural gas pipeline activities authorized by NWP 12 comply with industry standards that are protective of the environment and public safety. One commenter stated that pipelines provide a safe, reliable, efficient, and cost-effective way to move bulk liquids, particularly over long distances, and that the U.S Department of Transportation's Pipeline and Hazardous Materials Safety Administration concurs with that statement. The Corps acknowledges these comments. One commenter said that while oil or natural gas pipelines may be regulated by other agencies, the Corps is not relieved of its obligation to conduct a NEPA analysis for leaks or spills. A few commenters stated that the Corps must consider in its NEPA review the impacts that could result from authorizing a pipeline that would carry toxic material, including leaks or spills, and that the draft decision document doesn't take the required ``hard look''. In the national decision document for the issuance of this NWP, the Corps discusses leaks or spills that may occur during the construction and/or operation of oil or natural gas pipelines. The Corps does not have the authority to take actions to prevent or control potential leaks or spills that may occur during the construction or operation of oil or natural gas pipelines. Since the Corps does not regulate the release of oil, natural gas, or products derived from oil or natural gas, it is not required to perform a detailed analysis of the effects of those possible future leaks or spills because those leaks or spills are not an effect of the Corps' proposed action (see the definition of ``effects or impacts'' at 40 CFR 1508.1(g)). One commenter stated that pipeline abandonment issues in NWP 12 should be treated consistently across the districts and recommended that the NWP 12 terms should provide this consistency. A few commenters said that NWP 12 should continue to authorize emergency installation, replacement or repair of utility lines. One commenter requested that the Corps clarify the types of time-sensitive activities, including integrity digs, that are authorized under NWPs 12 and 3. One commenter requested clarification of the scope of maintenance activities under NWP 12. One commenter said that the Corps should facilitate the construction, repair, and/or replacement of climate resilient underground linear infrastructure to support climate[[Page 2770]]adaptive and resilient energy systems through the issuance of general permits. Corps districts have discretion to determine on a case-by-case basis how to address pipeline abandonment activities. Nationwide permit 12 can be used to authorize emergency installation, replacement or repair of utility lines. The reduction of the number of PCN thresholds for this NWP may facilitate the implementation of these emergency activities by reducing delays in securing NWP authorization. The Corps does not believe that it is necessary add text to the NWP to specifically address integrity digs, because discharges of dredged or fill material into waters of the United States for integrity digs can be considered part of maintenance, which is included in the first sentence of this NWP. The activities authorized by this NWP can contribute to the construction, repair, and/or replacement of climate resilient underground linear infrastructure to support climate adaptive and resilient energy systems. One commenter stated that the Corps should ensure that activities authorized by NWP 12 do not commence construction in uplands in protected critical habitats until the ESA section 7 consultation process has been completed. A few commenters indicated concern that cumulative impacts are not adequately considered in the decision document for NWP 12. A few commenters asserted that the scope of the cumulative impacts has proven to be more than minimal. One of these commenters stated that the draft decision document for NWP 12 already acknowledges that the cumulative impacts are more than minimal. A few commenters said that the Corps should consider the cumulative upstream and downstream impacts of its actions regarding oil and natural gas pipelines, including climate impacts. A few commenters expressed concern for potential effects on drinking water and aquifers. One commenter expressed a general concern for waterways affected by NWP 12 activities. The Corps does not have the authority to prevent project proponents from conducting activities in uplands before they receive NWP verifications from district engineers in response to PCNs. The national decision documents issued by Corps Headquarters address cumulative impacts in accordance with the Clean Water Act Section 404(b)(1) Guidelines at 40 CFR 230.7 for the issuance of general permits. The Council on Environmental Quality's NEPA regulation at 40 CFR 1508.1(g)(3) repealed the 1978 definition of ``cumulative impact,'' so under the current NEPA regulations the cumulative effects analysis for an NWP is similar to the approach the Corps uses under 40 CFR 230.7(b)(3): Estimating the number of times the NWP is anticipated to be used during the 5-year period it will be in effect, the authorized impacts to jurisdictional waters and wetlands, and the compensatory mitigation required to offset losses of jurisdictional waters and wetlands. Those impacts, and the compensatory mitigation, are evaluated against the current environmental setting (i.e , the affected environment), which includes the past and present effects of human activities and natural events that have shaped the current environmental setting. The Corps does not have the authority to regulate the operation of any oil or natural gas pipeline, or the ***emissions*** that result from combustion of oil or natural gas, or from the industrial processes that derive other products from oil or natural gas. Therefore, under the current NEPA regulations, the Corps is not required to evaluate those upstream and downstream impacts, including potential impacts on the planet's climate. The national decision document for this NWP considers effects on water supply and conservation as part of the public interest review. When reviewing PCNs, district engineers will evaluate the effects of proposed NWP activities on waterways.Activities Authorized by NWP 12 One commenter said that the first sentence of NWP 12 should be revised as follows: ``Activities required for the construction, replacement, maintenance, repair and ***removal*** of oil, natural gas and gaseous fuel pipelines and utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than \1/2\-acre of waters of the United States for each single and complete project.'' The Corps declines to make this change because it is covered by the definition of ``oil or natural gas pipeline'' provided in the second paragraph of this NWP. Oil or natural gas pipelines. One commenter stated that if the Corps moves forward with limiting NWP 12 to oil or natural gas pipeline activities, it should also delete the phrase ``including outfall and intake structures'' because oil and natural gas pipelines and distribution systems do not contain water outfall or water intake pipe structures. The Corps has made this change to the second paragraph of this NWP. A few commenters said that the terms ``oil'', ``gas'', and ``natural gas'', and ``petrochemicals'' are vague and overbroad for the purposes of determining compliance with the proposed NWPs and can have various meanings, and that any proposed changes should be subjected to notice and comment procedures. A few commenters stated that terms associated with the proposed NWP 12 that require clarification include ``utility lines,'' since pipeline activities authorized by NWP 12 might be both pipelines and utility lines; ``other substances,'' because gas and petrochemicals can be found in many types of infrastructure and industrial products; and ``gas'' and ``natural gas,'' because liquified petroleum gas is not a natural gas. The Corps has made changes to the definition of ``oil or natural gas pipeline'' to take into account the wide variety of products that may be derived from oil or natural gas and transported in these pipelines. In response to comments received in response to the 2020 Proposal, and to provide additional clarity on the types of products that may be transported by oil or natural gas pipelines versus utility line activities that may be authorized by NWP 58, the Corps has replaced the term ``petrochemical products'' with the phrase ``products derived from oil or natural gas, such as gasoline, jet fuel, diesel fuel. heating oil, petrochemical feedstocks, waxes, lubricating oils, and asphalt.'' The revised definition was developed using information from the U.S Energy Administration.\2\--------------------------------------------------------------------------- \2\ [*https://www.eia.gov/energyexplained/oil-and-petroleum-products/*](https://www.eia.gov/energyexplained/oil-and-petroleum-products/) (accessed November 4, 2020).--------------------------------------------------------------------------- A few commenters said that the proposed definition of ``oil or natural gas pipeline'' for the proposed NWP 12 is inadequate and inconsistent with the definitions in the Oil Pollution Act. One commenter suggested the Corps add ``and derivatives'' after `petrochemical products' for clarity. One commenter suggested ***removal*** of the phrase ``for any purpose'' from the proposed definition of ``oil or natural gas pipeline'' because it creates uncertainty about what activities may actually be authorized by the NWP. The Corps developed its own definition because this NWP also authorizes regulated activities associated with natural gas pipelines and products derived from oil or natural gas. The Corps has deleted ``for any purpose'' because NWP 12 is now limited to oil or natural gas pipeline activities. One commenter stated that the existing NWP 12 uses the category[[Page 2771]]``utility lines'' which is still used in proposed NWPs C and D, but the proposed NWP 12 uses the new term ``oil and natural gas pipelines'' which causes conflicting redundancies with various aspects of the proposed NWPs 12, C, and D. One commenter said that many of natural gas pipe construction and repair projects that will need NWP authorization involve pipelines that will be used to transport geologic natural gas as well as other lower carbon gaseous fuels such as renewable natural gas, hydrogen, and power-to-gas methanated hydrogen. This commenter said that to avoid confusion and streamline the process for these projects, the Corps should not split off any buried pipe-based utility lines into the proposed new NWP D. One commenter remarked that the Corps should clarify that NWP 12 is available for underground pipelines and utility lines whether they carry geologic natural gas or a blend with lower-carbon gaseous fuels. Nationwide permits 12, 57, 58 authorize activities for different types of utility lines, so there will be some redundancies because of similarities among these different types of utility lines, but there are also some differences, which result in different text in each of these NWPs. Nationwide permit 12 authorizes oil or natural gas pipeline activities that may carry different types of natural gas. Nationwide permit 58 can be used to authorize pipeline activities that require DA authorization and are used to convey hydrogen, methanated hydrogen, or carbon dioxide. Oil or natural gas pipeline substations. One commenter said that the paragraph on substations in the proposed NWP 12 should be revised to state that it authorizes construction, maintenance, replacement or expansion work in a non-tidal jurisdictional water for an oil or natural gas or gaseous fuel custody transfer station, boosting station, compression station or metering and/or pressure regulating station. One commenter said that if the Corps issues proposed new NWP C, then the references to ``substations'' should be removed from NWP 12 and replaced with boosting or compressor stations and natural gas metering and pressure regulating station. This commenter also recommended revising the fourth paragraph in the proposed NWP 12 to state that it authorizes construction, maintenance, replacement or expansion work in a non-tidal jurisdictional water for an oil or natural gas or gaseous fuel custody transfer station, boosting station, compression station or metering and/or pressure regulating station. One commenter noted that the term ``natural gas pipeline substation'' is used in the proposed language for the proposed NWP 12 and requested clarification regarding how above-ground natural gas facilities including district regulators and gate stations fit into NWP 12. The Corps has modified this paragraph to provide examples of substations associated with oil or natural gas pipelines. This NWP can be used to authorize discharges of dredged or fill material into waters of the United States for above-ground natural gas facilities including district regulators and gate stations. Access roads. One commenter said that only temporary access roads should be authorized by NWP 12, and that permanent access roads are more appropriately authorized under NWP 14. The Corps disagrees, and is retaining the NWP authorization for permanent access roads, because access roads are associated with utility lines are not usually available for public use. One commenter said that the proposal to add the word ``over'' to activities that are routed in or under navigable waters subject to Section 10 of the Rivers and Harbors Act of 1899 is unnecessary as structures routed over section 10 waters would be considered bridges and be regulated under Section 9 of the Rivers and Harbors Act of 1899. The Corps has modified the second sentence of the seventh paragraph of this NWP by adding the word ``may'' because there may be circumstances where section 10 authorization is required for oil or natural gas pipelines routed over navigable waters of the United States. A few commenters stated that the Corps does not have jurisdiction over inadvertent returns, leaks, or spills. One commenter said that NWP 12 should continue to authorize the remediation of inadvertent returns of fluids during drilling operations without additional changes. A few commenters stated that the Corps has not sufficiently evaluated the risks, impacts, and mitigation measures associated with inadvertent returns of drilling fluid. A few commenters expressed appreciation for the clarification in the decision document that the Corps' jurisdiction is limited to authorizing temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids through sub-soil fissures or fractures that might occur during horizontal directional drilling. The Corps does not have jurisdiction over inadvertent returns, leaks, or spills that may occur during horizontal directional drilling to install or replace oil or natural gas pipelines. The eighth paragraph of this NWP authorizes, to the extent that DA authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing oil or natural gas pipelines. The purpose of this paragraph is to provide authorization for regulated activities that are necessary to remediate inadvertent returns of drilling fluids to reduce adverse environmental effects that might be caused by releases of drilling fluids to the surrounding environment. One commenter expressed support for retaining the clarification that NWP 12 authorizes temporary mats for moving equipment. A few commenters said that the Corps should stop considering temporary mats/panels as a regulated activity or clarify that they are not to be considered as a ``loss of waters'' for the purposes of PCN requirements because of their temporary effects. One commenter requested clarification that activities resulting in the loss of greater than \1/10\-acre of waters of the United States require a PCN to the Corps, but temporary discharges do not count toward that \1/10\-acre PCN threshold. The determination as to whether the use of timber mats in waters of the United States for oil or natural gas pipeline activities constitutes a discharge of dredged or fill material into waters of the United States should be made by district engineers after evaluating site-specific and activity-specific circumstances. Any discharge of dredged or fill material into waters of the United States that results in a loss of greater than \1/10\-acre of waters of the United States requires pre-construction notification. As explained in the definition of ``loss of waters of the United States,'' waters of the United States temporarily filled, flooded, excavated, or drained, but restored pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. One commenter said there is inconsistency in the text of NWP 12 because it states that there must be no change in pre-construction contours of waters of the United States, but NWP 12 also authorizes losses of waters of the United States. This commenter recommended revising the text of NWP 12 to state that ``there must be no change in pre-construction contours which results in permanent loss of waters of the United States.'' One commenter stated that the Corps should adopt a strict interpretation of the[[Page 2772]]amount of ``temporary fill'' authorized by this NWP for the purposes of assessing cumulative impacts and should also consider the timing and duration of temporary fills, including temporary mats. This commenter indicated that permitted temporary fills generally occur in stages and not all at the same time. Some activities authorized by NWP 12 (e.g , the construction of substations and permanent access roads) result in permanent fills while other authorized activities, such as the placement of temporary fills, require restoration to pre-construction elevations. Temporary fills do not contribute to cumulative impacts because they are removed upon completion of the work and the permittee is required to restore the affected area to pre-construction elevations. The Corps acknowledges that temporary fills may occur during different stages of construction, maintenance, repair, or ***removal*** of an oil or natural gas pipeline activity.Pre-Construction Notification Thresholds Many commenters opposed reducing the number of PCN thresholds in this NWP. Several commenters suggested that reducing the PCN requirement would result in the NWP authorizing activities that have more than minimal adverse environmental effects, including cumulative effects. Many of these commenters suggested retaining the existing PCN thresholds. One of these commenters requested further clarification regarding which activities would no longer require PCNs. A few of these commenters stated that maintaining the status quo creates greater regulatory certainty to the industry. Many commenters said that reducing the PCN thresholds for this NWP undermines the Corps' ability to ensure that authorized activities NWPs will result in no more than minimal individual and cumulative adverse environmental effects, and reduces the opportunity for the Corps to require individual permits when adverse environmental effects would be more than minimal. One commenter remarked that the proposed reduction in PCN thresholds would cause increased harm to rivers, streams, and wetlands. The Corps proposed to retain those PCN thresholds associated with NWP 12 activities that result in losses of waters of the United States or have potential effects on navigation. To reduce regulatory burdens in response to E.O 13783, the Corps proposed to ***remove*** a number of PCN thresholds because of the requirement in the NWP to restore temporary impacts to pre-construction elevations or because they are already addressed by another PCN threshold. If a proposed NWP 12 activity does not trigger any of the three PCN thresholds in the text of the NWP, or a PCN threshold in the text of one of the NWP general conditions (e.g , general condition 18, endangered species and general condition 20, historic properties), then pre-construction notification is not required for the proposed activity unless a division engineer has imposed a regional condition to require PCNs in a particular geographic region. Division engineers can add regional conditions to add PCN thresholds that were removed from the text of NWP 12, if he or she determines the PCN threshold is necessary to ensure that the NWP authorizes only those activities that have no more than minimal adverse environmental effects. Adverse effects to rivers, streams, and wetlands are generally caused by the discharges of dredged or fill material or structures or work authorized by this NWP, not by the presence or absence of a PCN threshold. Many commenters expressed support for proposed reduction in PCN thresholds for NWP 12 and the associated reduced administrative burden that reduction would provide. One commenter voiced support for the reduction in PCN requirements as it would reduce the potential for infrastructure litigation and encourage private investment. One commenter stated that PCN thresholds should be removed when they are duplicative or burdensome. One commenter said that if the PCN requirements to be removed are truly redundant it would pose no additional burden on the regulated public. The Corps acknowledges these comments, and the Corps' intent with these changes is to reduce burdens on the regulated public and focus the PCN thresholds on those activities that have some potential to cause more than minimal adverse environmental effects. For these activities, district engineers should be given the opportunity to evaluate these activities on a case-by-case basis. Many commenters stated that the PCN process incentivizes permittees to avoid, minimize, and compensate for impacts to aquatic resources in order to reduce permitting delays. Some of these commenters said that the reduced PCN requirements would result in violations to general condition 23, mitigation. One commenter stated that the remaining PCN thresholds and the other NWP 12 terms and conditions reasonably limit the adverse environmental effects of the activities authorized by NWP 12. One commenter said that the Corps should encourage the districts to refrain from adding PCN thresholds to this NWP, specifically through regional conditions. A few commenters expressed concern that the reduction of PCN thresholds will likely be subject to litigation. One commenter suggested that any resulting litigation could cause uncertainties for the industries that rely on the NWP program. The NWPs provide incentives for project proponents to reduce impacts to waters of the United States to obtain DA authorization in less time than is required under the individual permit process. Reducing the number of PCNs does not violate general condition 23. The NWPs authorize activities that have no more than minimal individual and cumulative adverse environmental effects, and it is not necessary to require compensatory mitigation for every NWP activity. The PCN thresholds themselves do not limit adverse environmental effects; the adverse environmental effects caused by regulated activities authorized by an NWP are limited by the constraints in the text of the NWP (e.g , the \1/2\-acre limit, requirements to restore temporary impacts to pre-construction elevations) and in the NWP general conditions. Division engineers have the authority to add regional conditions to replace the PCN thresholds that were in prior versions of NWP 12, if those division engineers determine that adding those PCN thresholds is necessary to ensure that the NWP only authorizes those activities that result in no more than minimal individual and cumulative adverse environmental effects. While potential litigation risk is a consideration when contemplating changes, other factors such as administrative efficiency, reduction of regulatory burdens, and other approaches for maintaining environmental protections are other considerations that the Corps considers as well. A few commenters stated that the proposed reduction in PCN thresholds could expedite permit processing time and preclude a thorough review by the Corps. One commenter said that reducing the number of PCN thresholds would allow for the potential for spills near stream beds. One commenter opposed the simplified PCN requirements, stating that the proposal does not improve inter-agency coordination or reduce impacts on the environment. One commenter said that PCNs should be required for all NWP 12 activities. One commenter stated that the Corps fails to show how compliance with Clean Water Act Section 404(e)[[Page 2773]]would be achieved without a process to track all NWP activities. The reduction in PCN thresholds allows Corps districts to shift their resources towards evaluating proposed activities that require DA authorization that have the potential for greater adverse environmental effects. Reducing the number of PCN thresholds will not alter the potential for spills to occur near stream beds because spills are accidents and not planned activities that the Corps would evaluate as part of a PCN. The reduction in the number of PCN thresholds in NWP 12 does not alter any agency coordination procedures because agency coordination is not required for any NWP 12 activities. It is not necessary to require PCNs for all NWP 12 activities, because many of the activities authorized by NWP 12 result in only temporary impacts to aquatic resources. The Corps does not have to track all NWP activities to comply with Section 404(e) of the Clean Water Act. Since the inception of the NWP program in 1977, many of the NWPs have not require pre-construction notification, thus the changes that are being finalized are not a departure from the Corps practice or procedures. A few commenters said that reducing the PCN requirement does not comply with the Corps' mandate under ESA section 7 to ensure consultation occurs when necessary. One commenter said that PCN should be required for all maintenance activities in waters of the United States, especially if the waters contain ESA-listed species. A few commenters opposed reducing the number of PCN thresholds for NWP 12 because the PCN process allows state natural resource agencies to provide expertise in determining the effect of projects on state resources, affected species, and their habitat. A few commenters stated the reduced number of PCN thresholds would not comply with the NHPA. One commenter said that the proposed reduction in PCN thresholds could have potential impacts to cultural resources and affect the protection of historic properties. Several commenters said that the proposed reduction of PCN thresholds poses risks of significant impacts to tribal rights and treaty-reserved resources. General condition 18 addresses compliance with section 7 of the ESA. Under paragraph (c) of general condition 18, non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat even if a PCN is not otherwise required. This includes maintenance activities that might affect listed species or designated critical habitat. None of the activities authorized by NWP 12 require coordination with state natural resource agencies, and the PCN thresholds that have been removed from NWP 12 did not require that coordination. General condition 20 addresses compliance with section 106 of the NHPA. Under paragraph (c) of general condition 20, non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties even if a PCN is not otherwise required. The reduction in PCN thresholds for NWP 12 does not change the PCN requirement in general condition 20. During the process for issuing these NWPs, Corps districts have been consulting or coordinating with tribes to identify regional conditions or coordination procedures to ensure that activities authorized by NWP 12 and other NWPs do not have substantial adverse effects on tribal rights and, as appropriate, treaty reserved resources. Division engineers can add PCN requirements to address tribal concerns as appropriate. One commenter objected to the lack of a PCN threshold based on pipeline diameter. One commenter requested that the Corps provide additional information regarding the outcomes of PCN reviews under the current NWPs and an explanation for how environmental protection would be maintained without the PCN review process. One commenter stated that the Corps should clearly identify the information required by all applicants to support the analysis of temporal and cumulative impacts and recommended separate analyses for all impacts to waters of the United States within the total impact limitation of \1/2\-acre. Pre-construction notification thresholds are established for activities that have the potential to result in more than minimal adverse environmental effects, and pipeline diameter has not been demonstrated to have potential to be a useful PCN threshold. During their reviews of PCNs, district engineers document their conclusions as to whether the proposed activity will result in no more than minimal adverse environmental effects, or whether it is necessary to exercise discretionary authority and require an individual permit for the proposed activity. This documentation includes the district engineer's consideration of cumulative effects. In the paragraphs below, the Corps discusses each of the five PCN thresholds it proposed to ***remove*** to simplify the PCN requirements for this NWP. The Corps discusses the comments received and provides responses to those comments. In the paragraphs that follow, the Corps uses the term ``utility line'' because it proposed the same PCN thresholds for NWP 12 and proposed new NWPs C and D (now designated as NWPs 57 and 58, respectively in this final rule). Also discussed below is the Corps' proposal to add a new PCN threshold to NWP 12 for new oil or natural gas pipelines greater than 250 miles in length. (i) The activity involves mechanized ***land*** clearing in a ***forested*** wetland for the utility line right-of-way. Many commenters said that allowing mechanized ***land*** clearing through ***forested*** wetlands without requiring PCNs will cause more than minimal adverse environmental effects and recommended that this PCN threshold requirement be retained. Many commenters said that PCNs should be required for mechanized ***land*** clearing associated with NWP 12 to prevent the loss of wetland resources, functions and services, including water quality, erosion control, and flood mitigation. A few commenters suggested a maximum acreage for ***forest*** clearing activities without a PCN associated with NWP 12. One commenter stated that the PCN threshold should be modified to require PCNs for ``loss or permanent conversion.'' If construction of an oil or natural gas pipeline involves mechanized ***land*** clearing in a ***forested*** wetland for the right-of-way for that pipeline, the installation of the pipeline must cause no change in pre-construction contours of waters of the United States. Any temporary fills must be removed upon completion of construction, and the affected areas restored to pre-construction elevations. If there are any permanent fills associated with the mechanized ***land*** clearing of a ***forested*** wetland, and the loss of waters of the United States is greater than \1/10\ acre, a PCN is required. In areas where temporary fills occur, the wetlands in the right-of-way will remain, although there may be a conversion in wetland type. Those wetlands will continue to perform wetland functions, including hydrologic functions, biogeochemical cycling, and habitat functions, but there may be some changes to those functions and the degree to which the wetlands perform those functions. Division[[Page 2774]]engineers can impose regional conditions to require PCNs for mechanized ***land***-clearing in a ***forested*** wetland, and they can add regional conditions to impose an acreage limit on impacts resulting from mechanized ***land***-clearing of ***forested*** wetlands. Many commenters said that PCNs should be required for mechanized ***land*** clearing in ***forested*** wetlands to allow district engineers to consider avoidance, minimization, and the need for compensatory mitigation, as compliance with the 404(b)(1) guidelines, and further recommended retention of this PCN threshold. One of these commenters stated that temporary impacts should also be considered. Many commenters expressed concern that mechanized ***land*** clearing in ***forested*** wetlands would result in the long-term and/or permanent conversion of these areas to emergent and scrub-shrub wetlands, and further indicated that these scrub-shrub and emergent wetlands do not provide the same degree of ecological functions and services or provide the same values. Several of these commenters asserted that this conversion in wetland type causes more than minimal adverse effects to the environment. Paragraph (a) of general condition 23 requires project proponents to design and construct their NWP activities to avoid and minimize temporary and permanent adverse effects to waters of the United States to the maximum extent practicable at the project site (i.e , on site). Division engineers can add regional conditions to this NWP to require PCNs and compensatory mitigation for mechanized ***land***-clearing of ***forested*** wetlands. Activities that are authorized by NWPs do not require activity-specific evaluation under the 404(b)(1) Guidelines (see 40 CFR 230.5(b)). Emergent and scrub-shrub wetlands perform valued wetland functions, even though those functions differ to some degree from the functions performed by ***forested*** wetlands. A few commenters stated that clearing of ***forested*** wetlands can impact wetland hydrology and soils through rutting and soil compaction by machinery. Many commenters stated that a review of pre- and post-construction hydrogeomorphic method assessments demonstrates significant permanent impacts to ***forested*** wetlands resulting from mechanized ***land*** clearing and temporary discharges. Several commenters said that ***forested*** wetlands along the Gulf Coast provide vital stopover areas for migratory birds and that the proposed ***removal*** of this PCN threshold would be most profound along the Gulf Coast where pipelines are regularly constructed through ***forested*** wetlands. The text of this NWP that applies to the construction of the pipeline requires that there is no change in pre-construction contours of waters of the United States. If there are permanent impacts to certain features of these ***forested*** wetlands, those impacts are caused by the activities authorized by NWP 12, not the presence or absence of any PCN threshold. Soil compaction can be caused by a variety of activities other than discharges of dredged or fill material. If the activity results in a loss of greater than \1/10\-acre of waters of the United States, then the project proponent is required to submit a PCN. For those Corps districts in the Gulf Coast, division engineers add regional conditions to require PCNs for mechanized ***land***-clearing activities in ***forested*** wetlands. Several commenters said that the Corps does not cite any sources for stating that mechanized ***land*** clearing in ***forested*** wetlands usually results in only temporary impacts. A few commenters stated that the Corps has not provided any scientific rationale demonstrating that loss of ***forested*** wetland would not result in more than minimal adverse environmental effects. A few commenters said that the consensus in the scientific literature contradicts the Corps' assertion, with multiple studies and practices indicating that mechanized clearing results in irreversible and permanent alteration of ***forested*** wetland's functions. One commenter cited paragraph (i) of general condition 23 which allows district engineers to require mitigation for the permanent conversion of wetland types to offset losses of specific functions. One commenter said that the functions of ***forested*** wetlands have been estimated by the Corps to have a value of $10,401 per acre per year. A few commenters stated that mechanized ***land*** clearing can result in sediment disturbance and potential water quality impacts in wetland areas. A few commenters stated that ***removing*** the PCN requirement for mechanized ***land*** clearing in ***forested*** wetlands would make NWP 12 vulnerable to litigation. The text of NWP 12 requires temporary impacts to be restored after the pipeline is constructed. If the construction of the pipeline results in the loss of greater than \1/10\-acre of waters of the United States, then the project proponent is required to submit a PCN to the Corps. The ***removal*** of the PCN threshold is an administrative decision to improve regulatory efficiency, reduce redundancy, and focus the district engineer's evaluation efforts on proposed activities that have the potential to result in more than minimal adverse environmental effects. If mechanized ***land***-clearing causes irreversible and permanent alteration of ***forested*** wetland's functions, it is because of the physical effects of the discharge of dredged or fill material into waters of the United States and the periodic maintenance in the pipeline right-of-way that causes those changes in wetland functions. The Corps regulates the former, but does not regulate the mowing and cutting of vegetation to maintain the plant community in the pipeline right-of-way as herbaceous vegetation or scrub-shrub vegetation. Paragraph (i) of general condition 23 is retained in these NWPs, so for those NWP 12 activities that require PCNs, district engineers can require compensatory mitigation to offset permanent losses of certain wetland functions. One commenter stated that impacts to ***forested*** wetlands are permanent or semi-permanent and should not be considered temporary. One commenter suggested the cumulative effects of ***forested*** wetland conversion cannot be tracked without a PCN requirement. One commenter stated that the ***removal*** of the PCN for mechanized ***land*** clearing in ***forested*** wetlands is a change with implications for market growth of the ecological restoration industry. One commenter stated that mechanized ***land*** clearing can increase non-point source pollution in a water of the United States and can increase nutrient loading in first and second order streams. One commenter said that mechanized ***land*** clearing in ***forested*** wetlands is associated with an increase in the spread of invasive species. ***Forested*** wetlands that have been converted to herbaceous or scrub-shrub wetlands continue to function as wetlands. Therefore, from a wetland perspective, the impacts caused by the below-ground installation of the pipeline are temporary as long as temporary fills are removed and the affected area is restored to pre-construction elevations. Although the wetland type has changed as a result of the activity, district engineers can require compensatory mitigation to offset losses of specific wetland functions for those NWP 12 activities that require PCNs. If the permittee wants to conduct mechanized ***land*** clearing of a ***forested*** wetland for an oil or natural gas pipeline right-of-way, he or she must restore the disturbed soils so that there is no change in pre-construction contours of waters of the United States in that right-of-way. If there will be permanent changes in pre-[[Page 2775]]construction contours in waters of the United States, and the area of those permanent changes will exceed \1/10\-acre, then a PCN is required. Permanent adverse effects can be addressed through the PCN review process. Where appropriate to ensure minimal adverse effects on the environment in a particular region, division engineers can add regional conditions to require PCNs for mechanized ***land*** clearing in a ***forested*** wetland right-of-way. (ii) The utility line in waters of the United States, excluding overhead lines, exceeds 500 feet. One commenter stated that the 500 linear foot PCN threshold should be maintained since the \1/10\-acre threshold only covers losses of waters of the United States and retaining it would allow the district engineer to evaluate the site-specific conditions and make an informed decision. One commenter said that ***removal*** of the 500 linear foot PCN threshold limits the Corps ability to review projects that will affect habitat, ecosystems, and the environment on tribal ***lands*** and within tribal usual and accustomed areas that cross state lines and international borders and further indicated that this would constitute a violation of the United States and trust and responsibility and obligation to protect treaty resources. The \1/10\-acre PCN threshold for losses of waters of the United States provides an opportunity for district engineers to evaluate site-specific conditions and determine whether the proposed oil or natural gas pipeline activities are authorized by NWP 12. The \1/10\-acre PCN threshold also provides district engineers with the opportunity to assess potential effects on habitat, ecosystems, environmental conditions on tribal ***lands***, and tribal usual and accustomed areas. District engineers can work with tribes to develop coordination procedures to help protect treaty resources. In addition, activities authorized by NWP 12 must comply with general condition 17, tribal rights. One commenter said that if this PCN threshold is removed, the Corps cannot evaluate the impacts of temporary losses or determine if specific restoration or mitigation measures are necessary, or if an individual permit would be necessary. One commenter said that the proposal to ***remove*** the 500 linear foot PCN threshold should be coterminous with other section 404 permitting requirements, but since this justification does not apply in all situations it is inappropriate. An example cited by this commenter is utility lines directionally drilled under wetlands. Temporary impacts should not normally require PCNs because the aquatic resources and the functions they provide should recover after the temporary fills are removed and the affected area restored to pre-construction elevations. The ***removal*** of the 500 linear foot PCN threshold improves the Corps' efficiency in administering the section 404 program. Further, it is consistent with section 404 permitting requirements, because the Corps determines which activities should require PCNs to trigger review on a case-by-case basis. (iii) The utility line is placed within a jurisdictional area (i.e , water of the United States), and it runs parallel to or along the stream bed that is within that jurisdictional area. One commenter stated that installing pipelines that run parallel to a watercourse can have significant impacts on hydrogeomorphology of the watercourse and lead to substantial erosion and degradation. A few commenters recommended retention of the requirement for a PCN when the proposed activity would run parallel to and within a stream bed, citing the potential for those activities to downgrade aquatic resource functions. As discussed in the 2020 Proposal (85 FR 57326), the Corps proposed to ***remove*** this PCN threshold because the text of NWP 12 requires restoration of these temporary impacts. The third paragraph of NWP 12 addresses the requirements for trenching and backfilling underground oil or natural gas pipelines to ensure those impacts are temporary and do not result in a loss of waters of the United States. The ninth paragraph of NWP 12 also addresses the requirements for restoring temporary fills, so that those fills do not result in losses of jurisdictional waters and wetlands. Further, in Corps districts where the construction of oil or natural gas pipelines in jurisdictional waters and wetlands parallel to a stream channel have the potential to cause more than minimal individual and cumulative adverse environmental effects, division engineers may add regional conditions to NWP 12 to require PCNs for these activities. (iv) Permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 linear feet. Several commenters said that the PCN requirement for permanent access roads should be retained to ensure NWP 12 activities not authorize more than minimal adverse effects. One commenter opposed the ***removal*** of the PCN threshold for associated access roads and culvert-related activities so that district engineers can evaluate potential impacts to fish passage. The PCN threshold for losses of greater than \1/10\-acre of waters of the United States applies to permanent access roads, and that PCN threshold is sufficient for providing district engineers with the opportunity to review those activities to determine if they qualify for NWP authorization. The Corps is ***removing*** this PCN threshold for above-grade permanent access roads because it is redundant with the \1/10\-acre PCN threshold. Concerns about potential impacts to fish passage are addressed by NWP general condition 2. General condition 2 states that no NWP activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Furthermore, general condition 2 requires all permanent and temporary crossings of waterbodies to be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. (v) Permanent access roads are constructed in waters of the United States with impervious materials. A few commenters suggested a maximum length for impervious surfaces without a PCN associated with NWP 12. The current PCN requirement for losses of waters of the United States greater than \1/10\-acre is sufficient to trigger activity-specific review for permanent access roads constructed with impervious materials, to allow district engineers to determine whether a particular proposed access road will result in no more than minimal adverse environmental effects.Proposed Addition of a PCN Threshold for New Oil or Natural Gas Pipeline Activities Greater Than 250 Miles in Length Many commenters objected to the proposed PCN threshold for new oil or natural gas pipelines that are greater than 250 miles in length, stating that it is arbitrary and capricious, and indicated that there is no reasonable basis for the 250-mile threshold. One commenter expressed support for the addition of the 250-mile pipeline length PCN requirement. One of the commenters said that this PCN threshold is inconsistent with other PCN thresholds. Many commenters objected to ***removing*** the current PCN thresholds and replacing them with the 250-mile PCN threshold. One commenter expressed support for the proposal to require that PCNs include information on all discharges associated with a pipeline, including those that[[Page 2776]]would not otherwise require a PCN. One commenter stated that the phrase ``associated with an overall project'' was unclear and undefined. As discussed in the 2020 Proposal, this PCN threshold is being added for new oil or natural gas pipelines to provide district engineers the opportunity to review all crossings of waters of the United States for new long-distance oil or natural gas pipelines to ensure that the activities authorized by NWP 12 will result in no more than minimal individual and cumulative adverse environmental effects (see 85 FR 57327). Given the concerns expressed by numerous commenters regarding the potential cumulative adverse environmental effects that may be caused by NWP 12 activities, this is not an arbitrary or capricious addition to the PCN requirements for NWP 12. This new PCN threshold is not a replacement for the PCN thresholds the Corps is ***removing*** from NWP 12. It is a new PCN threshold to address stakeholder concerns about cumulative effects. The phrase ``associated with an overall project'' refers to the entire oil or natural gas pipeline that is greater than 250 miles in length. Several commenters supported a scope or length-based PCN threshold but suggested that the Corps adopt more protective PCN thresholds in place of the proposed 250-mile threshold. One of these commenters said that significant cumulative environmental impacts are likely to occur at a much lower length. One of these commenters suggested changing the distance in this PCN threshold to 25 miles, while another commenter suggested 75 miles, and a third commenter suggested a 5-mile threshold. One commenter said that the Corps should require PCNs for any proposed oil or natural gas pipeline activity resulting in five or more crossings. The Corps believes that this new PCN threshold, plus the other two PCN thresholds in NWP 12 (i.e , activities requiring section 10 authorization, and discharges resulting in the loss of greater than \1/10\-acre of waters of the United States), are sufficiently protective of the aquatic environment by providing information to district engineers to conduct case-specific reviews of proposed NWP 12 activities that have the potential to result in more than minimal individual and cumulative adverse environmental effects. In furtherance of the Corps' review of cumulative effects, paragraph (b)(4) of NWP general condition 32 requires PCNs for proposed NWP activities for linear projects to include and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The Corps finds that a length of 250 miles is both a good indicator of potential cumulative effects of an oil or natural gas pipeline while minimizing the potential for inconsistent implementation of the PCN requirement across districts. Although the Corps agrees that using a threshold of five or more crossings is based on a numerical impact, it could be more challenging to implement since there may be proposed oil or natural gas pipeline activities where there are five or more crossings and none of those crossings require PCNs. One commenter suggested replacing the PCN threshold for new oil or natural pipeline activities with lengths of greater than 250 miles with a PCN requirement for oil or natural gas pipeline activities that cross state or district boundaries. Several commenters objected to the proposed 250-mile PCN threshold, but some of these commenters said that the acreage PCN threshold is sufficient to ensure no more than minimal adverse environmental effects. A few commenters remarked that the length of a pipeline is not a predictor of its crossings of waters of the United States or environmental impacts and that this PCN threshold has no link to the Corps' regulatory authority. A few commenters stated that the 250-mile PCN threshold is inconsistent with the other proposed utility line activity permits as they do not contain that PCN threshold. One commenter objected to the 250-mile PCN threshold because it is limited to new oil or natural gas pipelines (i.e , the material to be transported after the pipeline is constructed). As discussed above, the purpose of this new PCN threshold is to provide information to district engineers to facilitate their review of the cumulative effects that may be caused by new long-distance oil or natural gas pipelines that have waterbody crossings that require NWP 12 authorization. These new long-distance oil or natural gas pipelines may be constructed within a single state or Corps district. The Corps agrees that the number of aquatic resources and their distribution in the landscape is variable, and therefore the number of crossings of waters of the United States is similarly variable. However, the Corps finds that a length of 250 miles is both a good indicator of potential cumulative effects of an oil or natural gas pipeline while minimizing the potential for inconsistent implementation of the PCN requirement across districts. In addition, some oil or natural gas pipeline crossings may not require DA authorization because they are installed through horizontal directional drilling, do not involve a waterbody subject to Section 10 of the Rivers and Harbors Act, and do not involve discharges of dredged or fill material into waters of the United States. The Corps does not believe that this PCN threshold is necessary for new NWPs 57 and 58 because long-distance electric utility lines are often constructed as overhead utility lines and utility lines for water and other substances (e.g , potable water, wastewater, sewage) are often constructed to serve local communities and thus are likely to be shorter in overall length. One commenter stated that the Corps' Regulatory Impact Analysis for the proposed rule is flawed because it assumes the new 250-mile PCN requirement would result in no additional PCNs. One commenter said that if the Corps does move forward with a 250-mile PCN threshold for new oil or natural gas pipeline activities that applicants be allowed to provide the PCNs based on desktop data as some areas may not be accessible for field surveys if the project is in the development stage. One commenter stated that the 250-mile PCN threshold would result in the majority of pipeline projects being constructed without review and would result in damage to historic properties. One commenter said that the 250-mile threshold has no scientific or technical basis. The new 250-mile PCN requirement is unlikely to require more PCNs for NWP 12 activities because the likelihood of a new oil or natural gas pipeline greater than 250 miles in length not having any crossings of waters of the United States that require PCNs under the other PCN thresholds is extremely small. In addition, the requirement to provide in the PCN the locations and proposed impacts for all crossings of waters of the United States that require DA authorization, including those crossings authorized by an NWP would not otherwise require preconstruction notification, does not trigger a requirement for the project proponent to submit full PCNs for those other non-PCN crossings of waters of the United States. This portion of the new PCN requirement is nearly identical to an existing requirement in paragraphs (b)(4)(i) and (ii) of general condition 32. Paragraph (b)(4)(i) requires the project proponent to include in the PCN any[[Page 2777]]other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require DA authorization but do not require pre-construction notification. Furthermore, paragraph (b)(4)(ii) of general condition 32 currently requires project proponents to include in PCNs for linear projects where one or more single and complete crossings require pre-construction notification, the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those waters and wetlands. This quantification also must include those single and complete crossings authorized by an NWP not requiring PCNs. The only additional information required by the 250-mile PCN threshold is the location of all non-PCN crossings. The Regulatory Impact Analysis for this final rule has been updated to identify this new PCN threshold as a change. The lack of discussion of the proposed 250-mile PCN threshold in the Regulatory Impact Analysis for the proposed rule was an error. When a project proponent develops a proposal for a new oil or natural gas pipeline, some degree of environmental analysis and review is needed to determine whether there are any crossings of waters of the United States that require DA authorization, and whether any of those crossings require PCNs. The new PCN threshold should not impose any additional burdens on the regulated public. New oil or natural gas pipelines must comply with general condition 20 for historic properties as do all activities authorized by an NWP. One commenter objected to the proposed 250-mile PCN threshold, and limiting it to the installation of new oil or natural gas pipelines (versus conducting repair or maintenance activities) along the majority of the distance of the overall project length, stating that a PCN requirement should be triggered even if short distances of the pipeline are being replaced. A few commenters stated that the proposed 250-mile PCN threshold is counter to, and could undermine, the Corps' longstanding definition of a single and complete linear project, and would allow district engineers to require individual permits because of the length of pipeline and cumulative impacts regardless of the independent utility of the separate and distant crossings. The maintenance of existing oil or natural gas pipelines is likely to have fewer adverse environmental effects than the construction of new oil or natural gas pipelines, because those maintenance activities occur to existing pipelines for which some degree of adverse environmental effects has already occurred and a current environmental setting that includes the existing pipeline. The 250-mile PCN threshold does not undermine the Corps' definition of single and complete linear project because each separate and distant crossing of waters of the United States can continue to be authorized by an NWP. If one crossing of waters of the United States for an oil or natural gas pipeline requires an individual permit, then 33 CFR 330.6(d) applies and the district engineer will determine which activities require individual permits and which activities can be authorized by an NWP. Section 330.6(d) of the Corps' NWP regulations, as well as Note 2 of NWP 12, remain in effect. Section 330.6(d) and Note 2 maintain the Corps' long-standing process regarding the use of NWPs and individual permits to authorize linear projects such as oil or natural gas pipelines. One commenter stated that the 250-mile PCN threshold would discourage pipeline developers from avoiding and minimizing impacts to waters of the United States, and from planning longer routes to avoid sensitive resources. One commenter said that the 250-mile PCN threshold will add an unnecessary layer of uncertainty and litigation risk. One commenter stated that a 250-mile PCN threshold would authorize potentially significant pipeline activities without any district or division review. One commenter stated that oil or natural gas pipelines greater than 250 miles in length are so large they are bound to cause more than minimal effects and should not be approved under an NWP. One commenter stated that the length of the utility line should not be used as a PCN threshold; environmental conditions and impacts should be used instead. Regardless of the addition of the 250-mile PCN threshold, pipeline developers are still required to comply with paragraph (a) of NWP general condition 23, which requires project proponents to avoid and minimize losses of waters of the United States on the project site, including permanent and temporary losses of those resources. The purpose of the new PCN threshold is to add a mechanism to provide information for the district engineer's cumulative effects determination and the district engineer's decision on whether to issue NWP verifications for the proposed crossings of waters of the United States. The information on all of the crossings will inform whether or not the cumulative adverse environmental effects of all crossings are or are not more than minimal. This PCN threshold also provides the district engineer to require an individual permit for the proposed oil or natural gas pipeline activities when he or she determines the cumulative adverse environmental effects of the proposed crossings of waters of the United States are more than minimal. This may help reduce litigation risk. The 250-mile PCN threshold provides information for the district engineer's review, who also uses information on current environmental conditions and potential impacts of the proposed NWP activities to determine whether NWP authorization is appropriate for these NWP 12 activities. Division engineers do not have a role in reviewing NWP PCNs.Other Provisions of NWP 12 One commenter said that Note 2 should be reissued with no changes, as it clarifies concepts such as ``single and complete project,'' ``single and complete non-linear project,'' ``independent utility,'' and the interaction of the NWPs with individual permits. The Corps has reissued Note 2 with no changes. Note 2 differs from the 250-mile PCN threshold in that an individual permit is required for the proposed oil or natural gas pipeline if one or more crossings of waters of the United States does not qualify for NWP authorization. Under the 250-mile PCN threshold, an individual permit is required if the district engineer determines the cumulative adverse environmental effects of all crossings of waters of the United States that require DA authorization will result in more than minimal cumulative adverse environmental effects. A few commenters objected to authorizing separate and distant crossings as single and complete projects. These commenters believe that the practice causes more than minimal cumulative adverse effects. A few commenters expressed opposition to allowing multiple ``single and complete'' project authorizations of the same pipeline to be authorized by the NWP 12, stating that it would be more appropriate to consider the entire pipeline as a single and complete project. One of these commenters said that more individual permits should be required for these activities. The authorization of separate and distant crossings of waters of the United States as single and complete projects for the purposes of NWP authorization is a long-standing practice consistent with the Corps' regulations at 33 CFR 330.2(i).[[Page 2778]] One commenter expressed concern with the cumulative effects analyses for multiple single and complete crossings and the inability to account for NWP activities that do not require PCNs. One commenter said that the proposed reissuance of NWP 12 is arbitrary and capricious and in violation of the Clean Water Act because it allows unlawful piecemealing of large pipelines and other linear projects to avoid individual permit review. One commenter stated that an entire pipeline project should be subject to NEPA review, including a cumulative review of all impacts to waters of the United States. Paragraph (b)(4) of NWP general condition 32 requires project proponents to include in PCNs any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require DA authorization but do not require pre-construction notification. This information is used by district engineers to determine whether the proposed activity will result in no more than minimal individual and cumulative adverse environmental effects. Activities authorized by NWP 12 are not subject to additional NEPA review, because Corps Headquarters fulfills the requirements of NEPA when it finalizes the national decision document for the issuance or reissuance of the NWP. The national decision document includes an assessment of effects of the Corps proposed action (i.e , the issuance or reissuance of the NWPs) in accordance with the Council on Environmental Quality's definition of ``effects or impacts'' at 40 CFR 1508.1(g) in their NEPA regulations. This analysis of effects or impacts under NEPA includes the projected use of the NWP over the 5-year period it is expected to be in effect. For an NWP that authorizes discharges of dredged or fill material into waters of the United States, the national decision document also includes a cumulative impact analysis conducted in accordance with 40 CFR 230.7(b)(3). One commenter stated that acreage limits and thresholds should remain constant with separate consideration at each single and complete crossing of waters of the United States authorized by NWP 12. One commenter said that each crossing should require a separate permit. One commenter expressed concern that the phrase ``separate and distant'' is not defined and would not prevent a pipeline from being used multiple times in close proximity and/or on the same waterbody under NWP 12. Another commenter said that no additional definition of ``separate and distant'' is necessary. One commenter stated that the Corps should impose an overall limit on cumulative effects allowed for a project with multiple ``single and complete'' crossings. Nationwide permit 12 has a \1/2\-acre limit for each single and complete project. As discussed above, and in 33 CFR 330.2(i), each separate and distant crossing of waters of the United States may qualify for a separate NWP authorization. The Corps declines to define the phrase ``separate and distant'' because what constitutes separate and distant crossings can vary across the country because of differences in the distribution of waters and wetlands in the landscape, local hydrologic conditions, local geologic conditions, and other factors. What constitutes separate and distant crossings is more appropriately determined by district engineers on a case-by-case basis. When reviewing a PCN, the district engineer considers the cumulative effects of all crossings of waters of the United States for the oil or natural gas pipeline activity, and applies the 10 criteria listed in paragraph 2 of Section D, District Engineer's Decision. One commenter said that Note 4 should refer to the General Bridge Act of 1946 instead of Section 9 of the Rivers and Harbors Act of 1899. The Corps has made this change to Note 4. With respect to Note 5 of this NWP, a few commenters requested that the Corps provide clarification and examples of exempted utility line activities under Section 404(f) of the Clean Water Act. One commenter suggested that the Corps provide examples of utility line activities that do not qualify for the exemption. In accordance with the 1989 Memorandum of Agreement Between the Department of the Army and the U.S EPA Concerning the Determination of the Section 404 Program and the Application of the Exemptions under Section 404(f) of the Clean Water Act, the U.S EPA has the authority to determine which activities are eligible for the Clean Water Act section 404(f) exemptions.Comments on Proposal To Issue Separate NWPs for Different Utility Line Sectors Many commenters expressed support for dividing oil and natural gas pipeline activities from other types of utility line activities. Several commenters acknowledged that the three types of utility lines are of varying sizes and lengths, constructed with different methods, and have different relative impacts to streams and wetlands. One commenter said that the proposed division of NWP 12 into three separate NWPs ensures that the activities authorized by these NWPs are substantially similar in nature and will further ensure that each of the NWPs will have no more than minimal adverse effects on the environment. One commenter stated that permitting utility line activities through three separate NWPs helps reduce litigation risk for some types of utility line activities. The Corps acknowledges that issuing three separate NWPs for different types of utility lines helps ensure that the categories of activities authorized by these NWP are substantially similar in nature and that they will result in no more than minimal individual and cumulative adverse environmental effects. The issuance of three NWPs for different categories of utility line activities may also help reduce regulatory uncertainty for electric utility line operators, telecommunications companies, state, tribal, and local water authorities, and other entities that construct, maintain, and operate these utility lines. It may also provide diversity and stability to the NWP program and allow Corps districts to continue to authorize categories of utility line activities by an NWP in the event that one of the three NWPs is invalidated or stayed by a federal court. Most of the past litigation on NWP 12 has been for oil or natural gas pipelines, not electric and telecommunications lines or utility lines that convey potable water, wastewater, sewage and other such substances. Issuing separate NWPs for electric utility line and telecommunications activities and for utility lines for water and other substances will help provide some degree of regulatory certainty for the entities that construct and maintain those types of utility lines. These separate NWPs will also benefit the people who rely on electric utility lines and telecommunication lines and utility lines for water and other substances to deliver energy, information, entertainment, potable water, and other goods and services. The public will also benefit from the ***removal*** of sewage and wastewater to protect public health and the environment. A few commenters requested that if NWP 12 is divided that the Corps be clear that all provisions relating to substations, foundations, and access roads, and as well as provisions on inadvertent returns of drilling fluids, temporary structures and fills (including use of temporary mats), and accompanying notes, remain with the[[Page 2779]]same legal effect and with no additional restrictions. The Corps has written these three NWPs in a consistent manner to provide a similar framework for authorizing regulated activities associated with utility lines, utility line substations, access roads, actions to remediate inadvertent returns, and the authorization of temporary impacts for construction and other activities. One commenter suggested that the Corps issue separate NWPs for utility lines based on the distinction as to whether they are overhead utility lines, such as electric and telecommunication lines, or underground utility lines. One commenter requested that the Corps change the proposed NWP 12 to authorize ``underground pipeline or utility line related activities.'' Several commenters said that buried linear utility lines have substantially similar environmental effects on waters of the United States. One commenter indicated there is variability and no reasonable justification for dividing the NWPs based on above-ground and below-ground activity types. A few commenters said that the construction of oil, natural gas, water, and other utilities typically require more ground and vegetation disturbance than the construction methods for electrical utility lines. These commenters also stated that electrical utility lines have more flexibility to avoid aquatic resources, and that discharges of dredged or fill material associated with electric utility lines typically have a smaller footprint than they do for other in-ground utility lines. One commenter said that the Corps should keep all buried, underground utility lines in NWP 12, rather than create a new NWP for utility line activities for water and other substances, because best management practices for protecting waters from trenching or boring for pipes are similar in nature regardless of the product to be carried in the pipe. After reviewing the public comments, the Corps determined that issuing separate NWPs for oil or natural gas pipeline activities, electric utility line and telecommunications activities, and utility line activities for water and other substances would be the best approach for reducing regulatory uncertainty for different utility line sectors. One commenter suggested that the Corps further distinguish between natural gas and petroleum liquids in recognition of the differences in environmental consequences of potential leaks. One commenter recommended that the Corps further distinguish between large interstate natural gas pipelines and smaller intrastate natural pipelines and service lines. The Corps does not have the authority to address the environmental consequences of leaks from oil or natural gas pipelines. Those environmental consequences are more appropriately addressed by federal, state, and local government agencies that have the legal authority to require operators of oil or natural gas pipelines to take actions in response to leaks. Many commenters objected to the proposed separation of NWP 12 into three NWPs and requested that the 2017 NWP 12 be retained in its historic form. Many of these commenters said that the Corps should focus its concerns on the environmental impacts of the authorized activities rather than the type of material transported by various utility lines. Several commenters objected to the proposed division of the NWP 12 activities indicating that it would cause additional complications to permitting utility line activities rather than streamlining the process. One commenter remarked that there are no substantive differences between the three proposed NWPs and therefore issuing separate NWPs is unnecessary. Several commenters said that issuing three separate utility line NWPs will increase litigation risk and uncertainty for the regulated public. As discussed above, the Corps believes that separating NWP 12 into three different NWPs to authorize utility line activities for different utility line sectors will help enhance regulatory certainty for utility line sectors that are not a frequent ***target*** for litigation because of the lower degree of concern about the potential direct and indirect environmental impacts of the substances those utility line sectors carry (e.g , electricity, potable water, wastewater). As with any change in the NWP program, prospective permittees will experience some challenges associated with those changes, but over time they will adjust to those changes and can realize the benefits of those changes. Prior versions of NWP 12 have been subjected to litigation, so the issuance of three separate NWPs for utility line activities is likely to pose no greater litigation risk than prior versions of NWP 12. One commenter said that the Corps only analyzed differences but not similarities among these different types of utility lines. A few commenters said that the proposed division of NWP 12 activities is an abrupt and unjustified departure from the long-standing view that utility lines are activities that are substantially similar. One of these commenters said that the proposed change is a departure from the NWPs that were first promulgated in 1977. A few commenters said that a general permit should encompass activities that are similar in nature consistent with Section 404(e) of the Clean Water Act. When proposing to issue new NWPs for activities that were authorized by a previous NWP, discussing the differences among those NWPs and the associated categories of activities is an important part of explaining the proposed action. The changes are being proposed through the normal rulemaking process, and are being made in response to events that have raised concerns about potential increases in regulatory uncertainty for specific categories of regulated entities. When the NWPs were first issued in 1977, there were 15 NWPs. When the NWPs were last issued in December 2016, there were 52 NWPs. The number of NWPs has increased substantially over time in response to changes in the Corps Regulatory Program, litigation, studies, and other factors. The three utility line NWPs being issued in this final rule represent categories that are similar in nature (i.e , oil/natural gas; electricity, including communications carried by electricity; and water, wastewater, sewage, stormwater, and other substances). Section 404(e) of the Clean Water Act does not specify how broad or narrow categories of activities authorized by NWPs and other general permits must be. The Corps has substantial discretion to identify categories of activities that are appropriate for NWPs and other general permits. One commenter noted that the Corps' response to public comments for the 2017 NWPs rejected the idea that utility line activities are not substantially similar, stating that the Corps explained that the agency interprets the `categories of activities that are similar in nature' requirement broadly to keep the NWP program manageable in terms of the number of NWPs. A few commenters said that the history of the NWPs indicates that there is no prior precedent in past NWP rulemaking for arbitrarily dividing NWPs that are intended to cover categories of activities that are similar in nature. One of these commenters further indicated that the mining NWPs (21, 44, 49, and 50) and the development NWPs (29 and 39) are not analogous as their development came about differently, indicating that they largely had to do with the end of NWP 26. As discussed above, Section 404(e) of the Clean Water Act gives the Corps substantial discretion in how broad or narrow to define categories of activities[[Page 2780]]for general permit authorization. The proposal to issue three separate NWPs for utility line activities instead of reissuing NWP to authorize all utility line activities was made, in part, in response to concerns about regulatory uncertainty for various utility line sectors. The proposal is also an opportunity to tailor the NWPs so that they will authorize activities that have no more than minimal individual and cumulative adverse environmental effects by making ***targeted*** changes to the text of each of these NWPs, as appropriate. This proposal is consistent with prior NWP rulemaking efforts, in which the Corps issued new NWPs to authorize categories of activities with numerous similarities in the text of the NWP, including acreage limits and other limits, PCN thresholds, and categories of waters in which those NWPs may be used to authorize discharges of dredged or fill material into waters of the United States. For example, in 2007 the Corps issued two new NWPs to authorize discharges of dredged or fill material into waters of the United States for coal mining activities (see 72 FR 11092). The Corps issued NWP 49 for coal remining activities and NWP 50 for underground coal mining activities. These two coal mining NWPs were issued even though the Corps had issued and reissued NWP 21 for surface coal mining activities over time since NWP 21 was first issued in 1982 (47 FR 31794). In 2000, the Corps issued five new NWPs and modified six existing NWPs to replace NWP 26, which authorized discharges of dredged or fill material into headwaters and isolated waters (65 FR 12818). Four of the new NWPs (NWP 39 for residential, commercial, and institutional developments; NWP 40 for ***agricultural*** activities; NWP 42 for recreational facilities; and NWP 43 for stormwater management facilities) authorized discharges of dredged or fill material into non-tidal waters of the United States, excluding non-tidal wetlands adjacent to tidal waters. Each of these NWPs had a \1/2\-acre limit for losses of non-tidal waters of the United States. The categories of activities established for these four NWPs were based on the operational purposes they served, which the Corps does not have the authority to regulate. Those operational purposes included providing places for people to live, work, learn, and produce goods and services (NWP 39); ***agriculture*** activities, including farm buildings (NWP 40); recreational facilities and associated features (NWP 42); and stormwater management facilities (NWP 43). Similar to these NWPs, the three NWPs the Corps is issuing to authorize various sectors of utility line activities are differentiated by the substances those utility lines carry, despite the Corps' lack of authority to regulate the substances being conveyed by those utility lines. If Congress had intended the categories of general permits issued under Section 404(e) of the Clean Water Act to be based on the activity the Corps regulates (i.e , discharges of dredged or fill material into waters of the United States), it would not have written the text of section 404(e) to refer to ``any category of activity involving discharges of dredged or fill material.'' The text of section 404(e) clearly allows the Corps to issue any number of NWPs that authorize discharges of dredged or fill material into waters of the United States. Furthermore, those categories can be based on how the authorized activity will be used after the project proponent has completed the construction activities associated with the discharges of dredged or fill material into waters of the United States, and how people will use the completed activities even though the Corps generally has no authority to regulate how the constructed facilities are operated. These principles apply to the three NWPs the Corps is issuing for these three utility line sectors. One commenter said that the proposed changes to NWP 12 and the proposed issuance of separate NWPs for other types of utility lines are not consistent with congressional intent to reduce administrative burdens and the Administration's policy on infrastructure development and maintenance. This commenter cited Executive Order 13777, ``Enforcing the Regulatory Reform Agenda'' (February 24, 2017), Executive Order 13783, ``Promoting Energy Independence and Economic Growth'' (March 28, 2017), and the 2018 ``Legislative Outline for Rebuilding Infrastructure in America.'' The Corps believes that this issuance of these three NWPs (NWPs 12, 57, and 58) are consistent with priorities for infrastructure development because they will help reduce regulatory uncertainty and burdens on the regulated public. The issuance of these NWPs will not cause any increases in the number of activities authorized by an NWP or the number of activities requiring individual permits. The three NWPs are consistent in general structure, but they have some differences because of the different types of substances those utility lines convey and how those utility lines are designed and constructed. Several commenters stated that the proposed division of NWP 12 activities into separate NWPs discourages the beneficial and common practice of joint trenching and the use of utility corridors where various types of utilities are co-located, and further indicated that these features should be permissible under NWP 12 as a single and complete project. Several commenters said that the proposal to issue three separate NWPs would increase costs and delays associated with energy infrastructure projects. A few commenters stated that the division of NWP 12 into three NWPs would increase the number of permits needed by some applicants. One commenter cited NWP general condition 28 as a reason not to divide NWP 12 into three different NWPs for different types of utility lines. The issuance of these three NWPs will not discourage joint trenching and the use of utility corridors for multiple utility lines. For example, if a project proponent proposes to construct a water line next to an oil or natural gas pipeline, the provisions of NWP general condition 28, use of multiple NWPs, would apply. For each crossing of a separate and distant waterbody, both NWP 58 and 12 could be used, as long as the loss of waters of the United States at each single and complete project does not exceed \1/2\-acre. The issuance of these three NWPs will not cause increased costs and delays for energy infrastructure projects, except for a relatively brief period of time as the transition from the 2017 NWPs to the 2021 NWPs occurs. The Corps acknowledges that there will be some increases in the number of permits that project proponents will need to obtain, but those permits will generally be used concurrently, and consistent with general condition 28. The use of multiple NWPs to authorize single and complete projects is a longstanding practice in the NWP program. A few commenters said that the when the Corps considers whether to make changes to an established and well-functioning NWP program, it should be conscious of how changes to the framework for permitting utility lines will affect the investment community, and in turn the country's ability to continue to deliver competitively-priced energy from diverse sources to U.S consumers and other end-users, and to further domestic energy independence. A few commenters remarked that pipeline and other infrastructure operators need regulatory certainty to build, maintain, and upgrade pipelines and other utility infrastructure. One commenter expressed support for the Corps' efforts to improve the NWP[[Page 2781]]program, but cautioned the Corps to avoid changes that could introduce inefficiencies. A few commenters said that the proposed division of NWP 12 into three separate NWPs would likely introduce unnecessary strain on agency resources, delays in the permit reviews, regulatory inconsistency in the permitting process. One commenter objected to dividing the NWP 12 into three separate NWPs because they are very similar and can be more easily tracked and understood as one category. The Corps acknowledges that there will be some challenges and opportunities with these changes to the NWP program, but it should also be noted that the NWP program changes each time the Corps goes through the rulemaking process to issue or reissue the NWPs and that adjustments need to be made under the new NWPs. The issuance of NWP 57 will help support renewable energy generation facilities and the transfer of electricity from those generation facilities to residential, commercial, industrial, and other users. The NWPs will continue to provide regulatory certainty for pipelines and other types of utility lines. None of these three NWPs require agency coordination, so other federal agencies should not be adversely affected by the splitting of NWP 12 into three separate NWPs. One commenter said that if the Corps were to move forward with the division of the NWP 12 activities it must take into consideration the differences between distribution and transmission pipelines as the physical characteristics of the pipelines inherent in these different uses may have a larger effect on waters of the United States than the material being transported. A few commenters suggested that if NWP 12 were reissued without change, over time the use of NWP 12 would shift from oil and gas pipelines to other utility sectors to account for new investment in more secure and resilient utility systems, and that a two-year period is an inadequate sampling for this decision making effort. The Corps does not agree that is necessary to address differences between distribution and transmission pipelines. These NWPs authorize utility lines of various sizes, and the Corps focuses its analysis of potential adverse environmental effects or impacts that are caused by the activities that are directly related to the Corps' regulatory authority (i.e , discharges of dredged or fill material into waters of the United States regulated under Section 404 of the Clean Water Act and structures and work in navigable waters of the United States regulated under Section 10 of the Rivers and Harbors Act of 1899). The Corps does not believe it is useful to engage in speculation about potential future trends in the number of oil or natural gas pipelines versus the number of electric utility lines and telecommunications lines versus the number of utility lines carrying water and other substances. The Corps estimated the potential permitting changes using data on NWP verifications issued between March 19, 2017, and March 19, 2019, which provides a robust sample size. One commenter said that that, according to the Congressional Research Service, the Corps does not have a centralized database or other information on the number of individual permits it issues for pipeline and utility line projects, nor does it have a database on the utility line activities that are authorized by NWP 12, and that any attempt by the Corps to draw out a reasoned, data-driven basis for dividing NWP 12 into three separate NWPs is premature at this time. The Corps does have a centralized database that tracks NWP verifications issued, regional general permit verifications issued, and individual permits issued, including the types of activities authorized by those general permits and individual permits. From that data, the Corps was able to estimate the number of NWP activities that were likely associated with oil or natural gas pipelines, electric and telecommunications lines, and utility lines for water and other substances. One commenter stated that dividing the NWP 12 would add complexity to ESA and NHPA compliance. One commenter said that the Corps appropriately recognizes that the techniques used to construct water and electric utility lines have fewer impacts to waters of the United States than other uses of NWP 12 involving transport of petrochemicals. The issuance of these three NWPs will not add complexity to ESA or NHPA compliance because they must comply with the same NWP general conditions, including general condition 18, endangered species, and general condition 20, historic properties. A single compliance process under either law can serve multiple NWPs for those activities that may use NWP 12 and 58, for example. A few commenters stated that there is no logical grouping to be found for dividing the proposed NWP activities based on pipe diameter, size, and any associated ground disturbances. A few commenters said that the Corps' information on diameter and pipeline lengths are based upon incomplete generalizations that do not withstand scrutiny. One commenter stated that justification for dividing NWP 12 cannot be based upon the diameter of the pipeline or conduit. One commenter remarked that the size of the pipe may determine a minimum width of a trench but that some smaller pipelines may require larger trenches depending on the circumstance and that this is not a valid criterion for separating the NWPs. One commenter said that the Corps failed to make a persuasive case that length of a utility line would be a determining factor when considering ground disturbances and division of the NWP activities. One commenter said that with respect to the Corps' jurisdiction under Section 10 of the Rivers and Harbors Act of 1899, it is the presence of a pipeline that affects navigation, not the substance it contains. The discussion in the preamble to the 2020 Proposal regarding the differences among the three utility line sectors that were the basis for the modified NWP 12 and the proposed new NWP C and D was intended to demonstrate that there are some differences among those sectors. The final NWPs are based on sectors, not construction techniques or sizes of the utility lines. The text of the three NWPs makes no references to the diameters or length of the utility lines. The Corps agrees that for utility lines that cross navigable waters of the United States and require section 10 authorization, the Corps focuses its evaluation on potential effects on navigation, not the substance being conveyed by the utility line. A few commenters said that the Corps' jurisdiction as related to these NWPs is limited to its statutory authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. One commenter expressed concern that the proposed issuance of separate NWPs could lead the Corps to consider factors outside of its statutory authority. A few commenters stated that consideration of the type of substances that can be conveyed by a utility constitutes overreach of the Corps' statutory jurisdiction. These commenters went on to reference statements from the Corps that it does not regulate the operation of oil and natural gas pipelines, but that the Corps regulates discharges of dredged or fill material into waters of the United States associated with their construction. The Corps recognizes that under these three NWPs the Corps' statutory authority is limited to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. However, for these three NWPs and many of the other NWPs, the categories of activities authorized by those NWPs relate to how[[Page 2782]]the constructed activities will be used (e.g , residences for NWP 29, recreational facilities for NWP 42, ***land***-based renewable energy generation for NWP 51), even though the Corps does not have the authority to regulate the operation of the constructed structure or fill. As discussed above, the text of section 404(e) recognizes that the Secretary could issue any number of general permits, including NWPs, for any number of categories of activities involving discharges of dredged or fill material into waters of the United States. A few commenters said that the terms used to describe the applicability of NWP 12 cause ambiguous situations with respect to which substances would qualify as oil, gas, or petrochemicals and to which NWP would apply. These commenters also indicated confusion associated with common situations where petrochemical products are added to non-petroleum products prior to transport and generally suggested the source of the material to be transported has little or no bearing on the methods for construction, maintenance, repair or replacement of the pipeline on the best management practices needed to protect waters of the United States. The Corps has attempted to provide more clarity regarding the differentiation of utility line sectors that would fall under NWPs 12, 57, or 58. The Corps recognizes that there may be situations where a prospective permittee may be unsure which NWP applies. The prospective permittee could coordinate with the appropriate Corps district to get assistance in identify which NWP would be most appropriate for a particular project. If the project proponent is contemplating constructing different types of utility lines for a particular project, multiple NWPs could be used as long as the project proponent complies with NWP general condition 28, which addresses use of multiple NWPs for a single and complete project.General Comments on Best Management Practices A few commenters supported the incorporation of specific best management practices (BMPs) for the utility line NWPs. A few commenters said that adding additional BMPs or standards to this NWP would result in redundant requirements to manage on these projects without providing additional benefits. A few commenters said that division engineers can tailor standards to meet region-specific needs and issue additional regional conditions with their discretionary authority. One commenter stated that the BMPs for protecting water features during trenching, boring, or sleeving construction methods for installing, replacing, or maintaining pipes at stream or wetland crossings are similar in nature, regardless of what product will travel in the pipeline once construction is completed. One commenter stated that the three categories of utility lines under proposed NWPs 12, C, and D, would authorize sufficiently similar activities and require the same or similar environmental provisions in order to meet the no more than minimal impacts requirement under section 404(e) of the Clean Water Act. One commenter said that because of the overarching federal regulatory regime, NWP 12 and its general conditions, regional conditions added by division engineers, and applicable state requirements there are no additional BMPs that could be practically or lawfully added to NWP 12. The Corps agrees that there are no national best management practices to add to NWPs 12, 57, and 58. As discussed below, a few commenters submitted suggestions for best management practices. The Corps has considered those best management practices, and has concluded that best management practices are more appropriately addressed as regional conditions added to the NWPs by division engineers or activity-specific conditions added NWP authorizations by district engineers. A few commenters said that imposing additional best management practice requirements would risk conflict or redundancy with other applicable regulations. A few commenters suggested that the if the Corps were to become aware of best management practices to add to NWP 12 then it should conduct a subsequent notice and comment procedure for these BMPs as none were specifically proposed. A few commenters indicated that a 60-day notice is inadequate for stakeholders and agencies to compile BMPs and best available science for the invitation to comment. One commenter recommended that the Corps maintain the existing NWPs and instead conduct an extensive outreach campaign to stakeholders to determine BMPs for the utility line NWPs. One commenter said that when developing industry specific standards and BMPs, the duration and location of temporary fill impacts across a project site should be taken into consideration. One commenter requested that the Corps provide examples the types of construction methods for access roads that are considered to minimize adverse effects to waters of the United States as noted in several NWPs. The Corps has decided not to add any best management practices to NWPs 12, 57, and 58. After reviewing the BMPs suggested by commenters, the Corps determined that the text of these NWPs already include some common BMPs, such as requiring the top 6 to 12 inches of the trench to normally be backfilled with topsoil from the trench, constructing the trench so that it does not drain waters of the United States through a French drain effect, or stabilizing exposed slopes and stream banks immediately after completion of construction of the stream crossing.Comments on Best Management Practices for NWP 12 One commenter said that impacts from work on natural gas pipelines and gas utility lines are minimal and temporary, and BMPs under the existing NWP 12 protect waters of the United States. One commenter stated that if the Corps decides to impose any BMPs on interstate natural gas pipelines they must not conflict with the FERC's Plan and Procedures. Several commenters stated that The U.S Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety imposes stringent pipeline safety regulations under 49 CFR part 192 on natural gas interstate transmission pipelines and gas utility intra-state natural gas transmission and distribution utility lines. One commenter stated that the 2017 NWP 12 provides adequate environmental protections under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, and that no additional industry-specific standards or BMPs should be added to the NWPs as national enforceable terms. One commenter stated that pipeline rights-of-way should be maintained in herbaceous condition within 10-feet centered on the pipeline. One commenter stated that applicants should have to produce containment and clean up contingency plans as BMPs for all of the utility line permits. One commenter said that a trench should not be constructed or backfilled in a matter that would redirect shallow groundwater flow paths, to avoid altering vegetative communities or flow in streams downslope of the trenches. One commenter said that appropriate measures should be taken to maintain water quality conditions downstream of the site. As discussed above, the Corps is not adding any BMPs to the text of NWPs[[Page 2783]]12, 57, and 58 that were not in the proposed texts of these NWPs. Best management practices recommendations. One commenter said that a list of BMP manuals that support oil and gas pipeline development and maintenance activities in Appendix G of the document titled ``Considering Best Practices for Managing Pipeline Permitting.'' Several of these documents are excellent resources for best management practices related to impacts to wetlands and streams. One commenter recommended the following BMPs for NWP 12: All excavations should be backfilled with the excavated material after installation of the appropriate structures. Side-cast spoil material from trench excavation should be placed on the side of the trench opposite streams and wetlands. Spoil material from trench excavation should be placed on the side of the trench to be reused as backfill with the A-horizon placed back in its original position. Excess spoil material must be removed to an approved upland disposal site. Stream banks at crossings must be restored after construction has been completed. Disturbed stream banks can be restored by planting woody vegetation and by using bioengineering techniques for stream bank stabilization. Right-of-ways through and adjacent to streams and through ***forested*** wetlands should be maintained in low growing, woody vegetation to minimize erosion and sedimentation. Maintenance of this right-of-way should be conducted with mowing rather than with chemicals to reduce the potential for contamination and negative impacts on aquatic resources. If chemicals are used, a 50-foot buffer on either side of the stream crossing should be established in order to retain the riparian vegetation while reducing the amount of chemical runoff into the aquatic environment. Any open trench must be temporarily fenced to reduce the likelihood of wildlife becoming trapped and must include a ramped section which would allow wildlife to escape. A full visual inspection of every open trench section must be made daily to identify any trapped wildlife in need of rescue. One commenter provided an example list of industry BMPs, but indicated that should the Corps chose to incorporate them in the text of NWP 12 and the other utility NWPs, it must understand that all BMPs are not appropriate to all circumstances. This commenter provided the following list of BMPs: Requiring, where appropriate, a plan to address the prevention, containment, and cleanup of sediment or other materials caused by inadvertent returns of drilling fluids. Requiring notification to the Corps and implementation of a remediation plan in the event of an inadvertent return of drilling fluids. Siting poles and tower foundations outside of surface waters where practicable. Visually marking waters of the United States near work areas. Using techniques that minimize rutting and damage to wetlands, such as installing mats prior to placing or driving equipment over wetlands or streams for temporary access or using wide-track equipment. Establishing stockpiling/work areas outside of surface waters. Construction monitoring during routine inspection and maintenance activities to avoid unauthorized discharges into surface waters. A few commenters suggested modifying the text of NWP 12 to encourage the use of directional drilling. One commenter said that when horizontal directional drilling (HDD) is not possible, the flume method should be the required method for use of the NWP 12 over the dam-and-pump or open-cut stream crossing methods in order to minimize impacts to aquatic resources. One commenter suggested when HDD is used the permittee should erect sediment control measures between the drill site and nearby sensitive resources to prevent drilling mud releases from reaching sensitive resources, conduct regular on-site briefings for personnel to identify and locate sensitive resources, and maintain response equipment on-site or in an accessible location and in good working-order. One commenter suggested that HDD contractors should be required to employ a full-time, qualified on-site mud engineer to continuously monitor the drilling fluid circulation and returns as a preventative measure. The Corps declines to add text to NWPs 12, 57, and 58 to encourage horizontal directional drilling. The use of horizontal directional drilling is more appropriately determined on a case-by-case basis. The Corps lacks the authority to require HDD contractors to employ a full-time, qualified on-site mud engineer to monitor drilling fluid circulation and potential inadvertent returns of drilling fluid. One commenter said that Congress did not intend the NWP program to be used to streamline the authorization of major infrastructure projects and that each water crossing for major pipeline projects that transport highly toxic and dangerous materials should require individual permit reviews. A few commenters stated that environmental impact statements should be required for oil or natural gas pipelines. One commenter said that a programmatic ESA consultation should be completed for this NWP. One commenter stated that the construction and operation of oil and gas pipelines pose significant risk to protected species and should require individual permits. Another commenter said that the Corps must determine the environmental safety of HDD at a particular location and associated mitigation measures. One commenter suggested a definition for ``stand-alone project'' to require that all the crossings within major watersheds are evaluated together as single and complete since the cumulative impacts would be to one system. Section 404(e) of the Clean Water Act provides the Corps with the authority to issue NWPs to authorize categories of activities involving discharges of dredged or fill material into waters of the United States to streamline the authorization process for these activities, as long as they result in no more than minimal individual and cumulative adverse environmental effects. Section 404(e) does not prohibit the issuance of general permits for utility lines and other infrastructure projects. As many commenters recognized, the Corps does not have the discretion to control the types of substances conveyed by oil or natural gas pipelines or other types of utility lines. Compliance with the Endangered Species Act is discussed in Section III.D of this final rule: Compliance with Relevant Statutes. The Corps declines to add a definition of ``stand-alone project'' because cumulative impacts are already evaluated by district engineers over appropriate geographic regions, such as watersheds, Corps districts, states, etc. A few commenters stated that NWP 12 should be revised to consider the protection of tribal treaty rights. One commenter said that the Corps should conduct tribal consultation for the reissuance of the NWP 12. One commenter suggested the Corps adopt a policy of early consultation with Indian Tribes and other actors on these types of projects, above the timeline required by the NHPA section 106 process to allow the Corps to preemptively address concerns and avoid delays, litigation, and other increased costs. One commenter said that the draft NWP 12 decision document fails to address the[[Page 2784]]high correlation of pipeline construction projects with rates of missing and murdered Indigenous women and children and indicated that the Corps had not consulted the tribes on the matter. One commenter stated that there are a variety of utility lines that have direct, indirect, and cumulative impacts on treaty reserved resources and that the proposed changes require additional review to fully understand the extent of potential resource impacts. One commenter requested the Corps continue to require PCNs in Washington State to adequately protect treaty resources. Tribal treaty rights are addressed through NWP general condition 17 for all NWPs, including NWP 12. Consultation with tribes on the proposed NWPs is discussed in Section V of this final rule (Administrative Requirements), in the section for E.O 13175. The draft decision document does not discuss pipeline construction projects and missing and murdered people because that issue is more appropriately addressed by local, state, tribal, and federal law enforcement officials. Concerns about potential impacts to treaty resources in Washington State are more appropriately addressed through regional conditions, which can add PCN requirements to this NWP, where appropriate. This NWP is reissued with the modifications discussed above.(2) NWP 21. Surface Coal Mining Activities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed (discussed above in Section II.F), ***remove*** the reference to integrated permit processing procedures, and ***remove*** the requirement for the permittee to obtain written verification from the district engineer so that the 45-day PCN review period would apply to this NWP as it does to other NWPs with \1/2\-acre limits for losses of waters of the United States. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. Many commenters opposed ***removing*** the provision that requires a written verification from the district engineer before commencing the authorized activity, instead of allowing a default authorization to occur if the Corps does not respond to a complete PCN within 45 days. Several commenters expressed support for the default authorization to occur if the district engineer does not respond to the PCN within 45 days. Many commenters opposed ***removal*** of the PCN requirements from this NWP. One commenter said that in order to further expedite permitting for a coal mining project, no PCNs should be required. The Corps removed the requirement for the permittee to obtain written authorization before commencing the activity to be consistent with the other NWPs that have a \1/2\-acre limit for discharges of dredged or fill material into non-tidal waters of the United States (e.g , NWPs 29, 39, 40, 42, 43, 44, 51, and 52). The Corps did not propose to ***remove*** any PCN requirements from this NWP. All activities authorized by this NWP require PCNs. One commenter stated support for the language regarding integrated permitting processing procedure language. One commenter requested addition of text to the NWP stating that no work can begin until formally approved by the U.S Department of Interior or the state, and final approval is not necessary before submitting a PCN to the district engineer. One commenter said that NWP 21 should be expanded to include a requirement for federal and state agency coordination when pitcher plant bog wetlands, bald cypress, and/or tupelo swamps are impacted. This commenter also stated that this NWP should not authorize discharges of dredged or fill material into these types of wetlands. The Corps removed the language referencing integrated permit processing procedures, since those procedures have never been developed for this NWP since that text was added to the NWP in 2007 (see 72 FR 11184). Project proponents may be required to obtain separate authorizations from the Department of Interior's Office of Surface mining or the state, but those authorizations are a separate process from the Corps' NWP authorization process. Authorization by an NWP does not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law. (See item 2 in Section E, Further Information.) Division engineers can add regional conditions to this NWP to restrict or prohibit discharges of dredged or fill material into certain wetland types if those discharges are likely to result in more than minimal individual and cumulative adverse environmental effects. District engineers can also exercise discretionary authority to modify, suspend, or revoke an NWP after reviewing the PCN, to ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects. Several commenters said that NWP 21 should be revoked because the adverse effects of surface coal mining on the environment are significant. One commenter objected to the ***removal*** of stream mitigation requirements. One commenter said that the applicant should be required to ensure that toxic substances are not released back into the water column through re-exposure from dredge activities. Several commenters said that the proposed changes to this NWP unlawfully put the interests of the regulated public above the Corps statutory mandate to protect the environment. The activities authorized by this NWP cannot result in the loss of greater than \1/2\-acre of non-tidal waters of the United States, excluding non-tidal wetlands adjacent to tidal waters. In addition, all activities authorized by this NWP require PCNs. The \1/2\-acre limit, the PCN requirements, and the ability of division and district engineers to modify, suspend, or revoke this NWP on a regional or activity-specific basis ensure that the activities authorized by this NWP result in no more than minimal adverse environmental effects. The Corps did not propose to ***remove*** any stream mitigation requirements from this NWP. Despite the changes to this NWP, these activities are reviewed by district engineers on a case-by-case basis since all activities require PCNs. This NWP is reissued as proposed.(3) NWP 29. Residential Developments The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed. The Corps also proposed to ***remove*** the ability for district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. One commenter said that this NWP should clarify that the acreage limits are applied cumulatively for both the original construction and any subsequent expansion of the development. One commenter stated that this NWP should not be issued to developments proposed in channel migration zones and floodplains where projects can directly and indirectly impact essential fish habitat, critical habitat, and habitats occupied by federally threatened or endangered species. One commenter said that as a result of climate change, residential[[Page 2785]]developments have increased the public safety risk. One commenter asked if projects occurring in floodplains and authorized by this NWP are consistent with the 2008 biological opinion on the Federal Emergency Management Agency's National Flood Insurance Program. This NWP includes a subdivision provision, which states that for residential subdivisions, the aggregate total loss of waters of the United States authorized by this NWP cannot exceed \1/2\-acre, including any loss of waters of the United States associated with the development of individual subdivision lots. Activities authorized by this NWP must comply with general condition 10, fills within 100-year floodplains. If the district engineer reviews the PCN and determines that the proposed activity may adversely affect essential fish habitat, he or she will initiate essential fish habitat consultation with the NMFS. If the district engineer reviews the PCN and determines the proposed activity may affect ESA-listed species or designated critical habitat, she or he will initiate section 7 consultation with the U.S FWS and/or NMFS as appropriate (see general condition 18). Potential public safety risks associated with residential developments are more appropriately addressed by local or state ***land*** use planning and zoning agencies. The 2008 biological opinion on the Federal Emergency Management Agency's National Flood Insurance Program only applies to that program. It does not directly apply to the Corps' NWP program. One commenter said that authorizing residential developments with golf courses results in devastating impacts on the environment through habitat loss and fragmentation, nutrient loading that causes algal blooms, and the use of pesticides/herbicides, which must be considered under an environmental impact statement, and therefore, should require an individual permit. One commenter stated that a \1/2\-acre loss of waters of the United States is not minimal and that any loss over \1/10\-acre should require compensatory mitigation. One commenter said that compensatory mitigation should be required for all unavoidable impacts to wetlands and streams authorized by this NWP. One commenter said that if the Corps does not require compensatory mitigation under NWP 29, the adverse environmental effects are more than minimal. One commenter said that the reliance on compensatory wetland mitigation often leads to a net loss of wetland functions and values and that NWPs like NWP 29 could lead to the loss of thousands of acres of wetlands. The Corps regulates discharges of dredged or fill material into waters of the United States, and this NWP limits those discharges to non-tidal waters of the United States. If the proposed NWP 29 activity includes the construction of a golf course, the district engineer will review the PCN and determine whether the proposed activity qualifies for NWP authorization. The Corps does not have the authority to regulate the use of pesticides or herbicides, and therefore is not required to consider the potential use of pesticides or herbicides when reviewing PCNs for proposed activities. Nutrient loading can be the result of non-point source pollution. Nutrient loading may also result from discharges of certain substances from point sources regulated under Section 402 of the Clean Water Act, which is administered by states with approved programs or the U.S EPA. General condition 23 requires compensatory mitigation for all wetland losses greater than \1/10\-acre that require PCNs, unless the district engineer determines that some other form of mitigation would be more environmentally appropriate. Wetland compensatory mitigation projects required for activities authorized by the NWPs must comply with the Corps' regulations at 33 CFR part 332, which require monitoring and other actions to ensure that the required compensatory mitigation offsets the permitted wetland losses. One commenter said the array of wetland and water types that authorized under NWP 29 and lost are varied and that the Corps cannot determine environmental effects are minimal when they are speculative and unquantifiable. One commenter stated that the cumulative impacts of authorizing large residential driveways in waters of the United States threatens nearshore benthic habitat that is important to salmonids. One commenter said that it is unclear how permit authorizations are coordinated with local agencies to ensure the appropriate use of NWP 29 and that local protections should apply to the permit. All activities authorized by this NWP require PCNs. Therefore, district engineers review all proposed activities and determine whether those activities qualify for NWP authorization. When reviewing PCNs, district engineers consider cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse effects are no more than minimal (see paragraph 2 of Section D, District Engineer's Decision). If the proposed NWP activity may affect ESA-listed species, including list salmon species, the district engineer conducts ESA section 7 consultation with the U.S FWS or NMFS, as appropriate. Nationwide permit 29 authorizations are not coordinated with local agencies. As stated in Section E, Further Information, the NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law. This NWP is reissued as proposed.(4) NWP 39. Commercial and Institutional Developments The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed. The Corps also proposed to ***remove*** the ability for district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. Several commenters recommended establishing tailored PCN thresholds for NWP that are similar to the PCN thresholds in NWP 12, NWP 14, and NWP 51, which only require PCN for losses of waters of the United States greater than \1/10\-acre. Due to the current requirement for PCNs for all NWP 39 activities, this NWP is underutilized and increasing the PCN threshold to \1/10\-acre would incentivize project proponents to reduce impacts. A couple of commenters said that compensatory mitigation should be required for all unavoidable impacts to streams, wetlands, and special aquatic sites authorized by NWP 39. One commenter stated that commercial developments have the potential to cause significant environmental harm through habitat loss and fragmentation and should be assessed in environmental impact statements and through programmatic ESA section 7 consultations. One commenter said that commercial developments constructed in channel migration zones and floodplains, areas occupied or critical to salmon populations, should be required to obtain individual permits. The Corps believes that this NWP should continue to require PCNs for all activities, so that district engineers can review all proposed commercial and institutional developments involving discharges of dredged or fill material into waters of the United States and determine which proposed activities can be authorized by NWP 39 and which proposed activities should require individual permits. The streamlined authorization process[[Page 2786]]provided by NWP 39 continues to incentivize project proponents to reduce losses of waters of the United States to qualify for NWP authorization instead of having to obtain individual permits for those activities, and the increased time and paperwork needed to secure those individual permits. When evaluating PCNs, district engineers determine whether proposed NWP 39 activities should require compensatory mitigation or other forms of mitigation to ensure that those activities result in no more than minimal adverse environmental effects. Compensatory mitigation requirements are determined on a case-by-case basis by district engineers. If the district engineer determines a proposed NWP 39 activity will result in more than minimal adverse environmental effects after considering mitigation proposed by the permit applicant, he or she will exercise discretionary authority and require an individual permit for the proposed activity. During the individual permit process, the district engineer will determine whether NEPA compliance will be achieved through the preparation of an environmental impact statement or environmental assessment, unless the proposed activity qualifies for a categorical exclusion. The district engineer will also evaluate the PCN to determine if the proposed activity may affect listed species or designated critical habitat, and thus require ESA section 7 consultation with the U.S FWS or NMFS, as appropriate. Activities authorized by this NWP must comply with general condition 10, fills in 100-year floodplains. This NWP is reissued as proposed.(5) NWP 40. ***Agricultural*** Activities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed. The Corps also proposed to ***remove*** the ability for district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. One commenter stated that losses of waters and wetlands up to \1/2\-acre are not minimal. One commenter said that any impacts greater than \1/10\-acre should require compensatory mitigation. Another commenter said that this NWP and other NWPs does not adequately address cumulative impacts and these activities should require individual permits. One commenter requested that the Corps require best management practices to prevent and reduce non-point source pollution associated with ***agricultural*** activities. One commenter said that all ***agricultural*** activities authorized by this NWP should go through an alternatives analysis for channelization or dam construction to support fish passage and healthy stream systems. One commenter stated that the authorization of some activities under this NWP, such as levees, is inconsistent with Federal Emergency Management Agency flood requirements or policies. One commenter said that allowing these impacts under current watershed conditions and salmon population status is excessive. All activities authorized by this NWP require PCNs. District engineers will review each proposed activity and determine which activities will result in no more than minimal individual and cumulative adverse environmental effects and are authorized by this NWP and which activities do not qualify for NWP authorization and should require individual permits. During their reviews of PCNs, district engineers consider cumulative impacts caused by activities authorized by this NWP (see paragraph 2 of Section D, District Engineer's Decision). The Corps lacks the authority to require ***agricultural*** producers to implement best management practices to control non-point source pollution. The NWPs do not require alternatives analyses since they can only authorize activities that have no more than minimal adverse environmental effects. If a project proponent is considering channelizing a stream or constructing a dam, the district engineer will review the PCN and determine whether the proposed activity will result in no more than minimal adverse environmental effects. Activities authorized by this NWP must comply with general condition 10, fills in 100-year floodplains. The Corps does not have the discretion to enforce flood requirements or policies adopted by the Federal Emergency Management Agency. If the district engineer determines that a proposed NWP 40 activity may affect salmon listed under the ESA, he or she will conduct ESA section 7 consultation with the U.S FWS or NMFS, as appropriate, before issuing an NWP verification letter. This NWP is reissued as proposed.(6) NWP 42. Recreational Facilities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed. The Corps also proposed to ***remove*** the ability for district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. One commenter said that large recreational facilities (golf courses) or non-passive recreational facilities should require individual permits in non-tidal waters and stream channels, in channel migration zones, and waters used or in the historic range of listed species, or that directly or indirectly impact critical or essential fish habitat. Allowing these impacts under current watershed conditions and salmon population status is excessive. This NWP requires PCNs for all proposed activities. District engineers will review all PCNs to determine whether the discharges of dredged or fill material into waters of the United States to construct or expand recreational facilities will result in no more than minimal adverse environmental effects. If the district engineer determines a proposed activity may affect ESA-listed species or designated critical habitat, she or he will conduct ESA section 7 consultation with the U.S FWS or NMFS, as appropriate, prior to issuing the NWP verification or deciding whether to exercise discretionary authority to require an individual permit. If the district engineer reviews the PCN and determines the proposed activity may adversely affect essential fish habitat, he or she will conduct essential fish habitat consultation with the NMFS. This NWP is reissued as proposed.(7) NWP 43. Stormwater Management Facilities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed. The Corps also proposed to ***remove*** the ability for district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. In the first paragraph of this NWP, the Corps also proposed to add the phrase ``such as features needed'' before ``to meet reduction ***targets*** established under Total Maximum Daily Loads set under the Clean Water Act.'' One commenter supported adding the phrase ``such as features needed'' to the first paragraph to clarify that green infrastructure type of features are not just to reduce total maximum daily loads. Several commenters said that this[[Page 2787]]NWP should be reissued with no changes except for a clarifying provision related to green infrastructure as states and municipalities may require or allow green infrastructure projects to meet water quality criteria, designated uses, and compliance with post-construction stormwater requirements regardless of whether a total maximum daily load applies to the receiving water. The Corps has added the phrase ``such as features needed'' to this NWP. The Corps agrees that states and municipalities may require, under their authorities, the construction and implementation of green infrastructure projects to meet water quality criteria, designated uses, and compliance with post-construction stormwater requirements. If the construction and maintenance of those green infrastructure projects involves discharges of dredged or fill material into waters of the United States, this NWP can be used to authorize those activities. One commenter said that for new stormwater management facilities, best management practices are required as a general matter to prevent non-point source pollution during and after construction activities. One commenter stated that allowing the loss of \1/2\-acre of non-tidal waters under current watershed conditions and salmon population status is excessive. This commenter said that these facilities should not be located in wetlands or intermittent or ephemeral streams adjacent to perennial streams that are occupied by salmon, especially ESA-listed species. This commenter asserted that these actions should require individual permits when located in channel migration zones, or floodplains, wetlands, and essential fish habitat. Measures undertaken to prevent non-point source pollution during and after construction activities may be required by state or local governments, or by other federal agencies. The Corps does not have the authority to regulate non-point source pollution that may reach waters and wetlands. Except for certain maintenance activities, all activities authorized by this NWP require pre-construction notification to the district engineer. For those activities that require PCNs, the district engineer will evaluate potential impacts to salmon, and if the salmon include ESA-listed species, the district engineer will determine if the proposed activity may affect listed salmon, and engage in ESA section 7 consultation with the U.S FWS or NMFS as appropriate. Activities authorized by this NWP must comply with general condition 10, fills in 100-year floodplains. If, during the review of a PCN, the district engineer determines the proposed activity may adversely affect essential fish habitat, she or he will initiate essential fish habitat consultation with the NMFS. This NWP is reissued as proposed.(8) NWP 44. Mining Activities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed. The Corps also proposed to ***remove*** the ability for district engineers to waive the 300 linear foot limit for losses of intermittent and ephemeral stream bed. Comments received on the proposed ***removal*** of the 300 linear foot limit for losses of stream bed are summarized in Section II.F of this final rule, and in that section the Corps provided responses to those comments. In addition, the Corps proposed to modify paragraph (b) of this NWP to apply the \1/2\-acre limit to work in non-tidal navigable waters of the United States (i.e , section 10 waters). One commenter said the Corps should not reissue NWP 44 because it is in violation of Section 404(e) of the Clean Water Act. A few commenters stated that NWP 44 poses a risk of significant direct and cumulative harm and these activities should be authorized by individual permits, not an NWP. One commenter recommended requiring applicants ensure that toxic substances are not released back into waters through re-exposure from dredging. All activities authorized by this NWP require PCNs. District engineers will review PCNs for proposed activities to ensure that those activities will result in no more than minimal individual and cumulative adverse environmental effects, and therefore comply with section 404(e) of the Clean Water Act. One commenter said that the Corps should allow use NWP 44 in tidal waters to reduce cost and time associated with obtaining individual permits. One commenter expressed support for including activities in non-tidal section 10 waters. One commenter stated that the addition of activities in non-tidal section 10 waters needs clarification. This commenter said this may be a new requirement that is not currently regulated and thus may impact industrial mineral mining. Mining activities in tidal waters have potential for causing more than minimal individual and cumulative effects, and from a national perspective should be evaluated under the individual permit process. However, district engineers can develop and issue regional general permits to authorize mining activities in tidal waters in areas where these activities usually result in no more than minimal adverse environmental effects. The Corps is retaining the proposed clarification in paragraph (b) of this NWP, with respect to the NWP authorizing work in non-tidal navigable waters of the United States (i.e , section 10 waters). The clarification regarding work in section 10 waters was added because the Corps' definition of ``work'' at 33 CFR 322.2(c) for the purposes of Section 10 of the Rivers and Harbors Act of 1899 includes ``without limitation, any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States.'' One commenter said that this NWP should not authorize activities in waters inhabited by salmon. A few commenters stated that the Corps must consider the numerous proposals for sulfide-ore copper mining in Minnesota and Wisconsin in light of unique lake-***land*** system that is highly susceptible to mining caused pollution and degradation. All activities authorized by this NWP require pre-construction notification. District engineers will review PCNs for proposed activities and determine whether they may affect ESA-listed species or designated critical habitat. If the district engineer determines a proposed NWP 44 activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S FWS or NMFS as appropriate. Proposals for mining activities in Minnesota and Wisconsin are evaluated by the Corps' St. Paul District. This NWP is reissued as proposed.(9) NWP 48. Commercial Shellfish Mariculture Activities The Corps proposed a number of modifications to this NWP. The Corps proposed to change the title of this NWP from ``Commercial Shellfish Aquaculture Activities'' to ``Commercial Shellfish Mariculture Activities'' to more accurately reflect where these activities are conducted (i.e , coastal waters). The Corps also proposed to ***remove*** the \1/2\-acre limit for new activities that have direct effects on submerged aquatic vegetation in project areas that that have not been used for commercial shellfish aquaculture activities during the past 100 years. In addition to the proposed ***removal*** of that \1/2\-acre limit, the Corps proposed to ***remove*** the definition of ``new commercial shellfish aquaculture operation'' that was adopted in 2017. Also, the Corps proposed to ***remove*** both PCN thresholds for this NWP, as well as the paragraph that identifies the additional information that permittees must submit with their NWP 48 PCNs.[[Page 2788]] The Corps changed the title of this NWP to ``Commercial Shellfish Mariculture Activities'' because the NWP only authorizes activities in coastal waters. Mariculture is the cultivation of organisms in marine and estuarine open water environments (NRC 2010). The term ``aquaculture'' refers to a broad spectrum of production of aquatic organisms. In the United States aquaculture activities encompass the production of marine and freshwater finfish, as well as shellfish (bivalve molluscs and crustaceans). Oysters, clams, mussels, and scallops are examples of bivalve molluscs (bivalves). Since aquaculture activities in the United States include both water-based and ***land***-based activities, we use the term ``mariculture'' in NWPs 48, 55 (seaweed mariculture activities), and 56 (finfish mariculture activities) to make it clear that these NWPs only authorize activities in marine and estuarine waters. In response to the October 10, 2019 decision of the United States District Court, Western District of Washington at Seattle in the Coalition to Protect Puget Sound Habitat v. U.S Army Corps of Engineers et al. (Case No. C16-0950RSL) and Center for Food Safety v. U.S Army Corps of Engineers et al. (Case No. C17-1209RSL), the Corps has made substantial revisions to the national decision document for NWP 48. The revisions addressed, to the extent appropriate, issues identified in the district court's decision. A copy of the final national decision document is available in the docket at [*www.regulations.gov*](http://www.regulations.gov) (COE-2020-0002). The national decision document for the 2021 NWP 48 provides a more thorough discussion of the direct and indirect impacts caused by commercial shellfish mariculture activities. The national decision document also uses a broader set of scientific literature to support that discussion of potential effects to various resources and the human environment. The national decision document does not focus solely on oyster mariculture; rather, it also discusses mariculture activities for other bivalve species, such as clams, mussels, and scallops. The national decision document presents a more detailed discussion of the potential impacts of commercial shellfish mariculture activities on aquatic vegetation other than seagrasses, benthic communities, fish, birds, water quality, and substrate characteristics. The national decision document provides a more thorough discussion of how the Corps applies its two permitting authorities to commercial shellfish mariculture activities (i.e , Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act). It discusses the types of activities regulated under those authorities and their potential environmental consequences. In addition, the national decision document provides a more rigorous analysis to support a finding, at a national level, that the NWP would authorize only those commercial shellfish mariculture activities that have no more than minimal individual and cumulative adverse environmental effects. The national decision document explains that division engineers retain the authority to modify, suspend, or revoke NWP 48 on a regional basis (see 33 CFR 330.5(c)). It further discusses the authority of district engineers to modify, suspend, or revoke NWP 48 on a case-by-case basis (see 33 CFR 330.5(d)) if impacts of an activity proposed for authorization using NWP 48 has more than a minimal adverse effect on the environment. A copy of the national decision document for the 2021 NWP 48 is available in the [*www.regulations.gov*](http://www.regulations.gov) docket for this rulemaking action (docket number COE-2020-0002). Commercial shellfish mariculture activities involve the production of bivalves such as oysters, mussels, clams, and scallops. These activities occur in marine and estuarine coastal waters of the United States. As discussed above, the Corps regulates commercial shellfish mariculture activities under two of its permitting authorities: Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Under Section 10 of the Rivers and Harbors Act of 1899, the Corps regulates structures and work in navigable waters of the United States. Under Section 404 of the Clean Water Act, the Corps regulates discharges of dredged or fill material into waters of the United States. Nationwide permit 48 authorizes structures or work in navigable waters of the United States for commercial shellfish mariculture activities when DA permits are required by Section 10 the Rivers and Harbors Act of 1899. The Corps' regulations for Section 10 of the Rivers and Harbors Act of 1899 in 33 CFR part 322 define the term ``structure'' as including, ``without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other obstacle or obstruction.'' [33 CFR 322.2(b)] Commercial shellfish mariculture activities usually involve structures such as cages, racks, nets, pilings, lines, trays, tubes, ropes, and bouchots (i.e , piles wrapped in rope for cultivating mussels) placed in navigable waters to cultivate bivalves. Oysters may be cultivated using structures such as cages, trays, racks, bags, and lines. Oyster mariculture may be conducted through on-bottom or off-bottom techniques (NRC 2010). Clams are generally cultivated through on-bottom techniques because the commercially produced species are infaunal organisms that grow in the substrate of waterbodies (NRC 2010). Clam mariculture may involve the use of structures such as tubes and anti-predator netting. Mussels may be cultivated by attaching mussel brood stock or seed to ropes, which are suspended in the water column from a floating raft. Mussels may also be grown on ropes attached to pilings (bouchots) (McKindsey et al. 2011), or in cages, trays, or racks. Mussels may also be cultivated through on-bottom or off-bottom culture methods (NRC 2010). For example, mussels may be grown on ropes suspended in the water column from a raft, or via bottom culture. Scallops may be attached to ropes via monofilament lines tied through a small hole drilled into the shell (Robinson et al. 2016), a technique called ``ear hanging.'' The installation and use of structures such as racks, cages, bags, lines, nets, and tubes, in navigable waters for commercial bivalve shellfish mariculture activities in navigable waters requires DA authorization under Section 10 of the Rivers and Harbors Act of 1899. Department of the Army authorization is required under Section 10 of the Rivers and Harbors Act of 1899 for all structures and/or work in or affecting navigable waters of the United States, except for activities identified in section 322.4 of the Corps' section 10 regulations (see 33 CFR 322.3). The exceptions in section 322.4 are limited to: (a) Activities that were commenced or completed shoreward of established federal harbor lines before May 27, 1970; and (b) wharves and piers construct in any waterbody, located entirely within one state where the waterbody is a navigable water of the United States solely on the basis of its historical use to transport interstate commerce. None of these exceptions apply to structures or work for commercial shellfish mariculture activities. In the Corps' section 10 regulations, there is no de minimis exception from the requirement to obtain DA authorization for structures and work in navigable waters of the[[Page 2789]]United States. Any structure or work that alters or obstructs navigable waters of the United States requires section 10 authorization from the Corps. With respect to structures used for shellfish mariculture activities, those structures require section 10 authorization because they alter navigable waters of the United States even though there might be circumstances where they might not obstruct navigation. Commercial shellfish mariculture structures may be floating or suspended in navigable waters, placed on the bottom of the waterbody, or installed in the substrate of the waterbody. The placement of mariculture structures in the water column or on the bottom of a waterbody does not result in a discharge of dredged or fill material that is regulated under section 404 of the Clean Water Act. While the presence of these structures in a waterbody may alter water movement and cause sediment to fall out of suspension onto the bottom of the waterbody, that sediment deposition is not considered a discharge of dredged or fill material because those sediments were not discharged from a point source. In general, the placement of bivalve shellfish mariculture structures on the bottom of a navigable waterbody, or into the substrate of a navigable waterbody does not result in discharges of dredged or fill material into waters of the United States that are regulated under Section 404 of the Clean Water Act. The Corps' section 10 regulations define the term ``work'' as including, ``without limitation, any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States.'' [33 CFR 322.2(c)] Under this NWP, the section 10 authorization applies to discharges of dredged or fill material into waters of the United States that are also navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Commercial shellfish mariculture activities often involve work that requires authorization under Section 10 of the Rivers and Harbors Act, such as harvesting and bed preparation activities. Bed preparation activities may include tilling or harrowing activities, or the placement of shell or gravel to provide substrate suitable for the establishment and growth of bivalves via bottom culture. Commercial shellfish mariculture activities that only require authorization under Section 10 of the Rivers and Harbors Act of 1899 are evaluated under the Corps' public interest review process at 33 CFR 320.4 The Clean Water Act Section 404(b)(1) Guidelines issued by the U.S EPA do not apply to activities authorized by the Corps under its section 10 authority because those guidelines only apply to activities that require authorization under Section 404 of the Clean Water Act. The 404(b)(1) Guidelines do not apply to section 10 activities that may directly or indirectly impact special aquatic sites such as vegetated shallows (i.e , submerged aquatic vegetation). Section 101(a)(2) of the Clean Water Act states that ``it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983.'' [33 U.S.C 1251(a)(2)] In other words, one of the goals of the Clean Water Act is to promote water quality that supports the propagation of fish and shellfish, in addition to other uses of waters of the United States. The Clean Water Act regulates discharges of pollutants into waters of the United States. See 33 U.S.C 1311(a). Section 502(6) of the Clean Water Act defines the term ``pollutant'' as meaning ``dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and ***agricultural*** waste discharged into water.'' Section 502(12) of the Clean Water Act defines the terms ``discharge of a pollutant'' and ``discharge of pollutants'' as meaning: Any addition of any pollutant to navigable waters from any point source, or any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft. Point source discharges of pollutants are regulated under Sections 402 and 404 of the Clean Water Act. Under Section 402 of the Clean Water Act, the U.S EPA authorized state agencies to regulate a variety of pollutants that may be discharged into waters of the United States via a point source. Under Section 404 of the Clean Water Act, the Corps regulates discharges of dredged or fill material into waters of the United States. Discharges of dredged or fill material into waters of the United States that require section 404 permits must comply with the Clean Water Act section 404(b)(1) Guidelines issued by the U.S EPA at 40 CFR part 230. The term ``pollutant'' does not include the placement of shellfish seed or bivalves at various stages of growth into jurisdictional waters, or the waste products (e.g , feces or pseudofeces, ammonium) excreted by bivalves. In Association to Protect Hammersley, Eld, and Totten Inlets v. Taylor Res., Inc., 299 F.3d 1007 (9th Cir. 2002), the court concluded that Congress did not intend that living bivalves and the natural chemicals and particulate biological matter they release through normal physiological processes, or the shells that might be separated from living bivalves from time to time, be considered pollutants under the Clean Water Act. In other words, bivalve shells and natural waste products excreted by living bivalves are not ``biological materials'' under the Clean Water Act's definition of ``pollutant'' because shells and natural waste products come from the natural growth and development of bivalves and not from a transformative human process. The EPA's National Summary of State Information, water quality assessment and total maximum daily load (TMDL) information,\3\ provides information on the causes of impairment and probable sources of impairment for the Nation's waters, including bays, estuaries, coastal shorelines, ocean waters, and near coastal waters where commercial shellfish mariculture activities may occur. Twenty-eight causes of impairment were identified for bays and estuaries. The top 10 causes of impairment for bays and estuaries are: Polychlorinated biphenyls, nutrients, mercury, turbidity, dioxins, toxic organics, metals (other than mercury), pesticides, pathogens, and organic enrichment/oxygen depletion. For bays and estuaries, the top 10 sources of impairment for bay and estuaries are: Legacy/historic pollutants, urban-related runoff/stormwater, unknown sources, atmospheric deposition, municipal discharges/sewage, unspecific non-point sources, other sources, natural/wildlife, ***agriculture***, and industrial.--------------------------------------------------------------------------- \3\ [*https://iaspub.epa.gov/waters10/attains\_nation\_cy.control*](https://iaspub.epa.gov/waters10/attains_nation_cy.control) (accessed November 27, 2020).--------------------------------------------------------------------------- Coastal shorelines were impaired by 16 identified causes, the top 10 of which are: Mercury, pathogens, turbidity, organic enrichment/oxygen depletion, pH/acidity/caustic conditions, nutrients, oil and grease, temperature, cause unknown--impaired biota, and algal growth. The top 10 sources of impairment of coastal shorelines are municipal discharges/sewage, urban-related runoff/stormwater, ``unknown,'' recreational boating and marinas, hydromodification, industrial, unspecified non-point source, ***agriculture***, legacy/historic pollutants, and ***land*** application/waste sites/tanks. Ocean and near coastal waters were impaired by 17 identified causes, the[[Page 2790]]top 10 of which are: Mercury, organic enrichment/oxygen depletion, pathogens, metals (other than mercury), pesticides, turbidity, nuisance exotic species, total toxics, pH/acidity/caustic conditions, and polychlorinated biphenyls. The top 10 sources of impairment of ocean and near coastal waters are: Atmospheric deposition, unknown sources, unspecified non-point sources, other sources, recreation and tourism (non-boating), recreational boating and marinas, urban-related runoff/stormwater, hydromodification, municipal discharges/sewage, and construction. None of the top 10 sources of impairment of these categories of waters are directly related to commercial shellfish mariculture activities. Commercial shellfish mariculture activities require clean water to produce bivalve shellfish for human consumption. Further, the ability of bivalves to improve water quality is well understood and their presence in an aquatic ecosystem is considered to be beneficial (e.g , NRC 2010). Mariculture activities can be classified as extensive or intensive. For extensive mariculture, young organisms are allowed to grow naturally using resources (food, inorganic nutrients) available in marine and estuarine waters until they are harvested (Diana et al. 2009). In intensive mariculture, the young organisms are provided feed to promote their growth before they are harvested. Bivalve shellfish mariculture and seaweed mariculture are examples of extensive mariculture, and for such activities there is no addition of materials (e.g , nutrients) through a point source that might trigger a permit requirement. However, in some cases a pesticide might be applied in waters where bivalve shellfish mariculture occurs (NRC 2010, Simenstad and Fresh 1995). The application of pesticides is not regulated by the Corps under Section 404 of the Clean Water Act, but it may be regulated by EPA or approved states under Section 402 of the Clean Water Act. As discussed in the previous paragraph, the bivalves themselves that are seeded in the waterbody, or are added to the waterbody after a limited grow out period in a nursery facility located on-shore or elsewhere, does not trigger a permit requirement the Clean Water Act because those living organisms are not considered to be pollutants under the Act. Nationwide permit 48 also authorizes discharges of dredged or fill material into waters of the United States. The Corps' regulations define ``dredged material'' as ``material that is excavated or dredged from waters of the United States.'' [33 CFR 323.2(c)] The term ``discharge of dredged material'' is defined at 33 CFR 323.2(d)(1) as meaning ``any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States.'' The term ``discharge of dredged material'' includes, but is not limited to: (1) The addition of dredged material to a specified discharge site located in waters of the United States; (2) the runoff or overflow from a contained ***land*** or water disposal area; and (3) any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any activity, including mechanized landclearing, ditching, channelization, or other excavation. [33 CFR 323.2(d)(1)] Some activities associated with commercial shellfish mariculture may result in a discharge of dredged material under the third instance identified above (i.e , redeposit of dredged material other than incidental fallback). Some commercial shellfish mariculture activities involve mechanical or hydraulic harvesting techniques that may or may not result in discharges of dredged material that require authorization under Section 404 of the Clean Water Act. If the bivalve harvesting activity would result in only incidental fallback of dredged material into the waterbody, a section 404 permit would not be required. (However, a section 10 permit would be required as ``work'' in navigable waters). A section 404 permit would be required for a mechanical or hydraulic harvesting activity if that activity results in a regulated discharge of dredged material by having more than incidental fallback. Some harvesting activities associated with commercial shellfish mariculture operations may result in the redeposit of dredged material other than incidental fallback within the waters of the United States. For example, dredge harvesting activities may ***remove*** sediment along with the bivalves. If the removed sediment is deposited back into the waterbody in a different location, and is more than incidental fallback, then the harvesting activity may be determined by the district engineer to result in a discharge of dredged material that requires section 404 authorization. On the other hand, if the sediment removed while harvesting the bivalves is redeposited in the same location, then it may be considered to be incidental fallback, and not require section 404 authorization. The Corps' regulations at 33 CFR 323.2(e)(1) define ``fill material'' as meaning ``material placed in waters of the United States where the material has the effect of: (1) Replacing any portion of a water of the United States with dry ***land***; or (2) changing the bottom elevation of any portion of a water of the United States. Examples of fill material include: ``rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States.'' [33 CFR 323.2(e)(2)] ``Fill material'' does not include trash or garbage (see 33 CFR 323.2(e)(3)). Discharges of trash or garbage may be regulated under other federal, state, or local laws and regulations. Fill material does not include the placement or release of living organisms, such as bivalve larvae and juvenile bivalves, into waters of the United States. The term ``shellfish seeding'' is defined in Section E of the NWPs as the ``placement of shellfish seed and/or suitable substrate to increase shellfish production. Bivalve shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e , spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.'' This definition was adopted in the NWPs in 2007 (see 72 FR 11197). Other materials may be used for bivalve shellfish seeding such as nets, bags, and ropes. Shellfish seed can be produced in a hatchery. Shellfish seed can also be produced in waterbodies where bivalve larvae can attach to appropriate materials, such as shell pieces, bags, or ropes. Placing shellfish seed on the bottom of a waterbody is not a ``discharge of fill material'' and thus does not require a section 404 permit. Placing gravel or shell on the bottom of a waterbody to provide suitable substrate for bivalve larvae to attach to is considered to be a ``discharge of fill material'' and would require section 404 authorization. The shellfish themselves, either growing on the bottom of a waterbody or in nets, bags, or on ropes, are not considered to be ``fill material'' and do not require a section 404 permit to be emplaced, remain in place, or to be removed from a waterbody. On-bottom bivalve shellfish mariculture activities may involve placing fill material such as shell or gravel to provide suitable substrate for bivalve larvae to attach to and grow on the bottom of the waterbody. These fill activities may require section 404 authorization. The placement of structures that are used for commercial[[Page 2791]]shellfish mariculture activities, such as cages, bags, racks, tubes, and netting, does not result in discharges of dredged or fill material into waters of the United States and therefore do not require authorization under Section 404 of the Clean Water Act. As discussed above, the placement of cages, bags, racks, tubes, lines, and netting and other structures in navigable waters of the United States for the purposes of commercial shellfish mariculture activities is regulated under Section 10 of the Rivers and Harbors Act of 1899 because they can be potential obstructions to navigation. In the 2020 Proposal, the Corps proposed to ***remove*** the \1/2\-acre limit for new commercial shellfish mariculture activities that directly affect submerged aquatic vegetation. The Corps also proposed to ***remove*** the definition of ``new commercial shellfish mariculture activities.'' Many commenters said that the \1/2\-acre limit for direct impacts to submerged aquatic vegetation for new commercial shellfish mariculture activities should be retained because ***removal*** of the \1/2\-acre could cause significant and permanent losses of submerged aquatic vegetation. One commenter said that allowing new commercial shellfish mariculture activities to directly affect more than \1/2\-acre of submerged aquatic vegetation would result in more than minimal adverse environmental effects. A couple of commenters stated that the ***removal*** of the \1/2\-acre limit for impacts to submerged aquatic vegetation conflicts with submerged aquatic vegetation goals and restoration efforts in different states. These commenters said that many federal, state, and local agencies are working throughout the country to recover lost submerged aquatic vegetation habitat in support of water quality and ecosystem goals. ***Removal*** of the \1/2\-acre limit would undermine the investments and progress made to date to recover these important habitats. The Corps is ***removing*** the \1/2\-acre limit for new commercial shellfish mariculture activities that directly affect submerged aquatic vegetation in the project area. In place of the \1/2\-acre limit, the Corps is substituting a PCN requirement for new and existing commercial shellfish mariculture activities that directly affect more than \1/2\-acre of submerged aquatic vegetation. This new PCN requirement accompanies the ***removal*** of the definition of ``new commercial shellfish aquaculture operation'' and will provide activity-specific review of all commercial shellfish mariculture activities that directly affect more than \1/2\-acre of submerged aquatic vegetation. In response to a PCN, the district engineer can add conditions to the NWP authorization to require mitigation, such as best management practices or other mitigation measures, to ensure that the individual and cumulative adverse environmental effects are no more than minimal. Under the 2017 NWP 48, the \1/2\-acre limit only applied to new commercial shellfish mariculture activities. After a new commercial shellfish mariculture activities was authorized by the Corps, the \1/2\-acre limit no longer applied to the existing commercial shellfish mariculture activity. In this regard, it was less protective than the NWP 48 in this final rule, which would apply a PCN requirement to existing operations seeking reauthorization. The ***removal*** of the \1/2\-acre limit in this final rule does not affect the authority of other federal agencies or tribal, state, or local governments to adopt and implement protection programs for submerged aquatic vegetation under their authorities. Submerged aquatic vegetation does not have any special status under the Corps' regulations for implementing Section 10 of the Rivers and Harbors Act of 1899, which is the statute that applies to most commercial shellfish mariculture activities. Submerged aquatic vegetation is covered by a number of the Corps' public interest review factors such as conservation, general environmental conditions, fish and wildlife values, and wetlands. While vegetated shallows are special aquatic sites under the Clean Water Act Section 404(b)(1) Guidelines, the Guidelines do not prohibit discharges of dredged or fill material into vegetated shallows. A smaller proportion of commercial shellfish mariculture activities trigger the permit requirements of Section 404 of the Clean Water Act because many commercial shellfish mariculture activities do not involve discharges of dredged or fill material into waters of the United States. Impacts to submerged aquatic vegetation caused by commercial shellfish mariculture activities may also be addressed through Endangered Species Act Section 7 consultations for proposed NWP 48 activities that district engineers determine ``may affect'' listed species or designated critical habitat, including critical habitat for which submerged aquatic vegetation is a physical or biological feature. Impacts to submerged aquatic vegetation may also be addressed through the essential fish habitat consultation process when the district engineer determines a proposed NWP 48 activity may adversely affect essential fish habitat, which may include submerged aquatic vegetation beds. Several commenters recommended that the Corps propose a revised threshold for seagrass impacts based on biological reference points. These commenters said that this is particularly important in regions where additional provisions to protect seagrasses are not in place and state laws do not impose additional restrictions on eelgrass. One commenter stated that the Corps seeks to ***remove*** an impact limitation that would otherwise incentivize responsible siting of mariculture operations and minimization of impacts to submerged aquatic vegetation. The Corps declines to impose an additional threshold for seagrass impacts based on biological reference points because it would be impractical to establish such biological reference points at a national level for activities requiring authorization under section 10 of the Rivers and Harbors Act of 1899 and section 404 of the Clean Water Act. The threshold to require a PCN for new and existing commercial mariculture operations that impact more than \1/2\-acre of submerged aquatic vegetation is sufficient for the purposes of ensuring that a project will have no more than a minimal individual or cumulative adverse environmental impact. If a state decides not to take measures to regulate activities in submerged aquatic vegetation within its own waters, it does not create a legal or regulatory requirement for the Corps to address such situations. The requirements of NWP 48 will continue to provide incentives for commercial shellfish mariculture operators to plan and design their activities to qualify for NWP authorization. As discussed above there are other applicable laws that can address impacts to submerged aquatic vegetation in conjunction with the Corps' NWP authorization. In addition, where necessary based on the characteristics of the regional ecosystem, division engineers can add regional conditions to NWP 48 to help ensure that activities authorized by this NWP result in no more than minimal individual and cumulative adverse environmental effects. Several commenters supported ***removing*** the 2017 definition of ``new operation'' as it is not relevant to a specific date or timeline. One commenter stated that the Corps has not been able to justify why one set of rules should apply to existing commercial shellfish mariculture operators and another set of rules should apply to everyone else, including new commercial shellfish mariculture[[Page 2792]]operators. This commenter said that if there is a conservation justification for protecting eelgrass and other submerged aquatic vegetation, then limitations on impacts to submerged aquatic vegetation should apply to everyone. One commenter said that ***removal*** of this definition failed to identify what it would be replaced with and stated that there needs a definition for new commercial shellfish mariculture activities but it must not conflict with tribal treaty reserved rights to take shellfish. The Corps has removed the definition of ``new commercial shellfish aquaculture operation'' from this NWP. The new \1/2\-acre PCN threshold will apply to both new and existing commercial shellfish mariculture activities. All activities authorized by NWP 48 must comply with general condition 17, tribal rights. One commenter said that the ***removing*** the distinction for new operations, with the \1/2\-acre limit, will result in more impacts. This commenter asserted that the Corps does little to justify the proposed ***removal*** of the \1/2\-acre limit, given that it added this limit three years ago to ensure impacts from NWP 48 would be no more than minimal. One commenter recommended adding the following definition for an ongoing or existing activity: Existing commercial shellfish aquaculture should be defined as the area under cultivation when NWP 48 was first issued in 2007 or where an operator can document that an area is part of a regular rotation of cultivation. The \1/2\-acre limit for new commercial shellfish mariculture activities was added to NWP 48 in 2012 (see 77 FR 10280). The \1/2\-acre limit only applied to new commercial shellfish activities, and does not apply when those on-going activities are authorized when NWP 48 is reissued after the current NWP expires. There is no need to add a definition of on-going commercial shellfish mariculture activities, because both new and existing activities are treated the same under this reissued NWP. One commenter stated that the Corps should identify a clear spatial delineation of what constitutes a waterbody to aid in decision-making and allow the public to determine the scope of this action. One commenter noted that the provision for ``project area'' could be subject to two differing interpretations. First, it could refer to that area where some entity or agreement specifically authorizes the operator to conduct commercial shellfish aquaculture. Second, it could be read as being that area where a legally binding agreement establishes an enforceable property interest for the operator. This commenter recommended revising the term ``project area'' to read as follows: ``The project area is an area in which the operator conducts commercial shellfish aquaculture activities, as authorized by a lease or permit or other legally binding agreement.'' The geographic scope for an NWP 48 activity is the project area, and the term project area is defined in the text of the NWP. The Corps did not change the definition of project area, and it covers both situations identified by the commenter. It is not necessary to and the Corps declines to define, at a national level, what constitutes a waterbody for the purposes of NWP 48. District engineers can identify the geographic extent of waterbodies for the purposes of NWP 48 activities. In the 2020 Proposal, the Corps proposed to ***remove*** the pre-construction notification thresholds for this NWP because most of the direct and indirect impacts caused by the activities authorized by this NWP under its permitting authorities (i.e , Section 10 of the Rivers and Harbors Act of 1899 and, when applicable, Section of the Clean Water Act) are temporary impacts. As discussed in the proposed rule, NWP 48 activities may require PCNs because of the requirements of paragraph (c) of NWP general condition 18, endangered species. Under paragraph (c) of general condition 18, pre-construction notification is required for non-federal permittees when any listed species or designated critical habitat might be affected by the proposed NWP activity or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat. In some areas of the country, commercial shellfish mariculture activities are located in waters inhabited by listed species and designated critical habitat. Division engineers may also add regional conditions to this NWP to require PCNs for some or all proposed NWP 48 activities. Several commenters expressed concern of the ***removal*** of the PCN thresholds for new or existing shellfish mariculture activities. These commenters said the ***removal*** of the PCN thresholds will result in fewer chances to account for regional differences in submerged aquatic vegetation communities and it will make tracking of individual and cumulative environmental impacts more difficult. One commenter said that the Corps should require PCNs for all shellfish cultivation operations across the country and evaluate sediment enrichment at individual cultivation sites. After evaluating the comments received in response to the proposed changes to the notification requirements of this NWP, the Corps determined that pre-construction notification should be required for proposed activities that directly affect more than \1/2\-acre of submerged aquatic vegetation. The Corps has added a new PCN requirement to NWP 48 to require pre-construction notification for all NWP 48 activities that directly affect more than \1/2\-acre of submerged aquatic vegetation. The new PCN threshold will provide district engineers the opportunity to review all new and existing commercial shellfish mariculture activities that directly affect more than \1/2\-acre of submerged aquatic vegetation. The Corps does not agree that PCNs should be required for all shellfish mariculture activities because of potential impacts caused by temporary suspension of sediment during harvesting activities or discharges of dredged material that may occur during dredge harvesting activities utilizing hydraulic dredging equipment. The impacts caused by the suspended sediment or discharged sediment are temporary because the sediment will settle to the bottom of the waterbody after a period of time. That period of time may depend on local currents and other factors but is generally understood to be relatively short (Newell et al. 1998) and not ecologically relevant, especially in shallow waters where wave actions frequently cause sediment to be suspended in the water column. Direct effects of commercial shellfish mariculture activities on submerged aquatic vegetation include the placement of structures such as racks, bags, and cages on the bottom of a waterbody inhabited by submerged aquatic vegetation. Direct effects of commercial shellfish mariculture activities also include harvesting activities, including mechanical and hydraulic dredging and harvesting by hand. Shading of submerged aquatic vegetation by off-bottom bivalve mariculture structures, such as floating racks, bags, and cages, is an indirect effect that would not trigger this PCN requirement. Changes in water flows caused by the use of long lines for bivalve mariculture cultivation, where slowed water flows cause sediment to fall out of suspension and accumulate on the bottom of the waterbody is another example of a potential indirect effect that would not trigger this PCN requirement. These direct and indirect effects would be caused by structures or[[Page 2793]]work regulated under Section 10 of the Rivers and Harbors Act of 1899. Direct effects also include discharges of dredged or fill material on the bottom of a waterbody inhabited by submerged aquatic vegetation for on-bottom culture methods, such as the placement of shell or gravel to provide substrate for the bivalves to attach to and grow. Discharges of dredged or fill material into waters of the United States may smother submerged aquatic vegetation, which is a direct effect of those activities. During harvesting activities that include regulated discharges of dredged or fill material, there are likely to be direct effects to submerged aquatic vegetation if those activities occur in seagrass beds. These direct effects would trigger the PCN requirement if they directly affect more than \1/2\-acre of submerged aquatic vegetation An example of an indirect effect that might be caused by a discharge of dredged or fill material into waters of the United States for commercial shellfish mariculture activities might be a turbidity plume that reaches areas beyond the discharge site, as suspended sediment is transported by water currents away from that discharge site. This indirect effect would not trigger the PCN requirement. This pre-construction notification requirement will provide district engineers the opportunity to evaluate each proposed activity that will directly affect more than \1/2\-acre of submerged aquatic vegetation and determine whether that activity qualifies for NWP 48 authorization. In response to a pre-construction notification, the district engineer may require mitigation (e.g , on-site avoidance and minimization) to ensure that the authorized activity complies with the no more than minimal adverse environmental effects requirement for the NWPs (see paragraph (a) of NWP general condition 23, mitigation). The Corps has removed the additional information requirements for PCNs from the text of NWP 48 because the information requirements of NWP general condition 32 cover the information needed for this new PCN requirement. The information requirements for NWP PCNs are listed in paragraph (b) of NWP general condition 32, pre-construction notification. Paragraph (b)(5) of NWP general condition 32 requires the PCN to include a delineation of wetlands, other special aquatic sites (including vegetated shallows, or submerged aquatic vegetation), and other waters. One commenter supported the ***removal*** of the PCN requirements because in many instances bivalve populations have been overharvested or in some cases attacked by diseases or poor water quality. This commenter said that regulation of these activities should not impede the ability to reinvigorate these species and growing them for food production. One commenter supported of ***removal*** of the PCN threshold for commercial shellfish mariculture for activities that include a species that has never been cultivated in the waterbody as long as the NWP continues to prohibit the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody, and prohibit the cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. One commenter said that state natural resource agencies should be notified for NWP 48 activities that seek to stock a species that has never been cultivated in a waterbody, and applicable state permits be obtained before the NWP 48 authorization becomes effective for a particular commercial shellfish mariculture activity. The addition of the PCN requirement for commercial shellfish mariculture activities that directly affect more than \1/2\-acre of submerged aquatic vegetation should not pose impediments on food production or efforts to reinvigorate these species in waters whether they have been overharvested. The Corps has also removed the PCN threshold for indigenous species that have never been cultivated in the waterbody. While the Corps has removed the PCN threshold, it has modified the NWP to prohibit the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody. State natural resources agencies can reach out to Corps districts to request coordination on proposals to cultivate indigenous species that have never been cultivated in the waterbody. Several commenters stated the PCN requirements should not be removed because tribes require notice and collaboration with the Corps in order to protect their treaty fishing rights. These commenters said that even temporary impacts to eelgrass could result in consequences to tribe's treaty-reserved fish populations and the habitat they rely on. In addition, these commenters stated that ***removal*** of the PCN thresholds poses significant problems to assuring protection of salmon, nearshore habitat, and treaty shellfish gathering rights. One commenter recommended adding a PCN requirement for all activities within the U.S v. Washington (Boldt) case area. During the process for issuing and reissuing these NWPs, Corps districts have been consulting and coordinating with tribes. Corps districts and tribes can establish coordination procedures to help ensure that NWP 48 activities comply with general condition 17, tribal rights. Division engineers can also add regional conditions to this NWP, where appropriate based on the characteristics of the regional ecosystem, to ensure that the activities authorized by this NWP cause no more than minimal adverse environmental effects to specific resources, including tribal trust resources. One commenter expressed support for the proposed reissuance of NWP 48. One commenter expressed support for the reissuance of NWP 48 because this NWP could significantly reduce the barriers to entry for emerging mariculture industries, and reduce the timeframes and costs associated with obtaining DA authorization for such activities. One commenter said that the conditions in the text of NWP 48 and NWP A should be consistent and preferably combined into one NWP for cultivating shellfish and seaweeds. One commenter stated that small businesses are supportive of the proposed changes to NWP 48, but acknowledged that there may be unfavorable litigation outcomes if the changes are finalized. However, these businesses are concerned that small businesses nationwide could be subject to unfavorable litigation outcomes where the environmental analysis and justification for this rulemaking is not sound. Nationwide permit 48 provides a streamlined authorization process for commercial shellfish mariculture activities that result in no more than minimal adverse environmental effects, and should help reduce regulatory burdens for the mariculture industry. The text of NWPs 48 and A (now designated as NWP 55) has some similarities, as well as some differences. Some of those differences are due to NWP 55 activities potentially occurring in a broader range of waters, including deeper coastal waters more distance from the shoreline and federal waters over the outer continental shelf. Commercial shellfish mariculture activities typically occur in coastal waters new the shoreline. The national decision document for this NWP has been revised to address the 2019 decision of the United States District Court, Western District of Washington at Seattle in the Coalition to Protect Puget Sound Habitat v. U.S Army Corps of Engineers et al. (Case No. C16-0950RSL) and Center for Food Safety v. U.S Army[[Page 2794]]Corps of Engineers et al. (Case No. C17-1209RSL), Several commenters stated that the Corps should not reissue NWP 48, and if the Corps decides to reissue NWP 48 it should improve its review of PCNs and require documentation of compliance with specific design and operational standards. A few commenters said that the Corps should not reissue NWP 48 as proposed for the same reasons that NWP was found by the United States District Court, Western District of Washington at Seattle to be in non-compliance with National Environmental Policy Act and the Clean Water Act. One commenter said that regional general permits should be issued in Washington State, for specific water bodies and for particular types of shellfish aquaculture. Nationwide permit 48 authorizes a variety of commercial shellfish mariculture activities under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, and a number of different structures can be used to cultivate bivalve molluscs. Project proponents are responsible for designing their projects and for those activities that require pre-construction notification, district engineers evaluate the direct, indirect, and cumulative adverse environmental effects caused by the proposed NWP activity. In the national decision document, the Corps has revised its NEPA analysis and its Clean Water Act Section 404(b)(1) Guidelines analysis. Regional general permits can be issued by district engineers to authorize these activities. Regional general permits can be effective in addressing regional approaches to commercial shellfish mariculture activities and the potential adverse environmental effects those activities may cause. One commenter noted that a lack of clarity in the proposed rule may lead to permitting delays and uncertainty, both of which have negative effects on small businesses. A couple commenters said that with regards to shellfish mariculture there needs to be more support from all levels of government to consider first and foremost a food production activity now and in the future to address our seafood deficit and food security for our nation. One commenter recommended that the Corps utilize information in Endangered Species Act and essential fish habitat consultation documents issued in Washington State to support the reissuance of NWP and address environmental issues of concern under the Clean Water Act, the Rivers and Harbors Act of 1899, and the National Environmental Policy Act. The reissued NWP 48 will provide a streamlined authorization process for commercial shellfish mariculture activities that cause no more than minimal individual and cumulative adverse environmental effects. Commercial shellfish mariculture activities may also be regulated by tribal, state, and local governments. The consultation documents issued by the U.S FWS and NMFS in Washington State are applicable only to Washington State, and this NWP authorizes commercial shellfish mariculture activities across the country. One commenter observed that at the national level, Congress passed the National Aquaculture Act of 1980 in response to findings that the nation has potential for significant aquaculture growth, but that this growth is inhibited by many scientific, economic, legal, and production factors. In support of the proposed reissuance of NWP 48, one commenter cited the National Shellfish Initiative's goal of increasing populations of bivalve shellfish in our nation's coastal waters--including oysters, clams, and mussels--through commercial production and conservation activities. One commenter stated that the NWP 48 should require notification to the U.S Coast Guard. The reissuance of NWP 48 helps support the growth of the aquaculture industry in the United States by reducing regulatory burdens on growers and providing a streamlined authorization process under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. The activities authorized by this NWP will also help increase the numbers of bivalves in the Nation's coastal waters, and the ecological functions and services those bivalve molluscs provide, especially in coast waters where bivalve shellfish populations have significantly declined as a result of overharvesting. The project proponent is responsible for securing any licenses or permits from the U.S Coast Guard, and complying with U.S Coast Guard requirements that may apply to structures used for commercial shellfish mariculture activities. Several commenters supported changing the name of NWP 48 from ``commercial shellfish aquaculture activities'' to ``commercial shellfish mariculture activities.'' One commenter suggested adding modifying terms to ``aquaculture'' such as ``marine,'' ``coastal marine,'' or ``offshore'' to improve specificity and clarity. One commenter suggested clarifying that the terms ``mariculture'' and ``aquaculture'' can be used interchangeably. A couple of commenters objected to changing ``aquaculture'' to ``mariculture'' in the title and text of NWP 48. They suggested using the term ``marine aquaculture'' to more closely align with the terms used by industry. One said that using the term ``mariculture'' may result in an unintended consequence of confusing or invalidating local and regional policy and regulations. One commenter stated the term ``commercial shellfish aquaculture'' is not defined and recommended defining that term in a manner that does not conflict with tribes' treaty-secured rights to take shellfish. One commenter stated that term ``shellfish'' is not explicitly defined, and recommended adding a definition to clarify whether that term includes lobsters and conches or only bivalves. The Corps is retaining the use of the term ``mariculture'' in this NWP. Use of the term ``mariculture'' in NWP 48, as well as NWPs 55 and 56, will not invalidate any local or regional policies or regulations. The use of the term mariculture is intended to provide clarity, to ensure that project proponents do not attempt to use NWP 48 to authorize the production of other species considered to be ``shellfish'' (e.g , shrimp, crawfish) in ***land***-based facilities and ponds. The term ``mariculture'' refers to the cultivation of species for food production, and should not interfere with a tribe's taking of shellfish from coastal waters. The Corps has modified the first paragraph of this NWP to clarify that the term ``shellfish'' refers to bivalve molluscs such as oysters, clams, mussels, and scallops. Several commenters said that the Corps' proposal fails to properly consider that the impacts authorized by NWP 48 violate the Clean Water Act and the Endangered Species Act. These commenters stated that the impacts of commercial shellfish mariculture activities should be evaluated through environmental impact statements and through formal programmatic ESA consultations. One commenter stated that the Corps has failed to provide adequate documentary support or substantive evidence for its conclusions that permit terms and conditions would be sufficient to ensure that environmental effects would be minimal and not significant. One commenter asserted that the proposed NWP 48 violates the Section 404(e) of the Clean Water Act because it allows unlimited impacts. Activities authorized by NWP 48 must comply with general condition 18, endangered species. Some Corps districts have developed programmatic ESA section 7 consultations that cover commercial shellfish mariculture[[Page 2795]]activities. Activities authorized by NWP 48 do not require additional NEPA compliance, since the Corps fulfills the requirements of NEPA when it issues its national decision document for the reissuance of that NWP, because that decision document includes and environmental assessment with a finding of no significant impact. Section 404(e) of the Clean Water Act does not require NWPs to have quantified acreage or other limits to ensure that authorized activities result in no more than minimal individual and cumulative adverse effects. Commenters have not provided any substantive evidence to support their opinions that all activities authorized by NWP 48 result in more than minimal adverse environmental effects and should not be authorized by an NWP. The Corps has issued a number of NWPs that do not have quantitative limits, such as NWP 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities), NWP 31 (Maintenance of Existing Flood Control Facilities), and NWP 38 (Cleanup of Hazardous and Toxic Waste). Several commenters said that NWP 48 activities contribute to degradation of waters of the United States by adversely affecting water quality, eelgrass, salmon, birds, herring, and flatfish and causing adverse effects from the introduction of plastics. One commenter recommended prohibiting commercial shellfish mariculture activities in or near marine protected areas or sensitive areas, such as essential fish habitat. This commenter said that the NWP should prohibit the use of plastic equipment or inputs such as pesticides, herbicides, or pharmaceuticals. This commenter also said that NWP 48 activities should require extensive documentation of compliance with design and operation standards, with routine reporting. In addition, this commenter stated that permitted activities should incorporate more rigorous operation, emergency response, and pollution standards, with swift and severe consequences for non-compliance, including revocation of permits. The potential environmental effects caused by commercial shellfish mariculture activities are discussed in the national decision document for NWP 48. The Corps acknowledges that commercial shellfish mariculture activities may have negative, positive, and neutral effects on various environmental components, including various species. It is generally understood that the presence of bivalves in an aquatic ecosystem is beneficial. Some commenters point out various adverse environmental effects caused by commercial shellfish mariculture activities, but other acknowledge the studies and observations that identify beneficial environmental effects caused by commercial shellfish mariculture activities. If a proposed commercial shellfish mariculture activity may adversely affect essential fish habitat as a result of activity subject to the Corps' legal authority, the district engineer will conduct essential fish habitat consultation with the NMFS, and incorporate as appropriate, essential fish habitat conservation recommendations into the NWP authorization as permit conditions. The Corps does not have the legal authority to regulate the use of pesticides, herbicides, or pharmaceuticals that may be associated with commercial shellfish mariculture activities. General condition 6 requires the use of suitable material for activities authorized by NWPs. Plastics materials may be used for commercial shellfish mariculture activities and it is the responsibility of the permittee to ensure that structures that may be made with plastics (e.g , tubes for geoducks, anti-predator netting) are properly maintained (see general condition 14). The Corps has no authority to regulate plastics that may wash away from a commercial shellfish mariculture activity. The Corps does not regulate the placement of trash or garbage into waters of the United States (see 33 CFR 323.2(e)(3)). Section 13 of the Rivers and Harbors Act of 1899 (i.e , the Refuse Act) has been superseded by Section 402 of the Clean Water Act (see 33 CFR 320.2(d)). One commenter requested that the Corps change NWP 48 to ***remove*** any unintended competitive edge for wild harvest fisheries, both in terms of allowable gear and harvesting requirements. One commenter stated that they investigated direct and indirect effects of individual bottom cages on eelgrass, and found that at the current level of mariculture activity, short-term cultivation of oysters has a minimal effect on eelgrass growth, water quality, and sediment characteristics. However, if the cultivation activity expands in terms of gear and/or individual operations, it may result in measurable effects. The Corps lacks the authority to prevent competition between commercial shellfish mariculture operators and fishers that harvest wild populations of bivalves. The Corps appreciates the information regarding the direct and indirect effects of bottom cages for oyster mariculture on eelgrass. The Corps is finalizing a new PCN threshold for commercial shellfish mariculture activities directly affecting more than \1/2\-acre of submerged aquatic vegetation to ensure the effects noted by the commenter are evaluated by district engineers. One commenter said that commercial shellfish mariculture activities have minimal adverse impacts, and they can have beneficial effects on habitat and water quality, and there is an extensive scientific literature that supports the identification of these benefits. This commenter discussed the structured habitat provided by commercial shellfish mariculture activities that is used by numerous species for refuge, foraging, and predator avoidance, thereby increasing species richness, abundance, and biodiversity. This commenter also said that bivalves ingest and filter suspended materials in the water column, sequestering excess nutrients as protein in their tissue. This commenter also remarked that upon harvesting these bivalve molluscs, nutrients are removed from the marine ecosystem, which improves water quality. This commenter also noted that commercial shellfish mariculture activities can also help to transfer the load of suspended materials from the water column to the benthos through a phenomenon known as benthic-pelagic coupling. In addition, this commenter said that by providing structured habitat, improving water quality, and helping to transfer the load of suspended materials from the water column to the benthos, shellfish can help mitigate adverse impacts caused by several different types of human activities and developments. This commenter stated that for these reasons, shellfish are increasingly being utilized in environmental restoration projects across the United States. The Corps acknowledges these comments on the beneficial effects of commercial shellfish mariculture activities on coastal waters. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects. One commenter said that impacts from geoduck farms are insignificant (no more than minimal) for: Forage fish spawning areas; consumption of forage fish larvae; juvenile salmon; waves, currents, and sediment transport; microplastics; marine debris; impact to the benthic community; cumulative impacts; recreation and navigation; marine mammals; birds; farm preparation; predator protection netting; harvest activities; density, genetics, diseases, and parasites; and property values. This commenter remarked that[[Page 2796]]the disturbances caused by commercial shellfish mariculture activities are within the range of natural variation experienced by benthic communities in Puget Sound. This commenter also stated that differences in the structure of mobile macrofauna communities between planted areas with geoduck tubes and nets and nearby reference beaches do not persist after the geoduck tubes and nets removed during the grow-out culture phase. In addition, this commenter said that nutrients released from a typical commercial geoduck operation are low and localized effects are likely to be negligible. Finally, this commenter stated that geoduck aquaculture practices do not make culture sites unsuitable for later colonization by eelgrass. The Corps acknowledges these comments on the beneficial effects of geoduck mariculture activities on coastal waters. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects. One commenter said that commercial shellfish mariculture activities have minimal impacts on birds, including foraging, noise, and the potential for net entanglement. This commenter noted that birds forage within mariculture operations, and feed on organisms growing on mariculture equipment, and the shellfish being produced. This commenter stated that noise associated with commercial shellfish mariculture activities could result in temporary displacement of birds from the immediate area, but this is a temporary impact to overall bird populations. Lastly, this commenter asserted that while predator exclusion net entanglement is a possibility for birds, it is likely to be rare and unlikely to result in significant effects to marine bird and bald eagle populations utilizing these areas. The Corps acknowledges these comments on the effects of commercial shellfish mariculture activities on birds, which have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects. One commenter objected to a statement in the proposed rule regarding the placement of shell or gravel on the bottom of the waterbody for on-bottom cultivation of bivalves. The proposed rule stated that this is a permanent impact. This commenter said that the placement of gravel or shell on the bottom of the waterbody causes temporary changes, which is why shellfish farmers frequently need to place gravel or shell in the same area from time to time. According to this commenter, this temporary change has beneficial impacts to species presence and diversity, according to a programmatic biological opinion issued by the NMFS for commercial shellfish mariculture activities in Washington State. This commenter said that placement of shell or gravel on the bottom of the waterbody shifts the benthic community from polychaetes to amphipods and copepods, which are important prey items for juvenile salmon. This commenter requested that the Corps correct or clarify this statement to recognize that the placement of shell or gravel causes temporary, localized changes to the marine environment, and these changes are beneficial. If the commercial shellfish mariculture operator places shell or gravel on the bottom of the waterbody, and does not ***remove*** the shell or gravel, then it is a permanent impact. When an NWP authorizes a temporary impact, the structure or fill has to be removed after that structure or fill is no longer needed. For a temporarily filled area, after the fill is removed several NWPs require the project proponent to restore the affected area to pre-construction elevations. The Corps acknowledges that a permanent fill may have positive, negative, or neutral environmental effects. For example, the permanent fill may be dispersed by flowing water and transported in the waterbody so that it becomes part of the benthic habitat in that waterbody. That permanent fill may provide habitat for certain aquatic organisms. Several commenters said they agreed that placing shellfish seed on the bottom of a waterbody is not a ``discharge of fill material'' and thus does not require a section 404 permit. Regardless of that whether the placement of shellfish seed is done for commercial aquaculture, habitat restoration, or fisheries enhancement, it should not require a section 404 permit unless there is significant placement of materials for reefs/hummocks in quantities adequate to alter the depth profile and alter the bottom topography. Several commenters noted that while depositing shell with spat already attached is considered seed and regulated ``work'' under Section 10 of the Rivers and Harbors Act of 1899, the proposed NWP 48 is also defining this as fill regulated under Section 404 of the Clean Water Act. They stated that requiring section 404 authorization is an additional unnecessary burden and these activities do not result in adverse environmental impacts and in actuality have positive impacts to water quality. This method is unlike a restoration project where oyster shell is deposited in large enough quantities to create reefs and foster a permanent non-transient population. This commenter requested that the Corps make a distinction between two different activities: Sparsely placing shell on the bottom of the waterbody to catch larvae and hummock building and restoration efforts. In the 2020 Proposal, the Corps did not state that shellfish seeding activities require authorization under Section 404 of the Clean Water Act. In addition, the Corps did not state that shellfish seeding requires authorization under Section 10 of the Rivers and Harbors Act of 1899. The placement of shell in a waterbody to construct reefs or hummocks for bivalves to settle on and grow requires Clean Water Act section 404 authorization because it raises the bottom elevation of the waterbody and is a discharge of fill material, as that term is defined at 33 CFR 323.2(e). That activity also requires authorization under Section 10 of the Rivers and Harbors Act of 1899 as a structure (e.g , a reef) under 33 CFR 322.2(b) or work under 33 CFR 322.2(c). One commenter said that placing single shellfish seeds on beds without containment structures is not regulated under Section 10 of the Rivers and Harbors Act of 1899. This commenter asserted that this activity is not subject to regulation under section 10 because it does not involve the use of structures, nor does it constitute work that alters or modifies the navigable capacity of the waters. Juvenile clams bury a few inches into the sediment and are essentially imperceptible, and single-set oysters lie on the bottom of the substrate without meaningfully altering the elevation of the seabed. This commenter said that the placement and grow-out of single set clams and oysters therefore does not require approval under Section 10 of the Rivers and Harbors Act of 1899. This commenter noted that section 10 authorization is required for activities that alter the bottom elevation of waters in a manner to impact their navigable capacity, and that shellfish seeding does not alter the bottom elevation. In the proposed rule at 85 FR 57334, the Corps stated that on-bottom bivalve shellfish mariculture activities may involve placing fill material such as shell or gravel to provide suitable substrate for bivalve shellfish larvae to attach to and grow on the bottom of the waterbody and that these activities may require section 404 authorization. The proposed rule did not state that depositing shell with spat attached to[[Page 2797]]the shell is considered fill material for the purposes of NWP 48. Discharging shell without bivalve larvae (i.e , spat) into a waterbody for the purposes of enhancing benthic habitat to attract bivalve shellfish larvae may require section 404 authorization if it meets the Corps' definition of ``fill material'' and ``discharge of fill material'' at 33 CFR 323.2(e) and (f). Under 33 CFR 323.2(f), the term ``discharge of fill material'' means the addition of fill material into waters of the United States. The term ``discharge of fill material'' does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and ***forest*** products (33 CFR 323.2(f)), so shellfish seeding is not considered a ``discharge of fill material.'' If the placement of gravel or shell on the bottom of the waterbody to enhance the substrate of the waterbody to attract shellfish larvae is not removed upon completion of the shellfish cultivation activity, it is considered a permanent fill even though it may increase the habitat value for bivalves, crustaceans, and other aquatic organisms. A few commenters said that predator nets, and low-profile cages to protect bottom planted seeds should not be considered navigation hazards subject to permitting requirements unless they create a vertical profile of greater than 25% of the water depth. One commenter agreed with the Corps' statements in the proposed rule that most commercial shellfish mariculture activities do not involve discharges of dredged or fill material that require Clean Water Act section 404 authorization. This commenter noted that placing living bivalve shellfish (e.g , clam seed and oyster cultch) in the intertidal zone during bottom-culture activities and their natural by-products are not pollutants, citing the Association to Protect Hammersley, Eld, and Totten Inlets v. Taylor Res., Inc., 299 F.3d 1007 (9th Cir. 2002). One commenter stated that the proposal accurately states that some commercial bivalve shellfish mariculture activities are regulated under section 10 because they include structures such as racks, cages, bags, lines, nets, and tubes, when those structures are placed in navigable waters. This commenter also said that dredging, excavation, and filling activities would also require section 10 authorization, although these activities are relatively rare. The placement of predator nets and low-profile cages in navigable waters of the United States requires authorization under Section 10 of the Rivers and Harbors Act because those nets and cages are considered structures under 33 CFR 322.2(b) and may be obstructions to navigation. The Corps maintains its views that most commercial shellfish mariculture activities are regulated solely under Section 10 of the Rivers and Harbors Act of 1899, and a relatively small percentage are also regulated under Section 404 of the Clean Water Act because they involve discharges of dredged or fill material into waters of the United States. The Corps agrees that the placement of living bivalves into waters of the United States does not result in a discharge of a pollutant that requires authorization under Section 404 of the Clean Water Act. One commenter said that bivalve shellfish harvesting activities do not bring commercial shellfish farming within the regulatory reach of Clean Water Act Section 404. In order for there to be a discharge regulated under Section 404 of the Clean Water Act, there must be an addition of a pollutant to a water of the United States, and that the harvesting commercial shellfish does not involve an ``addition'' for purposes of the Clean Water Act section 404. This commenter also stated that harvesting shellfish constitutes a ``net withdrawal'' of material from the water, not an ``addition.'' This commenter requested that the Corps clarify in the final rule that these commercial shellfish farming activities do not involve discharges of dredged or fill material and hence do not require Clean Water Act Section 404 authorization. The Corps does not agree that all bivalve shellfish harvesting activities do not require authorization under Section 404 of the Clean Water Act. There may be circumstances where a bivalve shellfish harvesting activity results in a regulable discharge that requires section 404 authorization. Those circumstances depend on how the harvesting activity is conducted, and whether a particular harvesting activity results in an addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States. District engineers apply the definitions of ``dredged material'' and ``discharge of dredged material'' at 33 CFR 323.2(c) and (d), respectively to determine whether a discharge requiring section 404 authorization has occurred. The Corps agrees that bivalve shellfish harvesting activities do not normally involve discharges of fill material, as that term is defined at 33 CFR 323.2(f). One commenter said that aquaculture is not exempt from CWA permitting under Section 404(f) of the Clean Water Act. This commenter said that adding gravel or shell to bags also triggers a section 404 permit requirement even if the bags themselves do not qualify as fill material. Even for activities that do not directly result in discharge of dredge or fill material, the Corps must document secondary effects, and has the authority to impose conditions reasonably related to the purpose of section 404 permits. Another commenter stated that established shellfish farms are exempt from regulation under the Clean Water Act's farming exemption, and that the reissued NWP 48 should state that established commercial shellfish farming activities do not require CWA Section 404 permits. This commenter said that even if some shellfish farming activities include discharges of dredged or fill material, established shellfish farms are exempt from regulation under section 404(f), which exempts normal farming activities from the requirement to obtain permits under Section 402 and 404 of the Act. Whether shellfish mariculture qualifies for a section 404(f) exemption is beyond the scope of this rulemaking. The authority for determining whether a particular activity, such as commercial shellfish mariculture activities, is eligible for the Clean Water Act Section 404(f) exemptions lies with the U.S EPA. See the 1989 Memorandum of Agreement Between the Department of the Army and the U.S EPA Concerning the Determination of the Section 404 Program and the Application of the Exemptions under Section 404(f) of the Clean Water Act. One commenter stated that advanced authorization of the broad suite of commercial shellfish mariculture activities afforded by the NWP 48 is impracticable because the blanket authorization cannot take into account important details regarding local ecological conditions at the growing site and specific information about the shellfish cultivation techniques. This commenter recommended that initial authorization should be made on a case-by-case basis and should be subject to ongoing monitoring and periodic review. Section 404(e) of the Clean Water Act does not specify how broadly or narrowly the Corps has to identify any category of activities for the issuance of a general permit, including the NWPs. Section 404(e) only requires that the activities in that category are similar in nature. Likewise, under the Corps' definition of general permit in its section 10 regulations at 33 CFR 322.2(f), there are no standards regarding how broad or narrow the category has to be. Therefore, the Corps has substantial discretion to determine the categories of activities to be[[Page 2798]]authorized by the NWPs. Nationwide permits are issued by Corps Headquarters to authorize categories of activities across the country, and there is substantial variation in aquatic resources and the functions they provide, as well as the degree to which they perform those functions. Nationwide permits require pre-construction notification for certain activities so that district engineers can assess proposed activities in the context of local ecological conditions and make a case-by-case determination as to whether proposed activities qualify for NWP authorization. Some commenters mentioned that the scientific literature cited in the proposed rule concerned studies of eelgrass located in Washington State. These commenters stated that despite its broad distribution along the Pacific and Atlantic coasts, eelgrass is a poor choice for a model species to develop a national standard from a regional dataset. One genus should not dictate policy on an entire suite of functionally, taxonomically, and geographically distinct species. These commenters went on to say that while the individual and cumulative impacts to eelgrass meadows in Washington may be temporary, it could be irreversible in areas where environmental conditions are more impaired and submerged aquatic vegetation meadows are declining in areas such as New England, the mid-Atlantic coast, the East coast of Florida, the Gulf of Mexico, and California. For the 2020 Proposal, the Corps considered scientific literature in coastal ecosystems located nationwide. The Corps also discussed submerged aquatic vegetation in general terms, and only made specific references to eelgrass when a particular study examined eelgrass. After the reissuance of NWP 48 in 2017, the Corps reviewed a broader range of scientific literature on the interactions between commercial bivalve shellfish mariculture activities and submerged aquatic vegetation, and found that while some permanent impacts to submerged aquatic vegetation may occur, the impacts are often temporary and submerged aquatic vegetation co-exists with bivalve mariculture activities. The Corps examined scientific literature from studies that occurred in other areas of the United States (e.g , Chesapeake Bay), not just Washington State. One commenter recommended that the Corps require mitigation for impacts to submerged aquatic vegetation at a ratio of at least 1.2:1 (mitigation area to impact area). One commenter said that when the functional value of eelgrass and shellfish are combined, and the seascape matrix of habitats are considered, it is possible that a broader ecosystem perspective would find benefits from the presence of aquaculture. This commenter also stated that commercial shellfish farming activities have minimal negative to beneficial impacts on eelgrass and supports the Corps' proposal to reissue NWP 48. One commenter remarked that interactions between seagrasses and shellfish mariculture must separately be addressed during Endangered Species Act and Essential Fish Habitat consultations for authorizations for shellfish farming activities in Washington State. Compensatory mitigation requirements for activities authorized by the NWPs are more appropriately determined by district engineers on a case-by-case basis after reviewing PCNs. If the district engineer reviews a PCN and determines the proposed activity will result in more than minimal adverse environmental effects, he or she will notify the applicant and provide an opportunity to the applicant to submit a mitigation proposal (see 33 CFR 330.1(e)(3)). If, after reviewing the mitigation proposal, the district engineer determines the adverse environmental effects of the proposed activity will be no more than minimal, she or he will issue an NWP verification with permit conditions that require implementation of the mitigation. The Corps acknowledges that, when viewed from a seascape perspective, a district engineer may determine that the proposed shellfish mariculture will provide ecological benefits that should be factored in the district engineer's decision regarding whether the proposed activity will result in no more than minimal adverse environmental effects. If the district engineer reviews a PCN for a proposed NWP 48 activity and determines the proposed activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S FWS and/or NMFS and that section 7 consultation may address potential impacts to seagrasses. If the district engineer reviews a PCN for a proposed NWP 48 activity and determines the proposed activity may adversely affect essential fish habitat, he or she will conduct essential fish habitat consultation with the NMFS and the NMFS may provide the district engineer with essential fish habitat conservation recommendations that may address potential impacts to seagrasses. Several commenters stated while shellfish mariculture can provide ecosystem services, some of which are similar to seagrasses and other benthic communities, there is no meaningful effort to discuss the numerous studies regarding impacts of a variety of aquaculture practices on submerged aquatic vegetation. Allowing commercial shellfish activities in new areas that have extensive beds of submerged aquatic vegetation could impact critical habitat for ESA-listed species. A couple commenters stated that tribes in the Puget Sound region have a unique interest in assuring that both salmon and shellfish are allowed to flourish. Consultation between Corps districts, tribes, federal, and state agencies are the appropriate entities to determine how best to protect submerged aquatic vegetation. A couple of commenters said that submerged aquatic vegetation is a critical resource requiring protection and ***removal*** of that protection from NWP 48 could create conflicts with other federal or state agencies such as NOAA Fisheries. These commenters asserted that some states, recognizing the need to protect these high-quality habitats have prohibited the siting of new mariculture leases in areas where surveys indicate the presence submerged aquatic vegetation in any one of the past five years. In the 2020 proposal and the draft decision document for NWP 48, the Corps provided a substantial discussion of the positive and negative impacts that commercial shellfish mariculture activities may have on seagrasses and other benthic organisms. Some of these impacts may be a result of activities under the Corps' legal authorities; however, bivalve shellfish mariculture activities may have impacts that are beyond the scope of the Corps' legal authorities. Under general condition 18, non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat (or species proposed for listing) might be affected or is in the vicinity of the activity, or if the activity is located in designated or proposed critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized (see paragraph (c) of general condition 18, endangered species). During the rulemaking process, district engineers have conducted consultation or coordination with tribes to identify regional conditions or coordination procedures that could be used to protect tribal trust resources and comply with general condition 17. Other federal agencies, as well as states, can develop regulations and policies to protect[[Page 2799]]submerged aquatic vegetation under their authorities. A couple of commenters stated that the Corps thinks it is important to protect submerged aquatic vegetation in other contexts, but not under NWP 48. These commenters said that the Clean Water Act regulations provide for protection of special aquatic sites, which include ``vegetated shallows'' and that submerged aquatic vegetation beds are considered vegetated shallows. One commenter said that while the Corps states that all activities and structures must avoid submerged aquatic vegetation, but it doesn't apply that principle to commercial shellfish mariculture activities. While the Clean Water Act Section 404(b)(1) Guidelines provide a greater degree of protection to vegetated shallows (submersed aquatic vegetation) as special aquatic sites compared to aquatic resources that are not special aquatic sites, the Guidelines do not prohibit discharges of dredged or fill material into vegetated shallows (i.e , submerged aquatic vegetation beds). The 404(b)(1) Guidelines only apply to discharges of dredged or fill material. They do not apply to activities authorized under Section 10 of the Rivers and Harbors Act of 1899. One commenter stated that submerged aquatic vegetation beds provide numerous ecosystem services including improving water quality, providing nursery habitat for commercial and recreationally significant fish and invertebrates, buffering shorelines from erosion, and sequestering carbon. Because of these additional functions performed by submerged aquatic vegetation, this commenter said that bivalve shellfish mariculture cages do not do any of these things and cannot be considered functionally equivalent habitat to submerged aquatic vegetation. As discussed in the 2020 Proposal and the national decision document for NWP 48, it is the bivalves that perform a number of the same ecological functions as submerged aquatic vegetation, not the structures in which these bivalves are grown. However, commercial shellfish mariculture structures do provide structural habitat for a wide variety of aquatic organisms, including substrate for organisms to attach to, and some aquatic organisms feed on the attached organisms. Structures used for commercial shellfish mariculture activities can slow the movement of water, and help reduce erosion of nearby shorelines. These impacts would be considered during the review of a PCN for a new or existing shellfish mariculture activity. One commenter noted that the argument that shellfish aquaculture activities only temporarily impact submerged aquatic vegetation is not accurate because leases issued for shellfish aquaculture vary in duration but are generally 5-20 years to ensure any investment in the enterprise is worthwhile. This commenter said that the word ``temporary'' is a highly relative and generally misleading descriptor. It is not the duration of the lease for shellfish mariculture activities that determines whether commercial shellfish mariculture activities have temporary impacts on submerged aquatic vegetation. Commercial shellfish mariculture operators might not cultivate bivalve shellfish continuously during the period the lease is in effect. The operator may let some areas within a leased area to go fallow for a period of time, to reduce adverse effects to the benthic community. The Corps agrees that the term ``temporary'' is a relative term, but disagrees that it is misleading. What constitutes a temporary impact depends in part on how much time it takes an organism or an ecosystem to recover from a disturbance, and how resilient and resistant the species or ecosystems are to disturbances. Coastal waters are highly dynamic environments subjected to periodic disturbances, both natural and man-made. Several commenters concurred with the Corps' view that commercial shellfish mariculture activities typically only has temporary impacts on submerged aquatic vegetation and these plants can sustain a healthy coexistence. A few commenters noted that mechanical harvesting has been found to not negatively impact native eelgrass and may even enhance it. One commenter stated that the positive ecosystem services (e.g , better water quality, habitat creation, and ecosystem studies) provided by bivalve shellfish mariculture activities outweigh the temporary nature of any perceived negative impacts. The habitat created by shellfish aquaculture increases species richness and diversity of both benthic and epibenthic organisms. This three-dimensional habitat is utilized by many commercially valuable species, such as Dungeness crab and flatfishes. The Corps acknowledges these comments. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects. One commenter noted that farming methods such as bottom culture propagation tends to focus on the cultivation of larger older shellfish with large time intervals between harvests, which results in short term impacts at harvest with long periods for recovery and result in no permanent losses of submerged aquatic vegetation. This commenter said that the persistence of eelgrass along the coast demonstrates that shellfish mariculture and eelgrass can coexist and have for over a century. Furthermore, commercial shellfish mariculture operators have long understood the best way to propagate eelgrass is to plant oysters, which creates optimal habitat allowing eelgrass to expand due to decreased current over the tide flats. This commenter also said that the bivalve shellfish, as filter feeders, ***remove*** large amounts of waterborne nutrients resulting in cleaner water which facilitates photosynthesis, expanding habitable ranges of eelgrass. The Corps acknowledges these comments. These beneficial effects have informed the Corps' decision to reissue NWP 48 as discussed because it will have no more than a minimal individual or cumulative adverse environmental effects. Several commenters recommended revising the definition of mechanical harvest so that they are not classified as ``dredge or fill'' activities because it is too broad and lumps many methods together and lacks clarity. These commenters said that mechanical harvesting by dragging a metal basket along the tide flats to gently tumble harvestable oysters does not result in a discharge of dredge or fill material and should be exempt from section 404 jurisdiction. Furthermore, these commenters said that these activities do not create ditches, channels, or substantially redeposit excavated soil material and none of the harvest tools are designed to ***remove*** large quantities of material to improve the navigability of waters. These commenters said that the sediment that may be disturbed during harvest should be considered as incidental fallback under 33 CFR 323.2(d)(1). Mechanical harvesting activities generally do not result in discharges of fill material, as that term is defined at 33 CFR 323.2(f). However, mechanical harvesting activities may result in discharges of dredged material, depending on how they are conducted. The term ``discharge of dredged material'' is defined at 33 CFR 323.2(d) to include the ``addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States.'' Some mechanical harvesting[[Page 2800]]activities may result in incidental fallback and not require section 404 authorization while other mechanical harvesting activities may result in additions of dredged material into waters of the United States that are not incidental fallback, and therefore require section 404 authorization. Mechanical and hydraulic harvesting activities that redeposit sediment in a different area of the bottom of the waterbody that the area from which the sediment was removed is considered a ``discharge of dredged material'' and therefore requires section 404 authorization. These discharges of dredged material into waters of the United States are authorized by NWP 48. A commenter noted that in the statement ``mechanical harvesting can include grading, tilling, and dredging the substrate of the waterbody'' that the term ``grading'' does not describe shellfish culture methods. A couple of commenters suggested that shellfish mariculture harvest activities should be regulated like wild-harvest shellfisheries (e.g , as they are regulated in NWP 4). This commenter said that both wild and cultured shellfish are state-managed resources, with the exception of many tidelands in Washington, and should not require additional oversight and regulation by federal authorities. This commenter also stated that harvesting activities do not involve structures and do not impact navigation in a way that should trigger regulation under the Section 10 of the Rivers and Harbors Act of 1899. Mechanical harvesting activities may move sediment in a waterbody in a manner that is not considered incidental fallback. These activities would require section 404 authorization under the Corps' definition of ``discharge of dredged material.'' Nationwide permit 4 authorizes discharges of dredged or fill material associated with fish and wildlife harvesting, enhancement, and attraction devices and activities, including clam and oyster digging. The Corps has jurisdictional authority in Washington State for activities regulated under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. Mechanical harvesting activities generally meet the definition of ``work'' at 33 CFR 322.2(c) for the purposes of Section 10 of the Rivers and Harbors Act of 1899, and are authorized by NWP 48. One commenter requested that the Corps add a statement in the final rule that acknowledges that the accumulation of sediment around shellfish farming gear may be considered beneficial in certain environments, as well as provision of year-round durable, structured three-dimensional habitat. The Corps declines to add the requested statement because the potential benefits would need to be determined on a case-by-case basis, and the durability of those sediment accumulations is influenced because water movements that could cause that sediment to be re-suspended in the water column. One commenter said that the Corps must comply with ESA Section 7 and the Magnuson-Stevens Act prior to issuing NWP 48. A few commenters stated that in all areas where submerged aquatic vegetation exists, it is designated essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act. These commenters said that ***removal*** of the \1/2\-acre limit for direct impacts to submerged aquatic vegetation fails to acknowledge submerged aquatic vegetation as essential fish habitat and the need for consultation with NMFS for activities that may adversely affect essential fish habitat. These commenters asserted that the Corps must consult on a nationwide programmatic basis because essential fish habitat is adversely affected by shellfish mariculture activities. The NWP program's compliance with the essential fish habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act is achieved through EFH consultations between Corps districts and NMFS regional offices. This approach continues the EFH Conservation Recommendations provided by NMFS Headquarters to Corps Headquarters in 1999 for the NWP program. Corps districts that have EFH designated within their geographic areas of responsibility coordinate with NMFS regional offices, to the extent necessary, to develop NWP regional conditions that conserve EFH and are consistent the NMFS regional EFH Conservation Recommendations. If a district engineer determines a proposed NWP 48 activity may adversely affect essential fish habitat, he or she will conduct EFH consultation with NMFS. Where there is a requirement to consult on EFH, consideration of direct impacts to submerged aquatic vegetation caused by new and existing commercial shellfish mariculture activities would occur regardless of the PCN threshold of \1/2\-acre. In response to an EFH assessment prepared by the Corps, the NMFS may provide EFH conservation recommendations to address potential impacts to submerged aquatic vegetation. As discussed in Section III.D of this final rule, the Corps has prepared a biological assessment for this rulemaking activity and determined that the issuance of the NWPs has no effect on listed threatened and endangered species and designated critical habitat, as well as species proposed for listing and proposed designated critical habitat. One commenter stated that significant changes to NWP 48 are not appropriate until the national decision document is finalized and deemed sufficient. This commenter said the draft decision document fails to satisfy the requirements of the National Environmental Policy Act and the Clean Water Act, and that it fails to properly acknowledge the impacts of mariculture on benthic habitat, fish communities, birds, water quality and substrate characteristics. Several commenters stated that the proposed revisions to the national decision document for NWP 48 do not fairly represent the conclusions of authors of the cited literature, in some cases omitting relevant information and in others misrepresenting study results and conclusions. The purpose of the national decision document is to provide information for the decision on whether to reissue NWP 48. The national decision document discusses the positive and negative impacts of commercial shellfish mariculture activities on benthic habitat, fish communities, birds, water quality and substrate characteristics. The Corps has considered this information and determined that NWP 48 will not have more than a minimal individual or cumulative adverse environmental effects. One commenter said that the Corps describes no studies in its decision document to verify its claim that commercially-raised shellfish help improve water quality. One commenter noted that the Corps acknowledges throughout the environmental consequences, public interest, and 404(b)(1) Guidelines Analysis, some negative impacts, but then fails to assess them and instead focuses only on positive impacts. This commenter said that the impacts from mechanical and hydraulic dredging are barely mentioned, with no assessment of their harmful impacts to the same degree as the supposed benefits from shellfish aquaculture. The Corps discusses, in numerous places, the water quality benefits of filter-feeding bivalves that are cultivated by commercial shellfish mariculture activities. The Corps acknowledges that commercial shellfish mariculture activities cause adverse and beneficial[[Page 2801]]environmental effects. Throughout the draft and final national decision documents, the Corps discusses the negative and positive effects of harvesting activities. One commenter identified errors in projected use and acreage impacted over the 5-year period NWP 48 is anticipated to be in effect. This commenter notes that the draft NWP 48 decision document states that the Corps estimates this permit will be used approximately 336 times per year on a national basis, resulting in impacts to approximately 13,360 acres of waters of the United States. It then states the Corps estimates that approximately 1,680 activities could be authorized over a five-year period until the NWP expires, resulting in impacts to approximately 40,080 acres. While 1,680 is five times the annual use figure (336), five times the annual acreage figure (13,360) is 66,800. One commenter requested that the Corps provide documentation on the number of permit request over the last 10 years that exceeded the \1/2\-acre limit, and of those activities, how many ultimately received a permit through regional or individual permit process, and what conditions were applied to those applications. One commenter stated that the Corps claims to have no duty to use any quantitative data, but has issued NWP 48 since 2007 and should be able after all these years to provide some quantitative data about loss of seagrasses, natural habitats, etc. One commenter recommended that the Corps pursue a quantitative analysis of the environmental effects of shellfish mariculture for habitat alterations, climate change, invasive species, overharvesting and exploitation, and pollution. Nationwide permit 48 authorizes structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for both existing (on-going) and new commercial shellfish mariculture activities. Many of the activities authorized by NWP 48 are on-going activities that require reauthorization each time the current NWP 48 expires and is replaced by a reissued NWP 48. Nationwide permits can be issued for period of no more than 5 years (see Section 404(e) of the Clean Water Act). The acreage of projected impacts in the national decision document for NWP 48 includes many on-going commercial shellfish mariculture activities, many of which have been in operation for decades. These on-going commercial shellfish mariculture activities have been part of the current environmental setting for years, and it is the current environmental baseline against which the degree of severity of adverse environmental effects is assessed to determine eligibility for NWP authorization (i.e , whether the individual and cumulative adverse environmental effects caused by commercial shellfish mariculture activities during the 5-year period the NWP is in effect are no more than minimal). The Corps has revised the national decision document to correct the errors in its estimates of potential use of this NWP and authorized impacts. However, it should be noted that these are estimates of projected use over the 5-year period the NWP is anticipated to be in effect. With respect to the ***removal*** of the \1/2\-acre limit for direct impacts to submerged aquatic vegetation caused by new commercial shellfish mariculture activities, the Corps is only required to provide an estimate of the number of activities that might occur during the period this NWP is in effect. It is not necessary to provide data on how many commercial shellfish mariculture activities were authorized by regional general permits or individual permits. The Council on Environmental Quality's NEPA regulations at 40 CFR parts 1500-1508 do not require quantitative analyses of potential environmental impacts. With respect to the 404(b)(1) Guidelines, 40 CFR 230.7(b)(3) requires cumulative effects to be analyzed by estimating the number of discharges expected to occur under the NWP while it is in effect. The environmental impacts of authorized activities during the period the NWP is in effect is dependent on the current environmental settings in which these activities will occur, and quantitative data on those current environmental settings is not available. It should also be noted that context is important, because these activities are occurring in coastal waters that have been altered by human activities and natural processes for thousands of years, and continue to be impacted by coastal watershed ***land*** use, point source pollution, non-point source pollution, fishing activities, recreation, and other disturbances, not just commercial shellfish mariculture activities. Several commenters stated it is unclear how mitigation can both be unnecessary and something the Corps is relying on to avoid cumulative impacts. Further, several commenters stated that the Corps relies heavily on mitigation at a district level, but fails to actually describe the possible effects (direct, indirect and cumulative) from shellfish aquaculture activities or how these unknown mitigation measures will actually avoid more than minimal adverse impacts. Any individual mitigation measures will only be attached if a permittee is required to submit a pre-construction notification, which will likely be few and far between. For commercial shellfish mariculture activities, the Corps generally does not require compensatory mitigation because these activities do not cause losses of waters of the United States. Paragraph (a) of general condition 23 requires permittees to design their projects to avoid and minimize adverse effects, both temporary and permanent, to waters of the United State to the maximum extent practicable on the project site. Many of the NWP general conditions consist of mitigation measures to avoid and minimize impacts. When determining whether to require mitigation to ensure that a particular NWP activity results in no more than minimal individual and cumulative adverse environmental effects, the district engineer will consider the direct, indirect, and cumulative effects, as required by paragraph 2 of Section D, District Engineer's Decision. If the district engineer requires mitigation for an NWP activity, he or she will add conditions to the NWP authorization (see 33 CFR 330.1(e)(3)) that are directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable (see 33 CFR 325.4(a)). One commenter stated that the Corps said that ``standard and best management practices'' can reduce impacts but fails to explain what these are and how they will mitigate impacts. One commenter said that the Corps claims commercially-reared bivalves improve water quality but fails to assess water quality impacts by deferring to district engineers and water quality certifications under Clean Water Act section 401, but impacts to water quality must be assessed before granting NWPs. One commenter said that the Corps fails to discuss the context and intensity factors that might indicate that this proposed NWP will have a ``significant impact to the human environment'' and thus requires an environmental impact statement. As stated in the 2020 Proposal, species-specific or regional standards and best management practices for commercial shellfish mariculture activities may be appropriate as regional conditions approved by division engineers (see 85 FR 57331). In the national decision document, the Corps has discussed potential impacts to water[[Page 2802]]quality as well as potential benefits to water quality that may result from commercial shellfish mariculture activities. In addition, the Corps has explained that cultivated bivalves are not considered a pollutant under the Clean Water Act. After considering the information in the national decision document for this NWP, including the potential benefits and detriments caused by commercial shellfish mariculture activities, there is no evidence that these activities cause a significant impact to the human environmental and thus no environmental impact statement is required. One commenter stated the alternatives analysis is inadequate. The commenter asserts that the Corps lists the ``no action'' alternative but barely analyzes it, strangely concluding that it would somehow have more substantial adverse environmental consequences. The ``national modification'' alternative is not an alternative, but the proposed NWP 48 and the ``regional modification'' is also not an alternative because it includes no conditions or changes from the proposed NWP 48. The national decision document discusses alternatives. In the Council on Environmental Quality's NEPA regulations that were published in the Federal Register on July 16, 2020, the preamble to the final rule at 85 FR 43323 states that an agency does not need to include a detailed discussion of each alternative in an environmental assessment. In the national decision document, the Corps briefly discussed the environmental consequences of each alternative. One commenter said that the Corps should impose monitoring requirements that would ensure that NWP terms and conditions, including those resulting from subsequent exercises in discretionary authority, would be adequately policed. In response, Corps districts can conduct compliance inspections for authorized activities, to ensure that those activities are conducted in accordance with any conditions added to the NWP authorization. The Corps district will take appropriate actions to address non-compliance with permit conditions. Several commenters approved of the reiteration and clarification that the discharge of pesticides is regulated under Section 402 of the CWA and not Section 404. They suggested that the final rule clearly state that operators may be permitted to use pesticides to control ***agricultural*** pests and predators instead of just predators. One commenter said that the statement regarding commercial shellfish mariculture operations using chemicals to control fouling organisms is incorrect because chemical use or the potential introduction of toxic materials is regulated by the Interstate Shellfish Sanitation Conference. One commenter said that commercial shellfish mariculture operators may use herbicides to control invasive, noxious weeds on commercial clam beds. The Corps does not have the authority to control the use of pesticides, herbicides, and antifouling agents in commercial shellfish mariculture activities. Use of some of these chemicals may be regulated under other federal or state laws and regulations administered by other agencies. One commenter said that while gear sometimes escapes from commercial shellfish farms despite growers' best efforts to ensure it remains secured, shellfish farmers do not discard equipment into the marine environment. This commenter requested that the Corps revise the national decision document to make it clear that growers are not discarding equipment, but equipment may wash away from the project site or move by other mechanisms. This commenter also said that NWP general condition 6 addresses the use of trash in the NWP program. One commenter said that the use of plastics gear for commercial shellfish mariculture activities adds plastic pollution to the ocean and beaches through plastic debris and this plastic can break down further into microplastics, which can impact wildlife, aesthetics, and food safety. The Corps has revised the national decision document to clarify that some materials used for commercial shellfish mariculture activities may wash away from the project area. General condition 6 does not address trash or garbage that may be associated with commercial shellfish mariculture activities. General condition 6 prohibits the use of trash as fill material. Trash and garbage are not considered fill material for the purposes of section 404 of the Clean Water Act (see 33 CFR 323.2(e)(3)). This NWP is reissued with the modifications discussed above.(10) NWP 50. Underground Coal Mining Activities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed, which is discussed above in Section II.F The responses to comments on the proposal to ***remove*** the 300 linear foot limit are provided in Section II.F In addition, the Corps proposed to the reference to integrated permit processing procedures and the requirement for written verification from the Corps before proceeding with the authorized activities. Many commenters stated they are opposed to the default authorization if the Corps does not respond to the PCN submittal within 45 days. Numerous commenters said they support the automatic authorization if the Corps project manager does not respond to the complete PCN within 45 days. One commenter objected to the ***removal*** of PCN requirements. A few commenters said that in order to further expedite permitting for mining project, no PCN should be required for activities authorized by this NWP. The Corps removed the requirement for the permittee to obtain written authorization before commencing the activity to be consistent with the other NWPs that have a \1/2\-acre limit for discharges of dredged or fill material into non-tidal waters of the United States (e.g , NWPs 29, 39, 40, 42, 43, 44, 51, and 52). The Corps did not propose to ***remove*** any PCN requirements from this NWP. All activities authorized by this NWP require PCNs. The Corps is retaining the PCN requirements for this NWP to provide activity-specific review by district engineers to ensure that the activities authorized by this NWP result in no more than minimal individual and cumulative adverse environmental effects. A few commenters said that the applicability of this NWP would be reduced if the applicant must now include coal preparation and processing activities outside of the underground mine site as a single and complete project under NWP 50. One commenter stated the Corps provided no justification for the deletion of the Note regarding the use of NWP 21, coupled with NWP 50, for coal preparation and processing activities outside of the underground mine. One commenter expressed support for the ***removal*** of the integrated permitting process language. One commenter stated that NWP should state that the project proponent cannot begin the authorized activity until the activity is formally approved by the Department of Interior's Office of Surface Mining or the state. Several commenters asserted the NWP 50 should be revoked because the effects of coal mining are significant to the environment and should be evaluated under an individual permit. Even if the Note were not removed, single and complete underground coal mining activities with coal preparation and processing activities outside the underground mine site are subject to general condition 28, use of multiple NWPs. If NWP 50 and 21 are combined to authorize a single and complete[[Page 2803]]project, the activity would be subject to the \1/2\-acre limit. The Corps removed the language referencing integrated permit processing procedures, since those procedures have never been developed for this NWP since that text was added to the NWP in 2007 (see 72 FR 11184). Project proponents may be required to obtain separate authorizations from the Department of Interior's Office of Surface mining or the state, but those authorizations are a separate process from the Corps' NWP authorization process. Authorization by an NWP does not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law. (See item 2 in Section E, Further Information.) Division engineers can add regional conditions to this NWP to restrict or prohibit discharges of dredged or fill material into certain wetland types if those discharges are likely to result in more than minimal individual and cumulative adverse environmental effects. District engineers can also exercise discretionary authority to modify, suspend, or revoke an NWP after reviewing the PCN, to ensure that the NWP authorizes only those activities that result in no more than minimal individual and cumulative adverse environmental effects. This NWP is reissued as proposed.(11) NWP 51. ***Land***-Based Renewable Energy Generation Facilities The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed, which is discussed above in Section II.F The responses to comments on the proposal to ***remove*** the 300 linear foot limit are provided in Section II.F One commenter expressed support for the PCN threshold for losses of greater than \1/10\-acre of waters of the United States and does not support requiring PCNs for all activities authorized by this NWP. One commenter said that these activities should be prohibited from channel migration zones and floodplains because they are likely to directly or indirectly affect critical habitat, essential fish habitat, and habitats occupied by listed species. This commenter stated that structures built in these zones are at heightened risk to flooding and future flood dynamics associated with climate change. This commenter also said that any impacts over \1/10\-acre should require mitigation. The Corps did not propose to change the \1/10\-acre PCN threshold for this NWP that was adopted in the 2017 NWP 51. Activities authorized by this NWP must comply with general condition 10, fills in 100-year floodplains. If the district engineer determines a proposed activity may adversely affect essential fish habitat, he or she will conduct essential fish habitat consultation with NMFS. If the district engineer determines the proposed activity may affect listed species or designated critical habitat, she or he will conduct ESA section 7 consultation with the U.S FWS and/or NMFS. In accordance with general condition 23 and 33 CFR 330.1(e)(3), district engineers determine on a case-by-case basis whether specific activities authorized by this NWP should require compensatory mitigation or other forms of mitigation to ensure the authorized activities result in no more than minimal individual and cumulative adverse environmental effects. One commenter recommended adding roads constructed to develop, maintain, and repair ***land***-based renewable generation facilities to Note 1. One commenter stated that the NWP 51 makes reference to a distribution system as utility lines constructed to transfer the energy produced by a ***land***-based renewable energy generation facility, but elsewhere in the proposed rule it refers to electrical lines as ``transmission lines'' which is an undefined term. Two commenters suggested revising Note 2 to state that NWPs C and 14 may be used to provide DA authorization for the construction, maintenance, repair, and ***removal*** or utility lines and/or road crossings. This commenter also said that the Corps should clarify that the applicant can specify which NWP it wants to use for utility lines and/or road crossings. Note 1 only addresses electric utility lines used to transfer the electrical energy generated by these facilities to a distribution system, regional grid, or other facility. Transmission lines are part of electrical energy distribution systems to move the electricity from generation facilities to end users. Note 1 has been modified to specifically refer to electric utility lines because these ***land***-based renewable energy generation facilities generate electrical energy. The Corps has revised Note 1 to reference NWP 57, which authorizes electric utility line and telecommunications activities. Activities authorized by NWP 51 are non-linear projects, while electric utility lines used to transport the generated electrical energy to end users and others are linear projects that are more appropriately authorized by NWP 57. Roads that extend to and from the ***land***-based renewable energy generation facility are also linear projects, and crossings of waters of the United States for these roads are more appropriately authorized by NWP 14. This NWP is reissued with the modifications discussed above.(12) NWP 52. Water-Based Renewable Energy Generation Pilot Projects The Corps proposed to modify this NWP to ***remove*** the 300 linear foot limit for losses of stream bed, which is discussed above in Section II.F The responses to comments on the proposal to ***remove*** the 300 linear foot limit are provided in Section II.F Many commenters said that the Corps should modify NWP 52 so that it is not limited to pilot projects, because this restriction limits project proponent's ability to utilize the NWP to facilitate the development of off-shore wind generation projects. These commenters said that the impacts are the same regardless of whether a water-based renewable energy generation project is a pilot project or a full-scale development project, and that the adverse environmental effects caused by these activities will be no more than minimal. A couple of commenters noted that as off-shore wind energy generation continues to grow it will become more crucial that these projects are able to obtain Corps authorization in a timely and efficient manner. A couple of commenters said that these projects should require individual permits and should not be authorized by an NWP. The Corps believes that the construction of permanent water-based renewable energy generation facilities should be authorized by individual permits instead of an NWP because of the potential for permanent activities to result in more than minimal adverse environmental effects. District engineers can develop regional general permits to authorized permanent water-based renewable energy generation facilities. One commenter stated that the \1/2\-acre limit and the requirement for PCNs for all proposed activities should be retained. One commenter recommended changing the PCN threshold to require PCNs for losses of greater than \1/10\-acre of waters of the United States. A couple of commenters said that Note 1 should be revised to reflect authorization of transmission lines by NWP C rather than NWP 12. The Corps is retaining the \1/2\-acre limit and the requirement that all authorized activities require PCNs. The Corps has revised Note 1 to reference electric utility lines and NWP 57, which authorizes electric utility line and telecommunications activities. Several commenters stated that these activities should not be authorized western Washington State without tribal consent in areas with tribal treaty fishing rights. These commenters said[[Page 2804]]that allowing floating solar panels up to \1/2\-acre in size in navigable waters adds additional obstructions to tribal fisherman trying to exercise their fishing rights. One commenter stated that floating solar panels, if installed, need proper monitoring requirements with the ability to have the projects removed if the injuries to fish reach a certain threshold. One commenter said that pilot projects for experimental purposes should include a requirement for robust information gathering to inform decision makers of ecological impacts of these energy generating structures. Division engineers can add regional conditions to this NWP to help ensure compliance with general condition 17, tribal rights. During this rulemaking process, Corps districts have been consulting and coordinating with tribes to identify regional conditions and coordination procedures to help ensure compliance with general condition 17. The Corps disagrees with imposing long-term information gathering requirements to monitor the ecological impacts that might be caused by these activities. The information in PCNs should be sufficient for district engineers to determine whether the adverse environmental effects caused by the authorized activities are no more than minimal. This NWP is reissued with the modifications discussed above.(13) NWP 55. Seaweed Mariculture Activities The Corps proposed this new NWP as NWP A, to authorize structures in navigable waters of the United States, including federal waters over the outer continental shelf, for seaweed mariculture activities. In the first sentence of this NWP, the Corps added ``and estuarine'' to make this NWP consistent with proposed new NWP B for finfish mariculture activities with respect to the waters in which these two NWPs may be used to authorize activities under Section 10 of the Rivers and Harbors Act of 1899. The omission of ``and estuarine'' in the proposed NWP A was a drafting error. The Corps removed the phrase ``and work'' from this NWP because this NWP only authorizes structures, and this NWP does not authorize any of the operational aspects of seaweed mariculture activities. The operation of a seaweed mariculture facility does not constitute ``work'' as that term is defined at 33 CFR 322.2(c) for the purposes of Section 10 of the Rivers and Harbors Act of 1899. Section 322.2(c) defines ``work'' as ``any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States.'' After the seaweed mariculture structure is installed, subsequent operations to produce seaweed do not physically modify navigable waters of the United States in a manner that would be considered ``work'' under the Act. Several commenters expressed support for the issuance of new NWP A. One commenter suggested combining NWPs 48 and A into one NWP instead of issuing separate NWPs. One commenter said that issuing NWP A would reduce barriers to entry for seaweed mariculture activities. Another commenter supported the issuance of NWP A because kelp and seaweed are winter crops and would help provide year-round revenue sources for coastal commercial communities. A few commenters expressed support for NWP A because growth of marine plants improves water quality and provides ecosystem services. The Corps is keeping NWPs 48 and proposed new NWP A separate because NWP 48 activities occur primarily in nearshore waters and NWP A can be used to authorize activities in both nearshore waters and federal waters on the outer continental shelf. The Corps acknowledges the economic benefits of providing an NWP to authorize seaweed mariculture activities that result in no more than minimal adverse environmental effects, as well as the ecological benefits that may be provided by the cultivated seaweeds, such as water quality benefits through the assimilation of nutrients and habitat benefits for some aquatic species. Several commenters said they support the inclusion of multi-trophic species production in NWP A. One commenter supported including multi-trophic species production as long as it is voluntary and not a requirement of the NWP. One commenter said that multi-trophic activities should not be authorized under an NWP until an industry standard has been established. A few commenters stated multi-trophic activities should be authorized under by individual permits to provide an appropriate level of environmental review. One commenter said PCNs including that multi-trophic activities should be coordinated with states. A few commenters asserted that the text of NWP A should clarify that multi-trophic activities do not include finfish cultivation. One commenter stated that multi-trophic species mariculture could attract protected species and result in greater risk of entanglement. A few commenters said that the NWPs are appropriate only for activities with more predictable outcomes and should not be used for experimental industries. The Corps has retained multi-tropic mariculture activities in this NWP, to provide authorization for mariculturists that want to grow seaweeds and bivalves on the same structures. Conducting multi-tropic mariculture activities is optional, and a grower can choose to only cultivate seaweeds. District engineers will review PCNs for proposed NWP A activities to ensure that those activities will result in no more than minimal individual and cumulative adverse environmental effects. If the district engineer reviews a PCN and determines that the adverse environmental effects will be more than minimal after considering any mitigation proposed by the applicant, he or she will exercise discretionary authority and require an individual permit. The Corps does not believe it is necessary to require coordination of proposed multi-tropic mariculture activities with states, but district engineers can informally coordinate PCNs with states if they believe it is appropriate to do so. If a mariculturist wants to grow finfish as part of a multi-trophic mariculture operation, she or he should use NWP B (which, as discussed below, is issued in this final rule as NWP 56), which authorizes multi-trophic mariculture activities involving finfish, seaweeds, and/or bivalves. There may be some risk of entanglement or other forms of adverse impact in lines used for seaweed mariculture activities, and that risk will be evaluated by district engineers during the PCN review process. If the risk of entanglement applies to ESA-listed species, the district engineer will conduct ESA section 7 consultation with the U.S FWS and/or NMFS as appropriate. Multi-trophic mariculture activities have been conducted for a number of years in other countries (Largo et al. 2016, Troell et al. 2009). Several commenters said NWP A should not be issued because these activities will result in more than minimal individual or cumulative adverse environmental effects. Several commenters stated NWP A should not be issued because the long-term cumulative impacts are unknown. Many commenters expressed concern with the issuance of an NWP authorizing seaweed mariculture activities because of the relative unknown impacts and risks associated with these activities. One commenter said that the social, economic, and environmental impacts from seaweed mariculture are unknown. One commenter said that the cumulative impact from the varying scale of aquaculture systems cannot[[Page 2805]]sufficiently be addressed under an NWP. Many commenters stated that there is not sufficient information available to inform whether NWP A would cause no more than minimal impacts. A few commenters said that the Corps has not demonstrated that NWP A complies with the Clean Water Act Section 404(b)(1) guidelines. The Corps has issued this NWP after considering information on its relatively small, if not beneficial, impact on marine ecosystems and including mechanisms (e.g , PCNs required for all proposed activities) to ensure that it authorizes only those seaweed mariculture activities that result in minimal individual and cumulative adverse environmental effects. In response to a PCN, district engineers will apply the 10 criteria listed in paragraph 2 of Section D, District Engineer's Decision to determine whether the proposed activity can be authorized by NWP 55, with or without additional permit conditions. Division engineers may modify, suspend, or revoke this NWP on a regional basis in accordance with the procedures at 33 CFR 330.5(c). The Clean Water Act Section 404(b)(1) Guidelines do not apply to activities authorized by this NWP because it only authorizes structures or work in navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899. It does not authorize activities under Section 404 of the Clean Water Act. Several commenters said that NWP A would impact tribal rights and treaty protected fishing grounds. One commenter requested additional information and formal government-to-government consultation on proposed new NWP A. One commenter objected to the issuance of NWP A because it does not include required mitigation measures. One commenter stated that mitigation measures should be considered for ESA-listed species and tribal cultural and fishing issues. One commenter suggested adding minimization measures to NWP A that are currently in place in states that are already practicing seaweed mariculture operations. Activities authorized by NWP A must comply with general condition 17, tribal rights. During the rulemaking process for the issuance of this NWP, district engineers have been conducting consultation and coordination with tribes to identify regional conditions and coordination procedures to facilitate compliance with general condition 17. In response to a PCN, a district engineer can require mitigation measures to help ensure that the authorized activity results in only minimal individual and cumulative adverse environmental effects. During the development of this NWP, the Corps did not identify any mitigation measures that should be added to this NWP, other than the general conditions that apply to all NWPs. Mitigation measures for ESA-listed species are more appropriately identified during the ESA section 7 consultation process. If states have developed mitigation measures for seaweed mariculture activities, division engineers can consider adding those mitigation measures as regional conditions to this NWP. Several commenters said that NWP A should include a PCN requirement. One commenter expressed support for requiring PCNs for new seaweed mariculture operations. One commenter said that PCNs should not be required if existing permitted bivalve shellfish farms want to add seaweed into their operations. One commenter stated that the U.S Coast Guard be notified before issuing an NWP A verification. One commenter recommended requiring the PCN to include information identifying the proposed location of operations to review competing stakeholder uses. One commenter said that all PCNs for these activities must identify all gear specifications, production duration, stocking and harvesting times, and gear modifications related to avoiding or mitigating protected species interactions. Many commenters stated that PCNs for NWP A activities should require documentation of compliance with specific design and operational standards. One commenter said PCNs required for these activities should include information the performance of anchoring systems during severe weather events to minimize damage or loss. One commenter said that PCNs for these activities should state which commercial fisheries activities (wild or mariculture) might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the proposed activities. Proposed new NWP A requires PCNs for all proposed activities. Project proponents may be required to notify the U.S Coast Guard or comply with U.S Coast Guard requirements for marking or lighting these structures. It is not the responsibility of the Corps to notify the U.S Coast Guard of these activities. Some Corps districts have developed local coordination procedures with the U.S Coast Guard. Paragraph (b)(2) of general condition 32 requires the PCN to include the location of the proposed activity. The Corps does not have the authority to regulate production duration and stocking and harvesting times. If the project proponent wants to modify the seaweed mariculture structures that are regulated under Section 10 of the Rivers and Harbors Act of 1899, he or she must notify the district engineer to request a modification of the NWP verification. Corps district regulatory staff do not have the legal authority or technical expertise to evaluate design or operational standards, or the structural integrity of the seaweed mariculture structures. It is the responsibility of the permittee to properly design the seaweed mariculture structures and ensure that they are properly maintained in accordance with general condition 14, proper maintenance. The Corps declines to require the PCN to identify which commercial fisheries species might be affected by the proposed seaweed mariculture activity because impacts to EFH are already considered when district engineers review PCNs and conduct EFH consultation with NMFS when they determine proposed NWP activities may adversely affect EFH. Many commenters said that seaweed mariculture activities should require individual permits. Several of these commenters stated that individual permits for these activities are appropriate because the public notice process would allow ample coordination with the affected public. A few commenters said that there is insufficient industry standardization within mariculture systems to issue an NWP for these activities and these activities should require individual permits. A few commenters said that individual permits should be required for these activities to allow proper environmental review and coordination with state natural resource agencies. The Corps believes that there are seaweed mariculture activities requiring authorization under Section 10 of the Rivers and Harbors Act of 1899 that will cause only minimal individual and cumulative environmental effects (see 33 CFR 322.2(f)) and are appropriate for authorization by NWP. If a district engineer reviews a PCN for a proposed seaweed mariculture activity and determines that the adverse environmental effects will be more than minimal after considering mitigation proposed by the applicant, he or she will exercise discretionary authority and require and individual permit for the proposed activity. In addition, division engineers have the authority to modify, suspend, or revoke this NWP on a regional basis in response to concerns for the aquatic environment or for any factor of the public interest (see 33 CFR 330.1(d)). The development of industry[[Page 2806]]standards is not a prerequisite for NWP authorization, and many activities that have long been authorized NWP do not have any industry standards. A few commenters stated that NWP A should require agency coordination under paragraph (d) of NWP general condition 32. One commenter said that NWP A PCNs should be coordinated with federal and state natural resource agencies of adjacent states and that applicable state permits must be obtained prior to the Corps issuing an NWP verification for seaweed mariculture activities. Many commenters said that seaweed mariculture activities should be coordinated with state resource agencies and the public. The activities authorized by this NWP may require consultation or coordination with the U.S FWS or NMFS. Consultation with the U.S FWS and/or NMFS is required for proposed activities that the district engineer determines ``may affect'' listed species or designated critical habitat. Essential fish habitat consultation with the NMFS is required for any proposed activity that the district engineer determines ``may adversely affect'' essential fish habitat. Corps districts may develop informal coordination procedures with state resource agencies. Activities authorized by NWPs do not involve coordination with the public. Coordination with the public is only require for activities authorized by standard individual permits. One commenter said that seaweed mariculture activities authorized by NWP A should be limited to small scale projects. One commenter recommended adding a \1/2\-acre limit to this NWP. One commenter stated that seaweed mariculture facilities for biofuels production are in the range of over 1,000 hectares and issuing an NWP to authorize seaweed mariculture activities at that scale would not sufficiently consider the environmental risks. One commenter said that the necessary spatial arrays required for seaweed mariculture would cause conflicts from multiple existing offshore uses. The Corps does not agree that this NWP should be limited to small-scale project or activities less than \1/2\-acre in size. If a project proponent submits a PCN for a large-scale seaweed mariculture activity, and the district engineer determines the proposed activity will result in more than minimal individual and cumulative adverse environmental effects, he or she will exercise discretionary authority and require an individual permit for the proposed activity. During the evaluation of the PCN, the district engineer will evaluate potential conflicts in resource uses, in accordance with the public interest review factors identified in 33 CFR 320.4(a). Many commenters stated that the seaweed species to be grown should be the same indigenous genetic stock as found in the waters of the proposed seaweed mariculture activity. One commenter said that the terms and conditions of the proposed NWP address the introduction of non-native species but not the role that mariculture may play in the role of further spreading invasive or aquatic nuisance species. One commenter stated that NWP A should impose rigorous operation emergency response standards. One commenter stated that NWP A should have clear requirements for ***removing*** derelict structures. The Corps has modified this NWP to state that it prohibits the cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 or the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody. Invasive or aquatic nuisance species can spread or be introduced into new areas through a variety of mechanisms, and the Corps does not have the authority to prevent the spread or introduction of those species through those other mechanisms. General condition 13 requires, to the maximum extent practicable, the ***removal*** of temporary structures from navigable waters after their use has been discontinued. For permanent structures, the Corps has added a provision to this NWP to require the permittee to ***remove*** these structures from navigable waters of the United States when those structures will no longer be used for finfish mariculture activities or multi-trophic mariculture activities. One commenter recommended requiring the siting of NWP A activities at least 200 meters away from corals, seagrass beds, mangroves, critical habitat, and migration pathways. A few commenters asserted that seaweed mariculture activities are known to impair water quality, and special aquatic sites such as coral, seagrass, and mangroves are especially susceptible to water quality impacts. A few commenters said that seaweed mariculture facilities should not be permitted near sensitive habitat areas or near marine protected areas. One Commenter remarked that seaweed mariculture activities could result in economic impacts to the region where these activities are located by interfering with commercial and recreational fishing activities. One commenter said that operations of seaweed mariculture activities could result in aesthetic impacts to the region. One commenter expressed concerns with potential impacts on navigation and public uses of the waterbody that may be caused by seaweed mariculture activities. One commenter stated that seaweed mariculture facilities should be distant from areas used by the public. One commenter said that NWP A should be revised to recognize that some state boundaries may extend beyond three nautical miles from shore. Based on the characteristics of regional ecosystems, division engineers can add regional conditions to this NWP to site NWP A activities specific distances from aquatic resources or areas that may warrant additional protection, such as corals, seagrass beds, mangroves, critical habitat, and migration pathways. Seaweed mariculture activities cultivate macroalgae that take up nitrogen and phosphorous and other nutrients from the water column and generally are understood to improve water quality. Organic matter may be sloughed off of the cultivated seaweeds, which can provide nutrients for benthic communities. The seaweed grown at seaweed mariculture facilities can provide economic benefits such as biofuels, food ingredients, and pharmaceuticals. When reviewing PCNs, district engineers will evaluate potential conflicts in use of navigable waters, such as fishing, recreational, and military uses, as well as potential impacts to aesthetics in the project area. Activities authorized by this NWP must comply with general condition 1, navigation. Navigable waters are available for a variety of public uses, as well as various types of activities authorized for private use. Activities authorized for private use often involve structures that require DA authorization under Section 10 of the Rivers and Harbors Act of 1899, which may include structures for seaweed mariculture activities. The variability in state boundaries for the purposes of identifying the territorial seas does not warrant any specific changes to NWP 55. One commenter stated that shellfish farming activities are known to spread pathogens and the proposed NWP would not sufficiently address environmental concerns for offshore systems. A few commenters said seaweed mariculture facilities should not be permitted to use pesticides, herbicides, or pharmaceuticals. One commenter said that existing shellfish mariculture facilities permitted under NWP 48 should continue to be[[Page 2807]]authorized under NWP 48 rather than authorized by NWP A. One commenter stated it would be more appropriate if seaweed was included under NWP 48 because bivalves are typically the primary cultivated species. The Corps does not have the authority to take actions to control the spread of pathogens. Pathogens can spread through a variety of mechanisms in open systems such as oceans and estuaries. In addition, the Corps does not have the authority to regulate the use of pesticides, herbicides, and pharmaceuticals that might be used in seaweed mariculture activities. In this final rule, the Corps has issued separate NWPs for commercial shellfish mariculture activities and seaweed mariculture activities. Under NWP A bivalves can be grown with seaweeds are part of a multi-tropic mariculture activity. A few commenters said that proposed new NWP A would have impacts on ESA-listed species and designated critical habitat. One commenter stated that ESA Section 7 consultation should be mandatory for all seaweed mariculture projects. One commenter said that incidental take permits under the ESA should be obtained before district engineers issue NWP verifications for these activities. A few commenters said that NWP A activities should have severe consequences for non-compliance, including revocation of the NWP authorization. Activities authorized by this NWP must comply with general condition 18, endangered species. District engineers will review PCNs for proposed seaweed mariculture activities and if the district engineer determines the proposed activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S FWS or NMFS as appropriate. If the district engineer initiates section 7 consultation with the U.S FWS or NMFS, the NWP verification cannot be issued until that consultation is completed. District engineers will also take appropriate actions to address non-compliance with the conditions in NWP A. Proposed new NWP A is issued as NWP 55, with the modifications discussed above.(14) NWP 56. Finfish Mariculture Activities The Corps proposed this new NWP as NWP B, to authorize structures and work in navigable waters of the United States, including federal waters over the outer continental shelf, for finfish mariculture activities. The Corps removed the phrase ``and work'' from this NWP because this NWP only authorizes structures, and this NWP does not authorize any of the operational aspects of finfish mariculture activities. The operation of a finfish mariculture facility does not constitute ``work'' as that term is defined at 33 CFR 322.2(c) for the purposes of Section 10 of the Rivers and Harbors Act of 1899. Section 322.2(c) defines ``work'' as ``any dredging or disposal of dredged material, excavation, filling, or other modification of a navigable water of the United States.'' After the finfish mariculture structure is installed, subsequent operations to produce finfish do not physically modify navigable waters of the United States in a manner that would be considered ``work'' under the Act. Some commenters supported the issuance of this NWP and some commenters opposed issuance of this NWP. A couple of commenters said that this NWP does not authorize activities that are similar in nature. Many commenters said that finfish mariculture activities should require individual permits to give the public an opportunity to review proposed activities. One commenter stated that finfish mariculture activities could result in significant cumulative impacts on marine wildlife and the environment, which cannot be properly assessed and mitigated. One said that finfish mariculture activities in estuarine waters should require individual permits because of the high risk of water quality impacts, animal escapes, and habitat damage. This NWP authorizes structures in navigable waters of the United States for finfish mariculture activities. A category of activities for an NWP is based on the general characteristics and uses of the permitted activity. A category of activities is not based on potential configurations of the regulated activities, or the size of those activities. Concerns about the size of authorized activities and potential adverse environmental effects can be addressed in part by addition quantitative limits on the NWP. The Corps believes there are finfish mariculture activities that can result in no more than minimal individual and cumulative adverse environmental effects and are appropriate for NWP authorization. In addition, the NWP regulations at 33 CFR part 330 include numerous provisions that allow district engineers to exercise discretionary authority to require individual permits for activities when the determine those activities will cause more than minimal adverse environmental effects. Division engineers have the authority to modify, suspend, or revoke an NWP on a regional basis (see 33 CFR 330.5(c)). District engineers have the authority to modify, suspend, or revoke an NWP authorization on a case-by-case basis (see 33 CFR 330.5(d)). The potential individual and cumulative adverse environmental effects caused by finfish mariculture activities will be assessed by district engineers when they review PCNs for proposed activities. For some of the adverse environmental effects identified by commenters, the Corps lacks the authority to regulate the particular activities that are the cause of those effects. Several commenters recommended the development and implementation of project-specific permit conditions to ensure that authorized activities will have no more than minimal individual or cumulative adverse environmental effects. Several commenters requested that NWP B include conditions limiting the amount of feed, pesticides, herbicides, pharmaceuticals that can be released in project waters. A couple of commenters suggested NWP B require specific design and operation standards, including depth and current velocity guidelines for net pen siting class size. A commenter said that the geographic variability of aquatic environments and their ecological functions would be problematic when characterizing project impacts of finfish mariculture activities on a national scale. Project-specific conditions are more appropriately identified by district engineers when they review PCNs for proposed NWP B activities. If a proposed activity is authorized by NWP B, the district engineer will add appropriate conditions to the NWP authorization to help ensure that the adverse environmental effects are no more than minimal, individually and cumulatively. Permit conditions must be directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable (see 33 CFR 325.4(a)). Potential permit conditions addressing finfish mariculture operations, such as amount of feed, pesticides, herbicides, pharmaceuticals that can be released in project waters are beyond the scope of the Corps' legal authority, because the Corps does not have the authority regulate discharges of feed, pesticides, herbicides, and pharmaceuticals into navigable waters, including federal waters on the outer continental shelf. District engineers will review PCNs for proposed NWP B activities, which will include information on the design and size of the proposed structures. During[[Page 2808]]the evaluation of PCNs, district engineers consider the current environmental setting and the ecological functions currently being provided by aquatic resources in the vicinity of the proposed activity. A couple of commenters said that notification to the U.S Coast Guard should be required for all proposed finfish mariculture projects to ensure that structures are not placed within restricted zones, shipping safety fairways, federal channels, traffic separation schemes or within U.S EPA- or Corps-designated open water dredged material disposal areas. The Corps believes it is the project proponent's responsibility to notify the U.S Coast Guard of the proposed activity, if such notification is required by law or regulations. One commenter stated that the availability of an NWP for finfish mariculture activities could be beneficial in promoting the business of finfish mariculture in areas where it is currently difficult to gain approval. The commenter added that growing seasons should be extended to allow for more jobs and tax revenue. One commenter suggested adopting location specific terms (freshwater, marine, offshore) and dropping the term ``activity'' and instead use ``practice'' The Corps proposed this NWP to provide authorization under Section 10 of the Rivers and Harbors Act of 1899 for structures used for finfish mariculture activities. Project proponents may be required to obtain other federal, state, and local authorizations required by law or regulation. This NWP does not have any limitations related to growing seasons. The Corps believes it has provided sufficient specificity regarding which types of waters this NWP can be used in (i.e , marine and estuarine waters), including the use of term ``mariculture'' instead of the broader term ``aquaculture.'' The Corps' authorization is limited to the installation of structures in navigable waters of the United States, which is why the term ``activity'' is used. The Corps does not regulate the operation of the finfish mariculture facility during the production of finfish, and the activities associated with production activities such as feeding, handling, and administering antibiotics, therapeutics, and other chemicals. Regarding multi-trophic mariculture projects, one commenter stated that the activity is still considered experimental, with potential for adverse environmental impacts and a lack of proven success at commercial sales, and would therefore not be suitable for authorization under a NWP which should only be utilized for projects with predictable outcomes. The Corps understands that multi-trophic mariculture activities have been practiced in other countries (Largo et al. 2016, Troell et al. 2009), so it is not an experimental approach. It is intended to cultivate different tropic levels to help reduce nutrient loads to surrounding waters. Many commenters stated that applicants should be required to clarify the species to be farmed as well as provide information on broodstock source and quantity. Several commenters said that PCNs should include project-specific details regarding configuration, structures, techniques, proposed production quantities, densities, spacing, and containment systems. One commenter recommended that the PCN include a decommissioning plan. The Corps has added text to this NWP to prohibit the cultivation of aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 and the cultivation of nonindigenous species unless that species has been previously cultivated in the waterbody. The Corps only regulates the structures used for finfish mariculture activities, and their configuration in the waterbody. The Corps does not have the authority to regulate the techniques used to produce finfish, or how many finfish are produced over a specific period of time. If the project proponent wants to cease using the authorized structures for finfish mariculture activities, those structures must be removed. General condition 13 requires, to the maximum extent practicable, the ***removal*** of temporary structures from navigable waters after their use has been discontinued. For permanent structures, the Corps has added a provision to this NWP to require the permittee to ***remove*** these structures from navigable waters of the United States when those structures will no longer be used for finfish mariculture activities or multi-trophic mariculture activities. A few commenters said that all finfish mariculture activities should require PCNs so that district engineers can evaluate consistency with environmental standards, impacts to navigation, commerce, fishing, and other resource use conflicts. One commenter suggested that the applicant should be required to disclose in the PCN the intended use of acoustic deterrent devices. Many commenters suggested that a higher level of detail should be required for finfish mariculture activity PCNs. A few commenters said the PCN should include a site analysis incorporating available spatial information including depth, wave climate, current velocity, substrate type, and proximity to any hard-bottom habitats. A couple of commenters stated that applicants should be required to provide detailed site maps, indicating the project location in relation to ecologically important marine/estuarine areas. One commenter said that applicants should be required to disclose the proposed activity's proximity to other mariculture or commercial fishing operations. All activities authorized by this NWP require PCNs. The Corps does not have the authority to regulate the use of acoustic deterrent devices, so it would be inappropriate to require disclosure of the use of such devices in PCNs for proposed NWP B activities. The information requirements for PCNs in paragraph (b) of general condition 32 are intended to provide the information necessary for the district engineer to determine whether a proposed activity qualifies for NWP authorization without an excessive amount of paperwork. The Corps declines to require the suggested information for NWP B PCNs because it is not needed to assist the district engineer in the determination of NWP eligibility. A few commenters said that the PCN should include a detailed statement on avoidance and minimization measures regarding the following impacts: Attraction and entanglement of wild fish, sharks, mammals, and seabirds; effects of chemicals, antifoulants, feed, and waste on water quality, habitat, and marine life; physical effects of all structures on habitat and marine life; displacement, disruption and risks to existing fishing activities; economic impacts to fishing industries; and spatial conflicts with other ocean users. A few commenters said that the applicant should be required to provide prevention, monitoring, and response plans that address escapement of cultured adults, progeny, and gametes; release of antimicrobials; disease transmission to wild stocks; release of nutrients; chemical pollution; structural failures; entanglement of fishing gear and marine species; small vessel strikes; and marine debris. The Corps does not agree that the suggested information is necessary for PCNs for proposed NWP B activities to assist in the district engineer's determination regarding whether the proposed activity regulated by the Corps (i.e , the placement of structures in navigable waters of the United States for finfish mariculture activities) is expected to result in no more than[[Page 2809]]minimal individual and cumulative adverse environmental effects. Much of the suggested information relates to operational aspects of finfish mariculture operations, which the Corps does not have the authority to regulate or control. One commenter stated that under NWP review, there is potential for an applicant to begin work within 45-days of submitting a PCN, even if the permittee has not received a written response from the district engineer. The commenter said that the 45-day default authorization should not occur and that the proposed activity cannot proceed until the district engineer issues a written verification. After the Corps district receives a PCN, the prospective permittee cannot begin the activity until either: (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer (see paragraph (a) of general condition 32). If the permittee was required to notify the Corps pursuant to general condition 18 that listed species or designated critical habitat (or species proposed for listing) might be affected or are in the vicinity of the activity, the permittee cannot begin the activity until receiving written notification from the Corps that there is ``no effect'' on listed species or that any consultation required under Section 7 of the Endangered Species Act has been completed. The Corps declines to add a provision to NWP B to require the project proponent to receive written authorization from the Corps prior to commencing the authorized activity. A couple of commenters expressed concern that structure placement within estuarine habitats may result in reduced current, velocity, altering circulation patterns, and consequently changing substrate characteristics. One commenter stated that the addition of artificial structures and moorings, and changes to seabed alter topography and hydrodynamics. Some commenters voiced concerns regarding the use of NWPs for emerging finfish mariculture activities, due to potential impacts on water quality, habitat, and wild species, requesting that activities in the area be reviewed through the individual permit process. The Corps acknowledges that structures placed in navigable waters may reduce water velocities to some degree and alter sediment transport and coastal erosion and deposition processes. District engineers will review proposed NWP B activities and determine whether it minimizes the impacts where practicable pursuant to general condition 23. Division and district engineers have discretionary authority to modify, suspend, or revoke NWP authorizations to further condition or restrict the applicability of an NWP when they have concerns for any factor of the public interest (see 33 CFR 330.1(d)). Many commenters said that construction of finfish mariculture operations should be prohibited within a specific proximity to marine protected areas, submerged aquatic vegetation, reef communities, habitats with significant important to existing aquatic communities, migration pathways, at specific water depths, and those areas subject to chronic oxygen and nitrogen depletion. A few commenters stated that finfish mariculture activities should be prohibited from areas identified as being prone to hypoxia or otherwise ecologically sensitive. Several commenters said that increases in finfish mariculture projects would have the potential to damage the commercial fishing industry by either decreasing the need for wild fishing or by causing adverse impacts to the health and habitat of wild fished species. One commenter stated that finfish mariculture could have the potential to adversely impact local economies by pushing out responsible, small-scale seafood producers and crop growers. Several commenters expressed concern with spatial conflicts, specifically with fishing, fishery research cruises, and long-term ocean monitoring stations which occupy much of state and federal waters. Additional potential conflicts identified by commenters included gear entanglement, displacement from traditional fishing areas, navigational safety, and income loss. Many commenters raised concerns about project siting requirements, with one commenter suggesting that the Corps should be required to perform a spatial siting analysis prior to issuance of an NWP verification to ensure the proposed activity does not interfere with existing fisheries operations, research projects, or affect federal marine protected areas, and essential fish habitat. Impacts regarding navigation are localized and therefore it is more efficient for district engineers to evaluate potential impacts in their review of PCNs. Finfish mariculture operators have, absent any potential exceptions, the same rights to use navigable waters as other users such as fishers, recreational users, researchers, and commercial users as long as they obtain all required federal, state, and local authorizations. In addition to the authorization under Section 10 of the Rivers and Harbors Act of 1899, finfish mariculture operators may be required to obtain other federal, state, or local authorizations. The Corps does not have the authority to conduct spatial planning for finfish mariculture activities. If the district engineer determines a proposed NWP B activity may adversely affect essential fish habitat, he or she will conduct essential fish habitat consultation with NMFS. Activities in marine protected areas may be require authorizations from the federal or state agency that has management responsibilities for those areas. A couple of commenters stated that structures could cause interference with access to treaty protected fishing grounds for tribal fisherman. Several commenters said that these activities could impact recreational activities by closing off areas of navigable waters that would otherwise be used for boating, fishing, tourism, and other water-related activities. A few commenters stated that finfish mariculture activities would close off or privatize areas currently used by the commercial fishing industry. One commenter stated that finfish mariculture activities could have the potential to adversely impact local economies by pushing out responsible, small-scale seafood producers and crop growers. Activities authorized by NWP B must comply with general condition 17, tribal rights. District engineers will review PCNs for proposed NWP B activities and assess potential impacts to navigation, including boating, fishing, tourism, and other water-related activities that use those navigable waters. There are a variety of activities (e.g , piers, port facilities, marine hydrokinetic devices) authorized by the Corps in navigable waters under its section 10 authorities that preclude or restrict use by others. The potential economic impacts of finfish mariculture activities on local businesses and residents is outside the Corps' control and responsibility. A couple of commenters said that finfish mariculture activities should raise farmed species that live in or adjacent to the body of water, to minimize the introduction of disease from species relocated from other regions. Another commenter suggested using only species native to the ecosystem where the finfish mariculture activity is located. One commenter requested the establishment of[[Page 2810]]exclusion zones, using assessments that consider not just the immediate area, but potential impacts to nearby waters as well. One commenter said that by requiring siting of finfish mariculture outside of known migratory pathways, predation from wild species may be minimized, entanglements may be reduced, and potential fish spills from net/cage damage by predatory species may also be reduced. One commenter suggested siting finfish mariculture activities in deep, open waters to minimize the effects of nutrient and sediment dispersal from the project site, which may cause increases in nitrogen and phosphorous levels, as well as increases in phytoplankton and algae. Several commenters said that finfish mariculture activities should not be authorized in estuarine waters to minimize adverse effects to water quality. A few commenters stated that the PCN review process does not provide for adequate planning and would eliminate project-specific public notice and comment period that would facilitate responsible site selection. The Corps does not have the authority to specify which species are cultivated at a finfish mariculture structure authorized by the Corps under section 10 of the Rivers and Harbors Act of 1899. In addition, the Corps does not have the authority to establish mariculture exclusion zones in navigable waters. Siting requirements on finfish mariculture activities may be imposed by other federal, state, or local government agencies. Many commenters expressed concerns regarding potential impacts to existing habitat, specifically coral reef systems, mangroves, and submerged aquatic vegetation that could be caused by increases in nutrient and sediment dispersal from the finfish mariculture operation. One commenter said that net pen structures and their associated anchoring systems have the potential to increase available habitat, supporting biodiversity, similar to engineered artificial reefs. In addition, this commenter said that the structures would prevent trawling of the benthic ecosystem within the footprint of the facility, further protecting species. When reviewing PCNs for proposed NWP B activities, district engineers will evaluate potential impacts on habitats in the vicinity of the proposed finfish mariculture structures. The Corps acknowledges that finfish mariculture structures can provide structural habitat that benefits some aquatic species, as well as providing some refuge from predators and fishers. Several commenters expressed concerned with the potential entanglement of wild fish and marine mammal species, stating that NWP review would not allow for adequate evaluation for potential impacts. One commenter discussed the potential for illegal extermination of predator species such as sea lions by operators of finfish mariculture facilities. A few commenters raised concerns regarding the use of acoustic deterrent devices, which they said are not consistently useful and have been known to cause deleterious impacts to non-***target*** species. Other commenters stated that these activities would have the potential to attract and concentrate predators, which may lead to entanglements or vessel strikes. One commenter said that risks and impacts to protected species are minimized by existing federal requirements for operations, including the use of improved technologies and regular maintenance, such as line-tightening, which has been shown to prevent accidental entanglement. A few commenters stated that this NWP must prohibit gear types known to cause harm to marine species. One commenter said that finfish mariculture structures should be removed from waters during peak seasons for protected species. If the district engineer determines that a proposed finfish mariculture activities may affect listed species or designated critical habitat, he or she will conduct ESA section 7 consultation with the U.S FWS and/or NMFS. The operator of the finfish mariculture facility may also need to obtain authorization under the Marine Mammal Protection Act. The ESA section 7 consultation may result in permit conditions added to the NWP authorization to minimize the risk of entanglement of listed species. The Corps does not have the authority to regulate the management of predator species at a finfish mariculture facility, or the use of acoustic deterrent devices. The use of acoustic deterrent devices would be addressed through the ESA section 7 consultation process and/or the Marine Mammal Protection Act authorization process, if applicable. One commenter said that finfish mariculture operations should only be stocked with eggs, larvae, or juveniles from pen-raised lineages, in order to avoid the need for wild capture. Another commenter stated that the cultivated species should have the same indigenous genetic stock as individuals of the species in the waters where the proposed finfish mariculture activity is located. The Corps does not have the authority to impose requirements on the stocking of finfish mariculture facilities, or which genetic stocks are cultivated. Many commenters stated concerns with the potential for accidental fish escapements by individual species because the introduction of non-native species may spread pathogens and parasites to wild species, increase competition to at-risk communities, and cause genetic degradation among existing fish populations. Several commenters discussed the 2017 escape of over 200,000 non-native Atlantic salmon in the Puget Sound as a result of finfish mariculture operations, with some commenters requesting that these activities require individual permits, and other commenters stating that regional conditions should be implemented to ensure structural integrity of facility structure and prevent escape recurrences. One commenter said that although the Corps lacks the authority to regulate finfish escapes, it can require structures installed in navigable waters to be constructed to a standard where escape risks can be mitigated. One commenter stated that applicants should be required to report escape events to the Corps and that the Corps should maintain a database to monitor events and better prevent them in the future. A few commenters said that a universal standard should be developed that specifies requirements for the proposed finfish mariculture facilities and related features that would meet challenges posed by severe weather, and prevent potential escapements. The Corps does not have legal authority to regulate the potential escapement of cultivated finfish. The Corps acknowledges that finfish mariculture activities have the potential to facilitate the spread of pathogens and parasites, but the Corps does not have the authority to regulate or control those occurrences. General condition 14 requires proper maintenance of authorized structures and fills. The project proponent is responsible for designing and constructing the finfish mariculture structures so that they have an appropriate degree of structural integrity. Since the Corps does not have the authority to address potential fish escapes, there would be no useful purpose served by requiring the operator to report escapes to the Corps, or for the Corps to maintain a database to track escape events. One commenter said that all mariculture operations should be considered point sources under the Clean Water Act and be required to obtain discharge permits. This commenter also said that routine disease testing and other water quality monitoring should also be mandated. One stated that effects to water quality within the local environment from other sources would have the potential to[[Page 2811]]cause impacts to cultured species and subsequently economic returns of the finfish farm, suggesting that maintenance of the facility would be in the best interest of the operation and thus encourages management operations that support the local environment. Some commenters said that finfish mariculture activities can cause changes to benthic community composition beneath and adjacent to structures because of excess feed, feces, and antifoulant accumulation. A couple of commenters stated that finfish mariculture projects should be held to the same regional water quality standard as offshore seafood processors. Several commenters expressed concern with the ingredients utilized in fish feed, which one commenter said often contains toxic heavy metals like cadmium and zinc and recommended that feed formulation and efficiencies be standardized and managed in order to lessen adverse environmental impacts. Another commenter suggested that finfish mariculture operators should be required to publish reports with the complete traceability of all mariculture feed products. One commenter asserted that permittees be required to provide proof that the finfish mariculture operations would not contribute to hypoxia in receiving waters. Some finfish mariculture operations may require authorization under Section 402 of the Clean Water Act for discharges from finfish mariculture operations. Section 402 of the Clean Water Act is administered by the U.S EPA or states with approved programs. The Corps lacks the authority to require disease testing and water quality monitoring. Water quality monitoring may be required by states in estuaries and the territorial seas. The Corps acknowledges that finfish mariculture activities can have effects on benthic communities. The Corps does not have the authority to regulate the production of finfish after the mariculture facility is constructed. Several commenters expressed concerns about the potential effects of the use of antimicrobials, pesticides, and anti-foulants, and the introduction of excess feed and fish waste in project waters. These commenters stated that use of these materials could lead to degradation of water quality, risking public health, and increase organic nutrient loads leading to eutrophication, causing widespread damage to wildlife. A few commenters said that industrial finfish mariculture operations may cause adverse impacts to public health, as the antibiotics, pesticides, and other chemicals that are heavily used to prevent disease and parasites in farmed species could accumulate in fish tissues to be consumed by the public. One commenter stated that these issues have influenced other countries like Canada, Argentina and Denmark, to move away from industrial finfish mariculture. The Corps does not have the authority to regulate the use of antimicrobials, antibiotics, pesticides, anti-foulants and other chemicals, how feed is provided to the cultivated finfish, or the composition of that feed and its potential effects on water quality. Water quality concerns may be addressed through state or federal water quality standards under the Clean Water Act, or state laws. A couple of commenters said that ESA section 7 consultation should be mandatory for all proposed finfish activities and that all applicants should be required to obtain an incidental take permits for potential effects to listed species. One commenter stated that NOAA would be the appropriate agency to provide expertise in reviewing and assigning specific permit terms in regard to site selection, conflicts between aquaculture projects, marine resources, other ocean users, and wild-capture fisheries. A couple of commenters said that individual finfish mariculture projects should be coordinated with state natural resource agencies to identify regional and site-specific concerns, needs analyses, and project-specific conditions. All activities authorized by this NWP require PCNs. If the district engineer reviews a PCNs and determines that any proposed activity may affect listed species or designated critical habitat, he or she will conduct ESA section 7 with the U.S FWS and/or NMFS as appropriate. Incidental take permits are issued under Section 10(a)(1)(B) of the ESA, not section 7(a)(2). The Corps declines to add a provision to this NWP requiring coordination with state natural resource agency, whose legal authorities are highly variable and generally do not apply in federal waters. One commenter questioned the Corps' reliance on general condition 23 to minimize project impacts. Another commenter said that all NWP B applicants should be required to provide a mitigation plan. Several commenters voiced concern over the risk for breakage of anchored mooring systems for finfish mariculture structures during significant weather events, which increases risks to navigational safety and marine debris. Additional concerns regarding marine debris were voiced by another commenter, who suggested that operators may dispose of solid waste into waters rather than through appropriate methods. One commenter recommended requiring agency coordination for proposed NWP B activities under paragraph (d) of general condition 32. General condition 23 provides the mitigation requirements for the NWPs. District engineers can require the project proponent to submit a mitigation plan if, after reviewing a PCN, the district engineer determines that mitigation is necessary to ensure the authorized activity will cause no more than minimal individual and cumulative adverse environmental effects. The project proponent is responsible for designing and constructing the finfish mariculture facility so that it complies with applicable engineering standards, and will maintain structural integrity within the appropriate parameters of sea and weather conditions, and potential predatory behavior by large vertebrates. The Corps does not believe that agency coordination under paragraph (d) of this NWP is necessary for these activities. One commenter asserted that the draft decision document for NWP B did not meet NEPA requirements, stated that it lacked adequate discussion on purpose and need, which the public needs for consideration of the scope of reasonable alternatives. One commenter said that an environmental impact statement should be required for approval of NWP B, claiming that the Corps failed to adequately discuss how potentially significant impacts will be mitigated below the level of significance in the draft decision document. One commenter stated the Corps failed to address potential adverse cumulative impacts at a regional level where specific locations recently identified by NOAA are more likely to be impacted. The national decision document for this NWP was revised to address the requirements for environmental assessments in the Council on Environmental Quality's NEPA regulations that were published in the Federal Register as a final rule on July 16, 2020 (85 FR 43304). A section on purpose and need was added to the national decision document. The Corps made a finding of no significant impact. Therefore, an environmental impact statement is not required for the issuance of this NWP. The national decision document considers the cumulative effects expected to occur as this NWP is used during the 5-year period it is anticipated to be in effect, and it is a national analysis since the geographic scope of the national decision document is the United States. Division engineers consider cumulative effects of NWP activities on a regional basis.[[Page 2812]] One commenter stated that the minimal effect determination is conclusory, as no quantitative impact limits, general conditions, or regional conditions have been specified and the impact section did not provide discussion on any foreseeable or unknown impacts. One commenter said that the Corps' minimal effects determination should provide estimates for the anticipated size of mariculture operations to be permitted under NWP B and potential impacts of those operations based on known impacts of net pen finfish mariculture. The Corps did not provide a minimal effects determination in the draft national decision document, so the commenter cannot say that it is conclusory. The NWPs are not required to have quantitative impact limits, and the proposed NWP general conditions were provided in the proposed rule. The regional conditions have not been finalized by division engineers. The draft decision document discusses reasonably foreseeable impacts. The Corps is not required to consider speculative impacts. The Corps did provide estimates of the impacts that may occur during the 5-year period this NWP is anticipated to be in effect. Proposed NWP B is issued as NWP 56, with the modifications discussed above.(15) NWP 57. Electric Utility Line and Telecommunications Activities The Corps proposed this new NWP as NWP C, to authorize discharges of dredged or fill material into waters of the United States, and structures and work in navigable waters of the United States, for electric utility line and telecommunications activities. Many commenters expressed support for the proposal to issue a separate NWP for electric utility line and telecommunications activities. They said that the creation of this new NWP for electric utilities represents a tailored approach to regulated industries and effectively addresses differences in how the various types of utilities are constructed, installed, maintained, and removed. Many commenters supported retaining the basic structure of the 2017 NWP 12 for proposed new NWP C, as well as continuing the longstanding definition of ``single and complete'' project, providing authorization for temporary structures, fills, and work, and imposing the same acreage limits. One commenter supports the Corps' proposal to include the list of structures and fills in NWP C, including utility lines, substations, foundations for towers poles and anchors, access roads, temporary structures, fill, and work for remediation of drilling fluid returns from horizontal directional drilling, and temporary structures, fill, and work including temporary mats for utility line and telecommunications activities. The Corps is issuing NWP C to authorize discharges of dredged or fill material into waters of the United States and structures and work in navigable waters of the United States for electric utility line and telecommunications activities. For the text of NWP C, the Corps has retained a structure similar to the structure of NWPs 12 and D, and there are some differences in the specific text of NWPs 12, C, and D to address differences in utility line sectors. The Corps is also retaining the regulatory approach for authorizing single and complete linear projects, where each separate and distant crossing of waters of the United States may be covered by its own NWP authorization. The corps is also retaining the \1/2\-acre limit for each separate and distant crossing of waters of the United States and for the construction, maintenance, or expansion of substations for electric utility and telecommunications lines. The Corps is also including the authorization of temporary structures and fills, as well as DA authorization for remediation activities requiring DA authorization that may be needed to address inadvertent returns of drilling fluids, consistent with NWPs 12 and D. Many commenters stated that they expect court challenges to oil and gas pipeline activities to continue, and therefore support the issuance of a separate NWP for electric utility line and telecommunications activities. By creating a separate NWP for these activities, it is the hope of these commenters that these electric infrastructure activities will not be disrupted by future NWP 12 litigation. The Corps acknowledges that the issuance of NWP C can help reduce regulatory uncertainty for entities that construct and maintain electric utility lines and telecommunications lines. Past litigation on NWP 12, especially for oil or natural gas pipelines, has caused concerns about the availability of NWP authorization for electric utility lines and telecommunication lines and their ability to serve people living in the United States. Several commenters noted that proposed NWP C is important as the scale of electrical energy generation from renewable energy sources increases. These commenters said there will be a need for additional electric transmission facilities to convey the electricity from the generation facilities to the end users. Several commenters stated that proposed NWP C will satisfy Section 404(e) of the Clean Water Act by authorizing activities that have no more than minimal adverse environmental effects, while continuing to allow for timely and efficient authorization of these activities. These commenters said that the techniques used to construct, maintain, and repair most electric transmission lines generally result in fewer impacts to waters of the United States compared to the techniques used to construct other types of utility lines. Several commenters requested that the Corps not issue proposed NWP C, stating that the activities authorized by this NWP would cause significant adverse impacts in violation of Section 404(e) of the Clean Water Act. These commenters said individual permits should be required for these activities. The Corps also appreciates the potential for new NWP C to support electric energy generation from renewable energy generation facilities, including activities authorized by NWPs 51 and 52. The Corps believes that the conditions for NWP C, including the reviews of PCNs for certain activities authorized by NWP C and the ability of division and district engineers to modify, suspend, and revoke NWP C authorizations, will help ensure that activities authorized by NWP C result in no more than minimal individual and cumulative adverse environmental effects. A few commenters noted that the issuance of NWP C would allow the Corps to incorporate industry-specific standards, appropriate regional conditions, and best management practices tailored to each utility line NWP. A few commenters said that proposed NWP C is important because the process of applying for and obtaining an individual permit is time consuming, expensive, and subject to regulatory uncertainty. These commenters said that increased costs and burdens that result from the individual permitting process can affect not only the members, but the amount of costs that are passed on to consumers and indirectly borne by the rural public. One commenter stated that the availability of NWPs authorizing the construction, maintenance, repair, and ***removal*** of utility lines and associated facilities is essential to the expansion of necessary infrastructure to remote areas in the United States. In this final rule, the Corps discusses suggestions for best management practices and national standards that commenters provided in response to the 2020 Proposal. The Corps acknowledges that the issuance of NWP C will further the objective of the NWP program,[[Page 2813]]which is to regulate with little, if any, delay or paperwork certain activities having minimal impacts (33 CFR 330.1(d)). One commenter stated that fiber optic lines should be specifically added to the definition of electric utility line and telecommunication line. One commenter recommended retaining the following provision in proposed NWP C: ``there must be no change in pre-construction contours of waters of the United States.'' One commenter said that the integrity of power lines in their service area could be severely compromised if vegetation management must be stopped while they obtain individual permits for this necessary and routine activity. Vegetation along electric utility rights of way must be maintained to prevent trees or other vegetation from bringing down power lines and, during dry conditions, preventing power lines from contributing to wildfires. The Corps has added fiber optic lines to the definition of electric utility line and telecommunication line. The requirement that NWP C activities associated with the construction, maintenance, repair, and ***removal*** of electric utility lines and telecommunications lines result in no change in pre-construction contours in waters of the United States do not compromise vegetation management because most vegetation management is conducted above the soil surface. In situations where vegetation management involves the ***removal*** of plants and their roots, the project proponent can regrade the soil surface so that there are no changes in pre-construction contours of waters of the United States, including jurisdictional wetlands. The Corps acknowledges that vegetation management is important for safe, reliable operation of electric utility lines and telecommunications lines, and for managing fire risks. However, the Corps does not have the legal authority to require vegetation management activities to manage fire risks. State and local governments may possess that authority. A few commenters recommended ***removal*** of the following sentence from the preamble to the proposed rule: ``The wooden poles used for overhead electric transmission lines can be up to 27 inches in diameter, and these poles are usually inserted into the soil surface by digging a hole, with some soil disturbance in the vicinity of the installed pole.'' These commenters said that utility poles are specified based on class and height, not diameter. In addition, these commenters noted that round treated wood utility poles can be greater than 27 inches in diameter. Lastly, these commenters said that treated wood utility poles can be provided not only as ``round poles'', but also as ``laminated rectangular poles.'' These commenters recommended adding the following sentence to the final rule: ``The wooden poles used for overhead electric transmission lines can be up to 40 inches in diameter or up to 90 inches on any side for rectangular poles.'' The Corps cannot ***remove*** sentences from documents that have already been published in the Federal Register, and it sees no need to ***remove*** this text because it only served as background information for the proposed rule, including the proposal to issue three separate NWPs for different sectors of utility line activities. The Corps acknowledges that this sentence is incomplete, and appreciates the additional clarification provided by the commenter. A few commenters noted that, although the preamble recognizes the wide array of structure types for utility lines, the language of proposed NWP C appears to assume a limited design configuration for structures to support aerial transmission lines. These commenters said that the requirement for separate footings for each tower leg incorrectly suggests that such lines only utilize lattice tower type structures with multiple legs per structure, which is not the case. Therefore, these commenters recommended that the Corps eliminate this language from the final NWP C to accurately reflect the wide array of structure types that are used to support aerial utility and telecommunication lines. One commenter recommended revising the text as follows: ``This NWP authorizes the construction or maintenance of foundations for overhead electric utility line or telecommunication line structures, towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary.'' The text of NWP C provides substantial flexibility in authorizing discharges of dredged or fill material into waters of the United States associated with the installation of structures used to support aerial transmission lines. The text of the NWP acknowledges that single poles may be used for overhead transmission lines, and there is flexibility for authorizing discharges of dredged or fill material into waters of the United States for footings that support other types of structures used for aerial transmission lines, including lattice tower types structures. For foundations for overhead electric utility line or telecommunication line towers, poles, and anchors, the Corps is retaining the text of the NWP as proposed. One commenter supports the Corps' proposal to use the \1/2\-acre limit in proposed NWP C. One commenter stated that it remains unclear when associated facilities are authorized by multiple NWPs, whether the \1/2\-acre limit will be applied to multiple NWPs or if only one NWP will be selected to authorize the associated facilities. The Corps has retained the \1/2\-acre limit for losses of waters of the United States for each single and complete project authorized by NWP C. General condition 28 addresses the use of multiple NWPs to authorize a single and complete project and that general condition applies to utility line crossings that may involve different types of utility lines authorized by NWPs 12, C, and/or D, where the acreage limit for each single and complete project continues to be \1/2\-acre. One commenter objected to the inclusion of substation facilities in this NWP, because substations can usually be constructed in uplands. One commenter said the proposed text for foundations for overhead electric utility line or telecommunications lines towers, poles, and anchors should be revised. The Corps is retaining substations in this NWP because there are likely circumstances where it is not feasible or practicable to site a substation in uplands. This NWP provides DA authorization for discharges of dredged or fill material into waters of the United States for the construction, maintenance, or expansion of electric utility line and telecommunications substations as long as the loss of waters of the United States does not exceed \1/2\-acre. One commenter stated that the Corps should end the practice of considering timber and other mats used for temporary access and construction as resulting in discharges of dredged or fill material into waters of the United States and as part of the filled area for the PCN thresholds. Some Corps districts count matting toward the PCN threshold for permittees, requiring permittees to submit a PCN if the discharge will result in the loss of greater than \1/10\-acre of waters of the United States. The Corps believes that the decision on whether timber mats or mats constructed of other materials that are used during construction, maintenance, repair, or ***removal*** of electric utility lines and telecommunication lines result in discharges of dredged or fill material[[Page 2814]]into waters of the United States and thus require DA authorization is more appropriately made by district engineers on a case-by-case basis. Such decisions should be made by district engineers after considering the definitions of ``discharge of dredged material'' and ``discharge of fill material'' at 33 CFR 323.2(d) and (f). The use of temporary matting does not constitute a ``loss of waters of the United States'' or count towards the \1/10\-acre PCN threshold for losses of waters of the United States as long as the timber matting is removed after completion of the authorized work and the affected area restored to pre-construction elevations. A few commenters stated that applicants should have to produce containment and clean up contingency plans as a best management practice to address inadvertent returns of drilling fluids during horizontal directional drilling activities. The Corps does not have the authority to require project proponents to develop containment and contingency plans for horizontal directional drilling activities that do not involve discharges of dredged or fill material into waters of the United State or cross navigable waters and require section 10 authorization. The NWP authorizes regulated activities that may be necessary to remediate inadvertent returns of drilling fluids to provide timely responses to such events and help reduce potential adverse effects to the aquatic environment that may occur as a result of these inadvertent returns. Several commenters supported the two PCN thresholds for proposed NWP C. They stated that limiting the PCN requirements for this NWP to these two PCN thresholds will reduce burdens on the regulated public, simplify NWP C, eliminate redundancy, and focus the PCN requirements on activities that have a substantive potential to result in more than minimal adverse environmental effects. One commenter stated that the proposed PCN requirements add an administrative burden to the Corps and reduce certainty for projects. Many commenters opposed having only two PCN thresholds and requested that NWP C have the same seven PCN thresholds as the 2017 NWP 12. In the 2020 Proposal the Corps proposed two PCN thresholds for this NWP: (1) For activities that require section 10 authorization, and (2) for discharges that result in the loss of greater than \1/10\-acre of waters of the United States. In response to the proposed rule, the Corps received comments recommending the addition of other PCN thresholds that were removed from NWP. For summaries of the comments on the five PCN thresholds that were in the 2017 NWP 12 but removed from the 2021 NWP 12, and the Corps' responses to those comments, interested persons should read the section in this final rule on the reissuance of NWP 12. One commenter supported the proposal to require PCNs for losses of greater than \1/10\-acre of waters of the United States. One commenter recommended requiring PCNs for mechanized ***land*** clearing of ***forested*** wetlands in the electric utility line right-of-way where greater than \1/10\-acre of ***forested*** wetland is subjected to mechanized ***land*** clearing, instead of requiring PCNs for any amount of mechanized ***land*** clearing in ***forested*** wetlands. One commenter asked why activities that result in changes in pre-construction contours, but do not result in permanent losses of waters of the United States cannot be permitted by NWP C while activities that do not result in a change to pre-construction contours, but result in up to \1/10\-acre of permanent loss of waters of the United States can be permitted by this NWP. The Corps did not propose to require PCNs for discharges of dredged or fill material into waters of the United States associated with mechanized ***land*** clearing of ***forested*** wetlands in the utility line right of way. If, for a proposed electric utility line or telecommunications line, the applicant proposes to conduct mechanized ***land*** clearing of ***forested*** wetlands in the right-of-way for the electric utility line or telecommunications line, a PCN is required if the project proponent will be unable to restore the disturbed wetlands to pre-construction elevations and the activity involves a discharge of dredged or fill material that results in the loss of greater than \1/10\-acre of waters of the United States. Nationwide permit C authorizes discharges of dredged or fill material into waters of the United States that result in permanent losses of waters the United States, as long as that loss does not exceed \1/2\-acre for each single and complete project. One commenter opposed the requirement to submit a PCN for activities that require authorization under Section 10 of the Rivers and Harbors Act, regardless of the amount of loss. The Corps has retained this PCN threshold so that district engineers have the opportunity to review these activities and ensure that the authorized activities cause no more than minimal adverse effects to navigation. Several commenters objected to allowing multiple segments of the same pipeline to qualify for NWP authorization, stating it is a violation of Section 404(e) of the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act, and other legal requirements for rigorous and transparent environmental reviews and safeguards. A few commenters noted that while electric and telecommunication lines do not pose the same risks of spills and leaks as oil and gas pipelines, they still allow for greater than minimal impacts by authorizing large electric lines and telecommunications lines under the guise of ``single and complete projects.'' Considering separate and distant crossings of waters of the United States to be linear projects that can be authorized by separate NWPs is a long-standing practice that has been codified in the Corps regulations at 33 CFR 330.2(i) since 1991 (see 56 FR 59110). This practice does not violate Section 404(e) of the Clean Water Act, NEPA, or the ESA. The Corps complies with NEPA when it issues the national decision document for the issuance of an NWP, because that decision document includes an environmental assessment. Activities authorized by NWP C and other NWPs must comply with general condition 18, endangered species. The Corps acknowledges that some spills or leaks may occur from equipment associated with electric utility lines and telecommunications lines, including equipment at substations, but the Corps does not have the authority to regulate such spills or leaks. A few commenters stated that is that it is unclear how the Corps will evaluate what constitutes a ``project'' under these NWPs for the purposes of determining whether a project exceeds the \1/2\-acre limit or results in a loss of more than \1/10\-acre in order to trigger the requirement for an individual permit. A few commenters requested additional details regarding what measures will be used to ensure that projects under these NWPs are not improperly divided into smaller sections to avoid an individual permit requirement. Several commenters state that the ``single and complete project'' concept should not apply to the installation of new electric utility line and telecommunication activities. Some commenters said a new electric utility line or telecommunications line should be subject to analysis under NEPA for the entire project, including a cumulative review of all temporary and permanent impacts to waters of the United States from the utility line crossings, access roads, substations, temporary work pads, etc. The Corps has long-standing practice and experience evaluating single and[[Page 2815]]complete projects when applying the \1/2\-acre limit and the \1/10\-acre PCN threshold for losses of waters of the United States. District engineers have the discretion to determine which regulated activities constitute ``single and complete linear projects'' and ``single and complete non-linear projects'' in accordance with the Corps' regulations and the definitions in Section F of these NWPs. When an NWP C activity requires a PCN, paragraph (b)(4)(i) of general condition 32 requires the applicant to include in the PCN and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. Furthermore, paragraph (b)(4)(ii) of general condition 32 requires the applicant to include in the PCN the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by NWPs but do not require PCNs). The district engineer uses this information to evaluate the cumulative adverse environmental effects of the proposed linear project. Activities authorized by NWP do not require additional NEPA compliance, because the Corps satisfies the requirements of NEPA when it issues the national decision documents for the NWPs. One commenter stated that a PCN should be required for any new or expanded electric utility line project, and there needs to be an overall limit in acreage of waters of the United States lost as a result of activities authorized by this NWP. A few commenters said that proposed NWP C should include the 250-mile PCN threshold proposed for NWP 12. These commenters asserted that not adding the 250-mile PCN threshold allows for very large projects to be built without a PCN and, therefore, bypass other federal requirements that are triggered by the section 404 process such as the requirements of Section 7 of the Endangered Species Act and Section 106 of the National Historic Preservation Act. One commenter asked whether temporary impacts and impacts that involve conversion from one wetland type to another (e.g , ***forested*** wetland to herbaceous) are counted as part of the \1/10\-acre PCN notification threshold. These commenters recommended revising the definition of ``loss of waters of the United States'' to include permanent conversion of wetland types. The Corps does not agree that PCNs should be required for any expansion of electric utility line projects. The information required by paragraphs (b)(4)(i) and (ii) of general condition 32 provides the Corps with information similar to the 250-mile PCN threshold that was added to NWP 12, but the Corps does not believe that the 250-mile PCN threshold is necessary for NWP C because it authorizes projects with typically smaller footprints of discharges of dredged or fill material. Activities authorized by NWP C must comply with general condition 18, endangered species, and general condition 20, historic properties. Temporary impacts are not considered a ``loss of waters of the United States.'' A permanent conversion of wetland type is generally not considered a ``loss of waters of the United States'' because the affected area is still a wetland, and vegetation management activities such as cutting and mowing vegetation or using herbicides are not regulated by the Corps under its permitting authorities. One commenter stated that Corps districts should maintain consistency with the number of thresholds that trigger the need for a PCNs expressed in the proposed rule. This commenter noted that some Corps districts have already proposed regional conditions that will undercut the changes in the proposed rule. This commenter said that differences in PCN thresholds across Corps districts could complicate NWP C by increasing confusion and inefficiencies. Division engineers have the authority to approve regional conditions for this NWP based on the characteristics and other factors regarding the ecosystems in their respective regions, including regional conditions that add PCN thresholds. Division engineers can add regional conditions to replace PCN thresholds that were removed from an NWP, if the division engineer determines that PCN threshold is necessary to ensure that the activity has no more than minimal or cumulative adverse environmental effects. Regional conditions are an important mechanism for tailoring the NWP program to address specific resource concerns in a particular geographic area. Several commenters opposed including Note 2 in NWP C. These commenters said that Note 2 is inconsistent with the requirements of Section 404(e) of the Clean Water Act and that it would allow activities that have more than minimal adverse environmental effects to proceed. One commenter said that proposed Note 2 would explicitly allow the cobbling together of multiple NWPs to authorize high impact pipelines and associated infrastructure that have greater potential for harmful spills, leaks, and the discharges that accompany them. As discussed above in response to comments on the Corps' definition of ``single and complete project'' at 33 CFR 330.2(i), Note 2 is consist with that regulation and this long-standing practice. One commenter recommended clarifying and rephrasing the following sentence found in Note 3: ``Aerial electric utility lines or telecommunication lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i). The Corps believes that no additional clarification is necessary for Note 3 because it only points to a specific provision of the Corps' regulations to serve as a reminder to project proponents that want to construct electric utility lines or telecommunications lines over navigable waters of the United States. A few commenters recommended including the term ``and other temporary structures'' in the text of Note 4. These commenters suggested changing Note 4 to state that access roads and other temporary structures such as work pads, temporary utility poles, and pulling and tension pads, used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Note 4 specifically addresses access roads, and the Corps believes it would be inappropriate to address other temporary structures in this note. Temporary structures are addressed in a separate paragraph in the text of NWP C. A few commenters recommended that if the Corps includes specific best management practices (BMPs) in the final NWP C, it should indicate that the BMPs should be implemented ``where appropriate and practical'' and recognize that implementation of certain BMPs may not be required in all circumstances. These commenters noted that there are a wide range of minimization, avoidance, and management measures deployed to reduce impacts to aquatic environments, some are unique to the electric and telecommunication utility lines. However, it would be difficult to include many of these BMPs as national requirements for all uses of NWP C because their implementation, while[[Page 2816]]frequent, is site-specific and may not be feasible or useful for minimizing impacts in all scenarios. A few commenters stated that the Corps should not adopt additional national BMPs or other restrictions, and said that such practices should be addressed at the regional level and tailored to local environments, which will allow for greater flexibility. A few commenters said that adding additional BMPs or standards to this NWP would result in redundant requirements to manage on these projects without providing additional benefits. The Corps agrees that BMPs should be implemented where appropriate and practical, and that it would be more appropriate and efficient to add BMPs to this NWP either through regional conditions added to the NWP by division engineers or activity-specific conditions added to the NWP by district engineers. During its review of the suggested BMPs, the Corps determined that many of these BMPs that are appropriate to apply nationwide would not be appropriate for the NWP at a national level, but they may be appropriate on a region level. The proposed text of NWP includes some BMPs (e.g , requiring no changes in preconstruction contours of waters of the United States, requiring the top 6 to 12 inches of the trench in wetlands to normally be backfilled with topsoil from the trench, ***removal*** of temporary fills upon completion of the work). Many commenters said that the placement of temporary matting in jurisdictional wetlands should continue to be a BMP for proposed NWP C activities to minimize adverse environmental effects. Several commenters recommend requiring the use of low-ground pressure equipment, such as heavy equipment that has been specially designed to spread the weight of the equipment over a larger area, which helps avoid permanent impacts by reducing compaction of wetland soils. One commenter said that use of wattles (i.e , erosion and sediment control devices used to minimize erosion on construction sites) is a general accepted practice to reduce water flow velocities and prevent sediment from flowing into jurisdictional waters. The Corps believes these BMPs are more appropriately applied on a case-by-case or regional basis, in consideration of the characteristics of the affected ecosystems, instead of a national basis. One commenter stated that the Corps should continue to clearly outline performance criteria within jurisdictional areas because it provides the flexibility needed to facilitate the improvement and development of construction practices that could better protect aquatic resources. One commenter recommended adding a requirement that directional drilling under waters of the United States should be a national standard. One commenter suggested the addition of a BMP to require district engineers to distribute relevant PCNs to state agencies involved in the regulatory oversight or environmental review of projects authorized by the new NWP C. With this NWP, the Corps outlines certain performance criteria (e.g , ***removal*** of temporary fills, uses of temporary mats) within jurisdictional waters. The Corps believes the recommended BMPs are applied more appropriately and effectively on a case-by-case or regional basis instead of a national basis. One commenter suggested a BMP where the project proponent tries to cut only vegetation that exceeds a height of 12 feet and allows all low-growing trees and shrubs to remain in place. This commenter said that a benefit of this BMP is that it allows roots to remain in place providing soil stabilization in and around jurisdictional waters. One commenter noted that non[hyphen]mechanized clearing is preferred consistent with the Corps' regulations at 33 CFR 323.2(d) along with hand clearing, low ground pressure equipment and mats, to minimize and avoid additional impacts to the jurisdictional water or wetland beyond conversion are significantly minimized or avoided. The Corps believes the recommended BMPs are applied more appropriately and effectively on a case-by-case or regional basis instead of a national basis. One commenter said that vibratory plowing is preferred over trenching methods for burying both distribution and fiber optic lines because vibratory plowing under most conditions does not create incidental addition of material. One commenter recommended requiring that material resulting from trench excavation may be temporarily side cast into waters of the United States for very short periods of time well within the limitation of three months, and is not placed in such a manner that it is dispersed by currents or other forces. In addition, this commenter suggested requiring side[hyphen]cast material to be protected so it does not discharge offsite or into jurisdictional waters during rainfall events. The Corps believes the recommended BMPs are applied more appropriately and effectively on a case-by-case or regional basis instead of a national basis. One commenter remarked that while burying utilities is an important climate adaptation strategy to address wildfire impacts, such activities should be undertaken in an ecologically responsible fashion, and recommended prohibiting NWP C activities within or under coastal zone waters and wetlands. The Corps does not agree that NWP C activities should be prohibited in coastal zone waters and wetlands. A few commenters provided the following list of various practices its members implement to help ensure that electric utility line construction and maintenance activities will have no more than minimal adverse environmental impacts: Avoiding surface waters when embedding structures (footings, poles, etc.), stockpiling materials, and setting up work areas. Locating poles and tower foundations outside of surface waters to the extent practicable. Where practicable, poles or structures are sited in uplands so that the infrastructure ``spans'' and thereby avoids the aquatic environment. When it is not possible to span an aquatic environment, poles or structures are installed in a manner to maintain conductor clearance consistent with North American Electric Reliability Corporation (``NERC'') and other guidelines to ensure safe and reliable operation. Installing mats before placing or driving equipment over wetlands or streams. Constructing roads with pervious materials and limiting width and elevation, so long as access is safe. Relying on low water crossings and appropriately sized culverts. Designing site plans to address the prevention, containment, and cleanup of sediment or other materials caused by the inadvertent returns of drilling fluids when installing electric utility lines under streams or other waters via directional drilling. Locating stockpile and work areas outside of surface waters. Performing frequent inspections of environmental and safety measures and construction activities. Marking waters of the United States near work areas with flagging or perimeter fencing Deploying mats prior to driving over or placing heavy equipment on wetlands. Installing stormwater BMPs to prevent erosion of hillsides adjacent to construction areas. Where practicable, trench material is side casted onto uplands or onto filter cloth, mats, or some other semi-permeable surface in vegetated wetlands.[[Page 2817]] Site plans are designed to address the prevention, containment, and cleanup of sediment or other materials caused by the inadvertent returns of drilling fluids when installing electric utility lines under streams or other waters via directional drilling. In the event of an inadvertent return of drilling fluids, the agency is notified, and the remediation plan is implemented. Where permanent access is not required, avoidance measures are deployed to minimize impacts to jurisdictional waters to the maximum extent possible. Where permanent roads are required, they are typically limited in width and elevation to the minimum necessary for safe access and constructed with pervious materials. Stockpiles and work areas are generally established outside of surface waters. Timber mats are typically installed prior to placing or driving equipment over wetlands or streams. Frequent inspections of environmental and safety measures and construction activities are performed. Monitoring during and after construction to avoid unauthorized discharges to surface waters. Construction personnel, contractors, and personnel who operate and maintain the electric utility and telecommunication lines are trained to understand and comply with permit requirements and conditions. Several commenters suggested the following BMPs for proposed NWP C based on Avian Powerline Interaction Committee documents. Their recommended BMPs include: Avian Protection Plan (APP) Guidelines. Suggested Practices for Avian Protection on Power Lines. Reducing Avian Collisions with Power Lines: State of the Art in 2012. Region 6 Guidance for Minimizing Effects from Power Line Projects Within the Whooping Crane Migration Corridor (available at [*https://puc.sd.gov/commission/dockets/electric/2019/el19-003/memo.pdf*](https://puc.sd.gov/commission/dockets/electric/2019/el19-003/memo.pdf).) The Corps believes the recommended BMPs are applied more appropriately and effectively on a case-by-case or regional basis instead of a national basis. The Corps has been administering NWP 12 since it was first issued in 1977 without extensive BMPs at the national level and has found that the current approach with the BMPs that are already in the text of the utility line NWPs (i.e , NWPs 12, 57, and 58) is effective. A few commenters stated that the proposed NWP C will allow for increased impacts to rivers and wetlands. One commenter said that mechanized ***land*** clearing in ***forested*** and scrub-shrub wetlands for utility line installation should not be authorized under NWP C and that individual permits should be required for those activities. One commenter said that individual permits should be used to authorize the entire electric utility line project when one crossing does not meet the limits for NWP C. One commenters states that it is not clear how temporal and cumulative impacts will be considered when evaluating facilities proposed to be authorized by NWP C or by multiple NWPs. A few commenters recommend that the Corps adopt a policy of early consultation with Indian tribes and other actors on these types of projects, above the timeline required by the NHPA section 106 process. One commenter recommended that the Corps require prior consent on projects impacting tribes. The proposed NWP C will not result in increased impacts to rivers and wetlands because it has the same limits as the NWP 12 that was issued in 2017 and in several prior reissuances of the NWPs. The activities authorized by this NWP must comply with 33 CFR 330.6(d), which addresses the use of NWPs with individual permits. During the PCN review process, district engineers evaluate the individual and cumulative effects of the activities authorized by an NWP (see paragraph 2 of Section D, District Engineer's Decision). For Corps districts consult with tribes when necessary for activities authorized by this NWP and other NWPs. Issuance of an NWP verification by a district engineer does not require prior consent from tribes. Several commenters expressed concern about the impacts that electric utility lines may have on migratory avian populations from collisions with power lines. These commenters said that the Corps needs to analyze the potential harm to bird populations from its permitting of utility lines pursuant to this proposed NWP. These commenters said that national programmatic ESA section 7 consultation should be initiated for the issuance of this NWP, to allow the Services to work with the Corps to establish national BMPs. Another commenter stated that the Corps should consider voluntarily performing ESA Section 7 consultation on the issuance of this NWP to provide regulatory certainty. The national decision document has been revised to discuss potential impacts of electric utility lines on migratory birds. General condition 19 addresses compliance with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. That general condition states that the permittee is responsible for ensuring that the activity authorized by an NWP complies with both of these acts, and that the permittee is responsible for contacting the appropriate office of the U.S FWS to determine whether any incidental take permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act. Compliance with the ESA for this rulemaking is discussed in Section III.D of this final rule. One commenter emphasized that safety must remain paramount when constructing, maintaining, repairing, and replacing above-ground and below-ground electrical utility lines. The commenter suggested that the Corps reference safety standards as a means of ensuring that electric utility activities are conducted safely. One commenter said that the proposal also describes the two methods by which underground electric transmission cables are installed: Trenching and backfilling or horizontal directional drilling. This commenter remarked that members may also utilize conventional boring to install electric utility lines, and asked that the Corps acknowledge that conventional boring is another method used for installation of underground electric transmission cables. The Corps does not have the authority to require and enforce safety standards that apply to the construction, maintenance, repair, and replacement of above-ground and below-ground electrical utility lines. Safety standards and requirements may be imposed by other federal agencies, or state and local government agencies. This NWP authorizes activities that may involve directional boring, as long as those activities involve discharges of dredged or fill material into waters of the United States or cross navigable waters of the United States. Proposed new NWP C is issued as NWP 57, with the modifications discussed above.(16) NWP 58. Utility Line Activities for Water and Other Substances The Corps proposed this new NWP as NWP D, to discharges of dredged or fill material into waters of the United States, and structures and work in navigable waters of the United States, for utility line activities for water and other substances, such as potable water, sewage, stormwater, and wastewater. Several commenters stated that they support the issuance of new NWP D for water, wastewater, and stormwater utility lines because of the national legal[[Page 2818]]uncertainty of oil and gas pipeline projects. Many commenters said they support the issuance of NWP D because it streamlines the permitting process, clarifies the PCN requirements, separates activities based on the utility types, and ensures the activities will cause no more than minimal adverse environmental effects. Several commenters stated they were opposed to the issuance of NWP D and recommend withdrawing NWP D because it authorizes activities that cause significant adverse impacts, and these activities should require individual permits. These commenters stated, that at a minimum, additional PCN requirements should be added to the proposed NWP. The activities authorized by NWP D will generally result in no more than minimal individual and cumulative adverse environmental impacts, and certain activities require pre-construction notification to the district engineer. District engineers will review PCNs for proposed NWP D activities, and may add permit conditions, including mitigation requirements, to the NWP authorization to help ensure that the authorized activities cause no more than minimal adverse environmental effects. District engineers can also exercise discretionary authority and suspend or revoke the NWP authorization for proposed activities that will result in more than minimal adverse environmental effects. The Corps believes that the two PCN thresholds in proposed NWP D will provide district engineers with the opportunity to review utility line activities for water and other substances that have the potential to cause more than minimal adverse environmental effects. Several commenters expressed opposition to allowing multiple segments as ``single and complete projects'' of the same pipeline qualify for NWP authorization because it violates the Clean Water Act's minimal impact limitation, the National Environmental Policy Act, the Endangered Species Act, and other legal requirements for rigorous and transparent environmental reviews and safeguards. In addition, several of these commenters stated the authorizing multiple segments as single and complete projects does not capture cumulative effects. The use of NWPs to authorize separate and distant crossings of waters of the United States for utility lines and roads as single and complete has been in the Corps' NWP regulations at 33 CFR 330.2(i) since 1991. The National Environmental Policy Act is a procedural statute that does not prohibit any specific regulatory approaches or mandate specific outcomes. Activities authorized by NWP D must comply with general condition 18, endangered species. The requirements of paragraph (b)(4) of general 32 help ensure that district engineers have information regarding the crossings of waters of the United States that require PCNs or do not require PCNs, so that the cumulative adverse environmental effects can be assessed during the review process. Several commenters stated opposition to the ***removal*** of the five PCN requirements from the 2017 NWP 12 because they believe the Corps will no longer receive notice of activities that cause more than minimal adverse effects, nor will other federal and state natural resource agencies be able to review and provide comments. Many commenters opposed the ***removal*** of the non-PCN requirements for right-of-way mechanized ***land*** clearing through ***forested*** wetlands because this activity causes fragmentation and a loss/conversion of wetland type and associated functions. The commenters requested addition of a requirement for the submittal of a PCN for ***land*** clearing associated with utility line rights-of-way within wetlands so that the Corps and interested stakeholders can ensure impacts are appropriately avoided and mitigated. A few commenters stated that the 500 linear foot PCN threshold from the 2017 NWP 12 should be added to NWP D. One commenter said that the PCN requirement for temporary access roads should be retained. One commenter stated that a PCN should be required when the proposed activities would run parallel with a stream bed. The ***removal*** of the five PCN thresholds from NWP 12 are discussed in the preamble discussion of NWP 12 and the same reasoning applies to the ***removal*** of these PCNs from NWP 58. That preamble discussion includes responses to comments, and that discussion will not be repeated in this section of the preamble. The Corps declines to add the suggested PCN thresholds because this NWP requires restoration of temporary fills to pre-construction elevations. If utility line activities associated with the suggested PCN thresholds result in a permanent impact that causes the loss of greater than \1/10\-acre of waters of the United States, then PCNs are required. A few commenters said there needs to be an overall acreage limit on authorized impacts for this NWP, including a maximum acreage for non-PCN ***forest*** clearing activities, and a maximum length of impervious surface roads before a PCN is required. One commenter stated that the Corps needs to provide sound, scientific evidence that the ***removal*** or omission of any of the PCN thresholds from the 2017 NWP 12 would not harm river, stream, or wetland hydrologic functions. The activities authorized by this NWP are subject to a \1/2\-acre limit for each single and complete project. There was no PCN requirement for temporary access roads in the 2017 NWP 12 and the Corps continues to believe that it is not necessary to ensure no more than a minimal individual or cumulative adverse environmental effects. Pre-construction notification thresholds are established for proposed activities requiring DA authorization that have the potential to cause more than minimal adverse environmental effects. Pre-construction notifications are informed by science and the Corps experience in administering the NWP program. In this instance, the Corps has determined it can ***remove*** the respective PCN requirements without risking more than a minimal individual or cumulative adverse environmental effects. Some commenters said that the reduction of the PCN thresholds will simplify NWP D and would not cause a negative impact on the environment. One commenter asserted that permanent access roads should be authorized under NWP 14, not NWP D. One commenter recommended adding a requirement for horizontal directional drilling under waters of the United States, as a national standard under NWP D. One commenter recommended adding a provision to NWP D requiring containment and clean up contingency plans. The Corps declines to add a requirement for the use of horizontal directional drilling because that technique is not always practical or feasible for utility lines that convey water and other substances. The use of horizontal directional drilling is more appropriately determined on a case-by-case basis after considering the characteristics of the proposed utility line activity, including site characteristics. The Corps does not have the authority to require containment and cleanup contingency plans for the construction, expansion, maintenance, or repair of utility line activities for water and other substances. One commenter stated that the Corps should define a ``stand-alone project'' as a utility line project that includes all crossing within a major watershed as evaluated together as single and complete, since the cumulative impacts are to one system. The commenter said that an alternative approach would be to require a cumulative analysis for all proposed NWP D activities. Several[[Page 2819]]commenters requested clarification of the status of ongoing, non-oil and gas utility projects verified under the 2017 NWP 12, specifically whether they will continue to be authorized under the 2017 NWP 12 until the March 18, 2022 expiration date, or if they will need to be reverified. The Corps declines to add a definition of ``stand-alone project'' to this NWP. When reviewing PCNs for proposed NWP activities, district engineers evaluate the crossings of waters of the United States that require PCNs and the information provided on other crossings in accordance with paragraph (b)(4) of general condition 32. They will determine whether the proposed utility line for water and other substances will result in no more than minimal individual and cumulative adverse environmental effects. The grandfathering provisions for these NWPs, including the transition from 2017 NWP 12 to the 2021 NWP 12 and new NWPs 57 and 58, is discussed in Section I.D of this final rule. A few commenters requested that the Corps broaden the definition of the term ``utility line'' so that it includes other types of man-made conveyances, such as canals and other linear conveyances that are subject to Clean Water Act section 404 jurisdiction and can transport water. One commenter requested the addition of specific waterline ancillary facilities including, but not limited to pump plants, siphons, and tunnels to the text of this NWP. One commenter said that the Corps should clarify whether this NWP authorizes utility line activities that convey substances that are unclear as to whether they included in the definition of ``oil or natural gas pipeline'' in NWP 12, such as hydrogen and power-to-gas (i.e , hydrogen combined with carbon dioxide to create methane, or renewable natural gas). One commenter recommended further defining the term ``other substances'' in this NWP. The Corps declines to add canals and ditches to the activities authorized by this NWP. Canals and ditches can be authorized by other NWPs, if the construction of those ditches involves discharges of dredged or fill material into waters of the United States or structures or work under Section 10 of the Rivers and Harbors Act of 1899. Substations for utility lines for water and other substances can include pump plants and siphons. Tunnels may be authorized if they a considered utility lines. Utility lines constructed to convey hydrogen or carbon dioxide can authorized by NWP D, but utility line activities constructed to convey renewable natural gas should be authorized by NWP 12. In general, ``other substances'' includes substances not conveyed by utility lines authorized by NWPs 12 and 57. The Corps has added ``products derived from oil or natural gas'' to be consistent with the definition of ``oil or natural gas pipeline'' in NWP 12, and to clarify that regulated activities associated with pipelines that carry substances derived from oil or natural gas should be authorized by NWP 12, not NWP D. One commenter said that Note 4 should refer to the General Bridge Act of 1946 instead of Section 9 of the Rivers and Harbors Act of 1899. The Corps has made this change to Note 4. One commenter requested clarification on how temporal and cumulative impacts will be considered when evaluating activities authorized by NWP D. This commenter recommended conducting a separate analysis for temporal and cumulative impacts on streams, wetlands, and other waters. A few commenters recommended changing the provision condition that states ``there must be no change in pre-construction contours of waters of the United States'' to ``there must be no change in pre-construction contours which results in permanent losses of waters of the United States.'' One commenter requested clarification on the measures the Corps will take to ensure that the activities authorized by NWP D are not improperly divided into smaller sections to avoid an individual permit. Temporal and cumulative impacts will be evaluated using the 10 criteria identified in paragraph 2 of Section D, District Engineer's Decision. The Corps declines to change the text regarding the requirement for no changes in pre-construction contours, because that has been a BMP that has helped ensure that most utility line activities result in temporary impacts. The Corps applies the definitions of ``single and complete linear project'' to NWP D activities and to other NWPs that authorize utility lines to determine which activities can be authorized by an NWP and which activities require individual permits. The Corps also implements 33 CFR 330.6(d), which addresses the use of individual permits with NWPs. Several commenters stated that BMPs should be site-specific and imposed as special conditions, if necessary, and not standardized in the text of NWP D. One commenter said that the inclusion of standards and BMPs would likely impede the objective of the NWP program by causing delays and increasing paperwork. This commenter asserted that attempting to establish national standards could cause conflicting requirements between the NWP and Clean Water Act Section 401. The Corps agrees that most BMPs are site-specific and should be identified for specific utility line activities. Best management practices may also vary by region and by aquatic resource type. Best management practices that are necessary to ensure that activities authorized by NWP D have no more than minimal adverse environmental effects are more appropriately identified by district engineers and required through activity-specific conditions added to the NWP authorization or through the section 401 water quality certification process. One commenter said that the Corps should adopt a policy of early consultation with the tribes and other interested parties for these types of projects over and above the NHPA section 106 process to avoid litigation, and other costly delays. This commenter also requested the Corps require consent on projects impacting tribes. One commenter recommended evaluating the direct, indirect, and cumulative effects on treaty reserved resources, including anadromous salmonids and their habitat to fully understand the potential extent of resource impacts. The Corps consults with tribes when necessary to ensure that activities authorized by an NWP comply with general condition 17, tribal rights. As part of this rulemaking, Corps districts have consulted and coordinated with tribes to identify regional conditions and coordination processes to ensure protect tribal rights, as well as tribal trust resources. Activities authorized by NWPs do not require prior consent from tribes. One commenter said that the Corps should end the practice of counting temporary impacts associated with matting for moving heavy machinery over a wetland, as a loss of greater than \1/10\-acre, which triggers a requirement to submit a PCN. One commenter stated the Corps districts should maintain consistency with the PCN thresholds and should not be allowed to add regional conditions to this NWP that undercuts the reduction in PCN thresholds in this NWP. This commenter said that regional conditions cause confusion and inefficiencies, especially if the linear infrastructure crosses into multiple Corps districts. The determination regarding whether the use of matting during utility line activities authorized by NWP D causes a loss of waters of the United States that may require a PCN is more appropriately made by district engineers on a case-by-case basis. Division engineers can add regional conditions to[[Page 2820]]this NWP that replace PCN thresholds that were removed, if they determine those PCN thresholds are necessary to ensure that this NWP authorizes only those activities that have no more than minimal adverse environmental effects. Regional conditions are intended to address regional differences in aquatic resource functions, so there may be some inconsistency that must be dealt with, especially for utility lines that run through multiple states or Corps districts. One commenter said that water mains are known to exceed the non-oil and gas pipeline diameters, identified in the preamble as 3 to 24 inches, as they may be 6 feet or wider. This commenter stated the Corps did not provide a robust analysis of the lengths of the various utility line, nor did they provide the total national mileage for these lines, as they could be quite long and have similar types of impacts as oil or gas pipelines. A few commenters recommended ***removing*** natural gas pipelines (i.e residential lines), hydrogen transport lines for clean energy solutions, and local, intrastate utility lines operated as an independent municipally-owned distribution system from NWP 12, because they are typically similar or smaller in size with respect to materials, location, installation footprint, and constructed along with water and wastewater pipelines. The intent of the preamble discussion in the 2020 Proposal regarding the proposal to issue separate NWPs for oil or natural gas pipelines, electric utility lines and telecommunications lines, and utility lines for water and other substances was to illustrate some of the differences among those utility line sectors. The discussion of pipeline diameters has no relevance to the text of these NWPs, or to the conditions that apply to those NWPs. Utility line activities authorized by NWP D can be used to convey hydrogen, and for local distribution of water, sewage, wastewater, and other substances. One commenter expressed concerns regarding the proposed issuance of NWP D to authorize utility line activities that carry wastewater. This commenter stated that distribution systems for wastewater reuse applications should be assumed to carry highly toxic and potentially hazardous substances that would degrade soils and groundwater if leaked or spilled. One commenter said that allowing activities under NWP D within or under coastal zone waters and wetlands will impermissibly degrade water quality, which is inconsistent with Section 404(e) of the Clean Water Act. One commenter stated that the NWP should be modified to require access roads to be built in accordance with local or state standards. Prior versions of NWP 12 have authorized utility line activities that carry wastewater, so this is not a new issue for the NWP program. General condition 14 requires proper maintenance of activities authorized by NWPs, so utility lines carrying wastewater should minimize the potential for leaks and spills. The Corps does not have the authority to regulate leaks or spills from utility lines. Leaks and spills are more appropriately addressed through federal, state, and local laws that are administered by other federal agencies, or state or local government agencies. This NWP can be used to authorize utility line activities for water and other substances in coastal zones. Local and state governments are responsible for ensuring that access roads are constructed in accordance with their standards. Proposed NWP D is issued as NWP 58 with the modification discussed above.H. Responses to Comments on the Nationwide Permit General Conditions GC 1. Navigation. The Corps did not propose any changes to this general condition. The Corps did not receive any comments on this general condition. The general condition is adopted as proposed. GC 2. Aquatic Life Movements. The Corps did not propose any changes to this general condition. One commenter noted that some project proponents bury the bottom portion of larger culverts to allow fish passage and create a natural bottom for habitat. One commenter expressed support for the Corps' retention of the existing definition given the wide variability of geomorphic and hydrologic settings in which NWP activities are conducted. One commenter stated that the Corps' preference for bottomless culverts, one-barrel culverts, or bridges should be explained. Another commenter said that in the absence of special concerns, such as endangered species, there should not be a preference for bottomless culverts. One commenter remarked that the text of this general condition is insufficient without specific monitoring and enforcement protocols to ensure that effects of NWP activities on aquatic life movements are no more than minimal. The Corps acknowledges that burying the bottom portion of a larger culvert and creating a natural bottom for habitat is an acceptable approach for complying with this general condition. The Corps appreciates the commenter's support for providing flexibility in this general condition for addressing variations in the geomorphic and hydrologic settings in which NWP activities are conducted. The preference for bottomless culverts is based on the ability of bottomless culverts to facilitate the continuity of aquatic life movements, including during low-flow conditions. The general condition does not mandate the use of bottomless culverts. Bottomless culverts can be beneficial to a wide variety of aquatic species, not just endangered or threatened species. Bottomless culverts can provide connectivity for a wide variety of species, including aquatic species that provide important ecosystem functions and services, and aquatic species that have economic and recreational value. District engineers retain the authority to conduct compliance inspections to ensure that permittees comply with this general condition. In most circumstances, compliance monitoring is sufficient to determine compliance with this general condition, instead of requiring monitoring and data collection over a period of time. The general condition is adopted as proposed. GC 3. Spawning Areas. The Corps did not propose any changes to this general condition. One commenter expressed support for the Corps' reissuance of this general condition without changes. The Corps appreciates the support for the reissuance of this general condition. The general condition is adopted as proposed. GC 4. Migratory Bird Breeding Areas. The Corps did not propose any changes to this general condition. The Corps did not receive any comments on this general condition. The general condition is adopted as proposed. GC 5. Shellfish Beds. The Corps did not propose any changes to this general condition. The Corps did not receive any comments on this general condition. The general condition is adopted as proposed. GC 6. Suitable Material. The Corps did not propose any changes to this general condition. One commenter stated that the condition should be refined to align with state water quality standards, specifically relative to nutrients and nutrient loading. Concerns about compliance with applicable state water quality standards or requirements are more appropriately addressed through the water quality certification requirements for proposed discharges of dredged or fill material into waters of the United States. The general condition is adopted as proposed. GC 7. Water Supply Intakes. The Corps did not propose any changes to this general condition. One commenter expressed support with reissuance of[[Page 2821]]the GC without change. The Corps acknowledges this commenters support for the reissuance of this general condition. The general condition is adopted as proposed. GC 8. Adverse Effects from Impoundments. The Corps did not propose any changes to this general condition. The Corps did not receive any comments on this general condition. The general condition is adopted as proposed. GC 9. Management of Water Flows. The Corps did not propose any changes to this general condition. The Corps did not receive any comments on this general condition. The general condition is adopted as proposed. GC 10. Fills Within 100-Year Floodplains. The Corps did not propose any changes to this general condition. A few commenters stated that the Corps should prohibit the use of NWPs and many other activities in 100-year floodplains and high-risk hurricane evacuation zones because of increasing risks of climate change and sea level rise. One commenter stated that the Corps' requirement in the condition to comply with FEMA-approved state or local floodplain management requirements is insufficient to ensure that authorized activities have no more than minimal adverse environmental effects and comply with the Clean Water Act, the Endangered Species Act, and the National Environmental Policy Act. One commenter said that ``high impact'' NWPs should be prohibited from use in floodplains and that individual permits should be required for those activities. this commenter also stated that this general condition should be revised to prohibit the use of certain NWPs to authorize discharges of dredged or fill material into waters of the United States that result in permanent above-grade fills in mapped 100-year floodplains or floodways, in order to comply with Executive Order 11988, Floodplain Management. The Corps does not have the authority to regulate activities in 100-year floodplains or high-risk hurricane evacuation zones, except for discharges of dredged or fill material into waters of the United States that may be located within those floodplains or evacuation zones. The primary responsibility for determining zoning and ***land*** use matters, including development activities in 100-year floodplains and high-risk hurricane evacuation zones, lies with state, local and tribal governments (see 33 CFR 320.4(j)(2)). This general condition is consistent with the item 2 of Section E, Further Information, which states that the NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law. State and local governments are the entities that have primary responsibility for regulating ***land*** uses within floodplains and other areas. Under the discretionary authority provision at 33 CFR 330.1(d) and other provisions of the NWP regulations at 33 CFR part 330, division and district engineers can further condition or restrict the applicability of an NWP for cases where they have concerns for the aquatic environment under the Clean Water Act section 404(b)(1) Guidelines or for any factor of the public interest. There are two public interest review factors related to floodplains in the Corps' public interest review regulations at 33 CFR 320.4(a)(1) that could be used as a basis for exercising discretionary authority: Floodplain values and flood hazards. Nationwide permit activities, including discharges of dredged or fill material into waters of the United States within floodplains, comply with the Endangered Species Act through the requirements of NWP general condition 18. The National Environmental Policy Act is a procedural statute, and does not mandate any substantive floodplain management requirements. The Corps complies with NEPA requirements when it prepares the national decision documents for the issuance, reissuance, or modification of NWPs, and discusses potential impacts to flood hazards and floodplain values in its public interest review evaluation. The proposed NWPs, including general condition 10, are consistent with E.O 11988, Floodplain Management, with respect to the Corps' authority to regulate specific activities that may occur in floodplains (i.e , discharges of dredged or fill material into waters of the United State). In each national decision document for the final NWPs, the Corps considered potential impacts to floodplain values and flood hazards. The general condition is adopted as proposed. GC 11. Equipment. The Corps did not propose any changes to this general condition. One commenter expressed support for reissuance of the general condition with no change. The Corps appreciates this commenter's support for the reissuance of this general condition without change. The general condition is adopted as proposed. GC 12. Soil Erosion and Sediment Controls. The Corps did not propose any changes to this general condition. One commenter stated that the condition should be modified to reference specific erosion control standards or specifications that must be followed, particularly for projects that exceed an acre of ***land*** disturbance. Specific soil erosion and sediment control requirements vary among state and local governments and other entities, and are more appropriately determined on a case-by-case basis for specific NWP activities. Therefore, it would be inappropriate to establish national standards for erosion control. The general condition is adopted as proposed. GC 13. ***Removal*** of Temporary Structures and Fills. The Corps proposed to modify this general condition to apply to temporary structures. A few commenters expressed support for the addition of temporary structures to this general condition. A few commenters objected to the addition of temporary structures to this general condition, stating that their ***removal*** may cause more harm than leaving them in place because temporary structures are not all alike. One commenter requested a definition of ``temporary.'' In contrast, another commenter supported leaving the definition of ``temporary'' to the district engineer's discretion. One commenter requested that the Corps add preamble language to the final rule that states that the ***removal*** of structures should occur after they have fulfilled their intended purpose. This commenter further stated that the project proponent should determine when the structure has fulfilled its intended purpose. What constitutes a temporary structure should be determined on a case-by-case basis. Therefore, the Corps declines to define ``temporary'' for the purposes of this general condition. The Corps has changed the text of this general condition as it relates to temporary structures. The general condition now states that temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. The Corps recognizes that it might not be feasible to completely ***remove*** the structure after its use has been discontinued. For example, it might not be feasible to ***remove*** an entire piling from navigable waters after it is no longer needed, but the project proponent could ***remove*** that portion of the piling that extends above the bottom of the waterbody so that it no longer is an obstruction at the water surface. The Corps also acknowledges that attempting to ***remove*** a temporary structure in its entirety has the potential to cause more substantial adverse environmental effects than leaving a portion of the structure in place. The general condition is adopted with the modifications discussed above.[[Page 2822]] GC 14. Proper Maintenance. The Corps did not propose any changes to this general condition. No comments were received. The general condition is adopted as proposed. GC 15. Single and Complete Project. The Corps did not propose any changes to this general condition. One commenter expressed support for reissuance of this general condition with no change. The general condition is adopted as proposed. GC 16. Wild and Scenic Rivers. The Corps did not propose any changes to this general condition. No comments were received on this general condition. The general condition is adopted as proposed. GC 17. Tribal Rights. The Corps proposed to modify this general condition to restore the text that was in the general condition for the 2012 NWPs and prior NWPs to eliminate any confusion about the applicable standards that apply when considering potential impacts to tribal treaty rights when consulting with tribes, and when determining the applicability of an NWP for a proposed activity. The proposed changes to this general condition are also intended to clarify that the identification of a potential effect to a tribal right does not mean that a district engineer must exercise his or her discretionary authority to require an individual permit for a proposed activity. The proposed changes to this general condition were also intended to avoid any confusion between tribal consultation policies, tribal rights, and the requirements of the Corps' permitting authorities. Many commenters objected to the proposed changes to general condition 17 and many commenters expressed support for the proposed change. Many commenters stated that the 2017 general condition's use of the ``no more than minimal effects on'' standard is clearer than the ``impair'' standard the Corps proposes to revert to because the ``no more than minimal adverse effects'' standard used throughout the NWPs. One commenter stated that ``impair'' is a clearer standard. Many commenters asserted that use of ``no more than minimal effect'' threshold in the general condition is consistent with Section 404(e) of the Clean Water Act and would not be confusing to retain in the general condition. Several commenters remarked that a minimal effect determination is well established in guidance and regulation and use of the word ``impair'' provides no additional clarity. The Corps is returning the text of this general condition to the text that was in the 2012 NWPs and prior NWPs to eliminate any confusion about the applicable standards that apply when considering potential impacts to tribal treaty rights when consulting with tribes, and when determining the applicability of an NWP for a proposed activity. By using the word ``impair'' instead of ``no more than minimal adverse effects on'' the general condition will be clearer that the NWPs do not change existing tribal trust duties of the Corps, or the rights of tribes. Rather, the proposed changes to the general condition will serve as a guide to users when undertaking tribal consultations regarding the application of an NWP to a particular activity, and when developing protocols regarding tribal notification that build upon the existing Department of Defense, Army, and Corps tribal consultation policies. The Clean Water Act section 404(e) requirement that no activity authorized by an NWP may cause more than minimal adverse effects remains applicable in the context of potential effects to tribal rights, resources, or ***lands***. Many commenters said that the change in language would result in less protection for tribal rights and resources and is inconsistent with the Corps' trust obligations. Many commenters stated that the Corps provides no rationale for the proposed change considering its rationale for changing the language in 2017. A few commenters stated that tribes should receive copies of PCNs for all activities that occur on tribal ***lands*** or off-reservation areas where treaty rights are exercised. One commenter stated that the tribes should be allowed to make the ``no more than minimal effect'' determination. The change in the text of this general condition will not result in less protection for tribal rights and resources. The rationale for the proposed change was provided in the preamble to the 2020 Proposal (see 85 FR 57350). The 1998 Department of Defense American Indian and Alaska Native Policy continues to apply to the NWPs and other DA permits. The district engineer is authorized to determine whether a proposed NWP activity will result in no more than minimal individual and cumulative adverse environmental effects. Many commenters said they are opposed to ***removing*** ``tribal ***lands***'' and its definition from the suite of protected resources. Many commenters expressed opposition to ***removing*** ``protected tribal resources'' and its definition from the suite of protected resources. Many commenters stated that the proposed wording would only protect tribal treaty rights and not all tribal rights. A few commenters suggested that the definition of tribal rights be moved to the text of general condition 17. One commenter said that the change in general condition 17 would not affect the Corps' tribal trust responsibilities. One commenter recommended that the Corps delete unnecessary definitions and should only retain definitions for ``tribal rights'' and ``tribal ***lands***'' as they pertain to general condition 17. Protection of tribal ***lands*** will continue through the implementation of the 1998 Department of Defense American Indian and Alaska Native Policy. ``Protected tribal resources'' is an ambiguous term and ***removal*** of that term from the general condition will result in a clearer, more enforceable general condition with less risk of disputes and litigation concerning whether particular resources are protected tribal resources. The Corps is retaining the definition of ``tribal rights'' in the ``Definitions'' section of these NWPs (Section F). The Corps is also retaining the definition of ``tribal ***lands***'' in Section F of the NWPs. Many commenters said that ``identification of a potential effect to a tribal right does not mean that a district engineer must exercise his or her discretionary authority to require an individual permit for a proposed activity,'' is contrary to statutory authority and the Corps' trust obligations. One commenter encouraged the Corps to engage prospective applicants for projects that have a greater potential to affect tribal rights in an optional pre-application meeting with the tribes prior to submittal of an NWP verification request. One commenter said that the general condition should include a statement requiring the Corps to conduct meaningful consultation with potentially impacted tribes in accordance with tribal protocols. District engineers have the final decision-making authority as to whether a proposed NWP activity that requires DA authorization qualifies for NWP authorization. District engineers can coordinate with tribes to help make these decisions, including whether a proposed NWP activity complies with general condition 17. If a district engineer holds a pre-application meeting with a project proponent, he or she has the discretion to invite tribal representatives to attend the meeting. When conducting government-to-government consultation with tribes, district engineers endeavor to conduct meaningful consultation with tribes. One commenter suggested revising general condition 17 to read as follows: ``No NWP activity may cause more than[[Page 2823]]minimal adverse effects to tribal rights, including treaty rights, protected tribal resources such as ceded territory, any sacred/cultural site/landscape or tribal ***lands***, as determined by any concerned tribe(s).'' Another commenter recommended revising this general condition to read as follows: ``No activity or its operation may cause adverse effects on tribal rights (including, but not limited to, reserved water rights and treaty rights), protected tribal resources, or tribal ***lands***.'' As discussed above, the Corps is adopting the proposed text of general condition 17. Several commenters said that the change in language does not support the Corps' rationale for the NWPs in light E.O 13783, ``Promoting Energy Independence and Economic Growth.'' A few commenters stated that the change in language would violate E.O 13175. One commenter suggested that the condition should include a statement requiring the project proponent to obtain consent from potentially impacted tribes for the NWP activity. One commenter requested a definition of ``impair.'' One commenter suggested that the Corps provide an approved list of tribal entities. One commenter suggested that the Corps provide guidance and processes relative to consultation and timelines. General condition 17 was not discussed in the report issued by the Office of the Assistant Secretary of the Army (Civil Works) in response to E.O 13783. This change in the text of general condition 17 does not violate E.O 13175. The Corps continues to consult with tribes on proposed NWP activities when such consultation is warranted. The district engineer determines whether a proposed activity requiring DA authorization qualifies for NWP authorization, and consent from potentially impacted tribes is not required for that determination. The Corps does not believe it is necessary to develop an approved list of tribal entities. Corps districts are aware of the tribes they may need to consult with. The Bureau of Indian Affairs may be the appropriate entity to develop and maintain such a list. The Corps Regulatory Program follows a number of existing Department of Defense, Army, and Corps tribal consultation policies. Information on these tribal consultation policies are available at: [*https://www.usace.army.mil/Missions/Civil-Works/Tribal-Nations/*](https://www.usace.army.mil/Missions/Civil-Works/Tribal-Nations/). This general condition is adopted as proposed. GC 18. Endangered Species. The Corps proposed to modify this general condition to make changes to be consistent with the U.S Fish and Wildlife Service's (FWS) and National Marine Fisheries Service's (NMFS) Endangered Species Act (ESA) section 7 consultation regulations that were published in the Federal Register on August 27, 2019 (84 FR 44976). Those regulations amended the definition of ``effects of the action'' at 50 CFR 402.02 by ***removing*** the term ``indirect effects.'' Several commenters supported the proposed changes to ensure that general condition 18 aligns with the current ESA implementing regulations at 50 CFR part 402. A few commenters suggested that the Corps incorporate the new ESA section 7 regulation definitions directly into the general condition rather than by referencing provisions in the Code of Federal Regulations. These commenters also suggested adding a definition for ``action area'' to the text of the general condition. The Corps believes that it is more appropriate to reference the current ESA section 7 regulations in the general condition rather than copying the text of the applicable provisions into the general condition itself. During the process of determining whether a proposed NWP activity ``may affect'' listed species or critical habitat, the Corps will utilize the definition of ``action area'' at 50 CFR 402.02 and there is no need to provide the definition of that term in the text of general condition 18. Several commenters objected to the ***removal*** of ``direct effects'' and ``indirect effects'' definitions from the general condition and asserted that ESA section 7 consultation compliance will not be achieved without the analysis of the effects and/or would cause significant adverse impacts to endangered species. One commenter expressed opposition to the proposed change to general condition 18 because he or she is opposed to the 2019 amendments to the U.S FWS's and NMFS's ESA section 7 regulations. One commenter stated that the Corps must seek concurrence from the U.S FWS or NMFS for any ``no effect'' determination. The terms ``direct effect'' and ``indirect effect'' are no longer used in 50 CFR part 402. When the district engineer evaluates a PCN for a proposed NWP activity to determine whether the proposed activity ``may affect'' listed species or critical habitat, he or she applies the definition of ``effects of the action'' at 50 CFR 402.02, as well as the U.S FWS's and NMFS's regulations for identifying activities that are reasonably certain to occur (50 CFR 402.17(a)) and identifying the consequences caused by the proposed action (50 CFR 402.17(b)). The ESA section 7 consultation handbook issued by the U.S FWS and NMFS in 1998 states that a federal agency is not required to obtain written concurrence from the U.S FWS or NMFS for its ``no effect'' determinations. One commenter stated that clarification is needed as to what is meant by non-Federal permittees that require pre-construction notification under paragraph (c) of this general condition. A few commenters said that the general condition only requires project proponents to submit a PCN if a proposed activity might affect a species or its critical habitat, which ignores the Corps responsibility to conference on species proposed for listing. These commenters suggested revising this general condition to include proposed species. Several commenters requested clarification of the term ``in the vicinity'' in paragraph (c) of this general condition. One commenter said that the Corps inappropriately relies on information contained in the PCN to make its effect determinations and must independently verify the potential for a listed species to be affected. Generally speaking, a non-federal permittee is a permittee that is not a federal agency. There may be limited circumstances where a non-federal agency might be considered as having ESA section 7 obligations similar to those of a federal agency. For example, the Federal Highway Administration may assign a state Department of Transportation the responsibility for complying with non-NEPA environmental statutes such as the ESA. The Corps has modified paragraph (c) of this general condition to be consistent with 33 CFR 330.4(f)(2), which states non-federal permittees shall notify the district engineer if any Federally listed (or proposed for listing) endangered or threatened species or critical habitat might be affected or is in the vicinity of the project. The Corps also added ``critical habitat proposed for such designation'' to paragraph (c). These changes are necessary for species proposed for listing and critical habitat proposed for such designation because section 7(a)(4) of the ESA requires agencies to confer with the U.S FWS or NMFS on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 4 of the ESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. The Corps has modified the first sentence of paragraph (c) as follows: ``Non-federal permittees must submit a pre-construction notification to the district[[Page 2824]]engineer if any listed species or designated critical habitat (or species proposed for listing or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized.'' The Corps has added ``species proposed for listing'' and ``critical habitat proposed for such designation'' where appropriate in other sentences in this paragraph. When reviewing a PCN for a proposed NWP activity that might affect species proposed for listing or critical habitat proposed for such designation, or is located in critical habitat proposed for such designation, the district engineer will evaluate the effects of the proposed NWP activity on the species proposed for listing or the critical habitat proposed for designation. If the district engineer determines that the proposed NWP activity is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat, he or she will initiate a conference with the U.S FWS and/or NMFS in accordance with 50 CFR 402.10 If the district engineer determines that a conference is necessary, he or she will notify the non-federal applicant within 45 days of receipt of a complete PCN. The activity is not authorized by NWP until the district engineer has notified the project proponent that the requirements of ESA section 7 have been satisfied The Corps added ``or conference'' to the second to last sentence of paragraph (c) to address situations where the district engineer conducts an ESA section 7 conference with the U.S FWS or NMFS for a proposed NWP activity that may affect a species proposed for listing or proposed critical habitat. The Corps also modified paragraph (d) of this general condition to state that as a result of a conference with the U.S FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs. The Corps is adding ``or critical habitat proposed for such designation'' to this general condition to ensure that these NWPs do not authorize any activities that are likely to result in the destruction or adverse modification of proposed critical habitat. The general condition already prohibits the use of NWPs for any activity that is likely to jeopardize the continued existence of species proposed for listing. The prior exclusion of proposed critical habitat was an administrative oversight. The term ``in the vicinity'' for the purposes of paragraph (c) of this general condition cannot be defined at a national level. What constitutes ``in the vicinity'' can vary substantially by species, environmental setting, the medium in which the species lives (e.g , water, air, or in the ground), and other factors. When reviewing a PCN, the district engineer makes an independent determination of whether the proposed activity ``may affect'' listed species or designated critical habitat and thus requires ESA section 7 consultation. The district engineer relies in part on information in the PCN, but he or she will also utilize other information, including local knowledge of the area, and the species and the habitats in which the listed species lives in. One commenter said general condition 18 should require PCNs for activities authorized by NWPs 3, 12, 13, 14, 21, 39, 44 and 48. One commenter stated that the Corps must not rely solely on permittees submitting PCNs to comply with its ESA obligations. One commenter suggested revising the general condition to state that the ESA section 7 consultation for an NWP activity will cover the entire project, to clarify that the entire action area must be examined and not just the activities on ***lands*** under the Corps' jurisdiction. All activities authorized by NWPs 21, 39, and 44 require PCNs to district engineers. The district engineers will review those proposed activities and determine whether ESA section 7 consultation is required. Activities authorized by NWPs 3, 12, 13, 14, and 48 require PCNs under specific circumstances, and district engineers will review those PCNs to identify proposed activities that ``may affect'' listed species or designated critical habitat. For those activities that do not require PCNs under the text of those general permits, paragraph (c) applies when the project proponent is a non-federal permittee. If any listed species or designated critical habitat might be affected or is in the vicinity of the proposed NWP activity, or if the proposed NWP activity is located in designated critical habitat, then the project proponent is required to submit a PCN so that the district engineer can determine whether the proposed activity ``may affect'' listed species or designated critical habitat. When determining the scope of the ESA section 7 consultation, the district engineer applies the U.S FWS's and NMFS's regulations at 50 CFR part 402, including the definitions of ``action area'' and ``effects of the action.'' One commenter recommended that the Corps adhere to the 45-day review time to determine whether a proposed NWP activity ``may affect'' or will have ``no effect'' on listed species. Alternatively, this commenter suggested that the review period not exceed 90 days under any circumstances. One commenter expressed support for the use of regional programmatic ESA section 7 consultations to satisfy the requirements of general condition 18. Paragraph (c) of general condition 18 already requires the district engineer to notify the non-federal applicant within 45 days of receipt of a complete PCN whether the proposed activity will have ``no effect'' in listed species or designated critical habitat or where it ``may affect'' listed species or designated critical habitat and require section 7 consultation with the U.S FWS and/or NMFS. If the district engineer has to conduct section 7 consultation with the U.S FWS or NMFS, the consultation process may take longer than 90 days. Formal section 7 consultations conclude within 90 days after initiation unless the timeframe is extended in accordance with the section 7 regulations at 50 CFR 402.14(e). For informal consultations, the U.S FWS and NMFS are required to provide written concurrence or non-concurrence with the federal agency's ``may affect, not likely to adversely affect'' determination within 60 days, unless an extension occurs (see 50 CFR 402.13(c)(2)). The Corps cannot issue the NWP verification until the section 7 consultation is completed and the applicant cannot proceed without receiving a verification from the Corps as provided for in paragraph (a)(2) of general condition 32 because compliance with ESA cannot be waived. The Corps will continue to utilize regional programmatic consultations for the NWPs, and work with the U.S FWS and NMFS to develop new regional programmatic consultations. One commenter suggested changing paragraph (g) of general condition 18 to advise project proponents to only use the U.S FWS's IPaC website at ([*http://ww.fws.gov/ipac*](http://ww.fws.gov/ipac)) because other websites are usually outdated. This commenter also recommended requiring project proponents to append the IPaC output document to their consultation package. One commenter requested that the text of the general condition be modified to include specific instructions on the process for ESA Section 7 consultation where the Corps has limited regulatory authority, such linear projects where the Corps' jurisdiction is limited to crossings of jurisdictional waters and[[Page 2825]]the crossings are separated by upland areas. Project proponents should be allowed to use whatever information that can help them determine whether the PCN threshold in paragraph (c) of general condition 18 is triggered. The U.S FWS's IPaC tool is just one tool that might provide useful information to prospective permittees. There may be other tools, such as databases and websites managed by state and local governments and non-governmental organizations that may be helpful in determining whether a proposed NWP activity might affect listed species, if listed species are in the vicinity of a proposed activity, or if the activity is located in designated critical habitat. This includes listed species under the jurisdiction of the NMFS, which are not included in IPaC. The Corps does not believe that there should be a requirement to the output from IPaC in the PCN because not all listed species are included in that information system. For linear projects, such as various types of utility line activities authorized by NWPs 12, 57, and 58, the Corps applies the ESA section 7 regulations at 50 CFR part 402, including the definition of ``effects of the action'' and other provisions in determining whether a proposed NWP activity ``may affect'' listed species or designated critical habitat, and for initiating ESA section 7 consultation for those proposed activities where the district engineer makes a ``may affect'' determination. If ESA section 7 consultation is required for activities authorized by NWPs 12, 57, and 58, the Corps and U.S FWS and/or NMFS work together on a comprehensive review of the overall project in accordance with the definition of ``effects of the action'' and other provisions of 50 CFR part 402, including the 2019 amendments the U.S FWS and NMFS made to those regulations (see 84 FR 44976). For ESA section 7 purposes where the Corps has a limited regulatory role under the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899, the Corps, with the assistance of the permit applicant, can provide the U.S FWS or NMFS with a biological assessment that evaluates the larger project as a whole but that clearly distinguishes between areas and effects subject to the Corps' jurisdiction and areas and effects outside of its jurisdiction. If the proposed activity requires formal ESA section 7 consultation, the U.S FWS and NMFS can issue an incidental take statement for a biological opinion where, in accordance with ESA section 7(b)(4)(iv) they can assign responsibility of specific terms and conditions of the incidental take statement to the Corps, the applicant, or both taking into account their respective roles, authorities, and responsibilities (see 84 FR 44977). A few commenters said that it is likely activities are occurring that are not in compliance with general condition 18 because the Corps does not require PCNs for all activities. One commenter stated, with regard to ESA-listed species, PCNs should not only include the immediate area, rather the entire area impacted by NWP activities, which must be consulted on programmatically with the U.S FWS. This commenter provided an example of studies have shown that pollutants and sediments can impact critically imperiled mussels up to 10 river miles from the impact location and said that ESA section 7 consultations should include the evaluation of 10 river miles of potential effects from the NWP impact location and analyses of cumulative effects as well. In order to obtain NWP authorizations, project proponents must comply with all terms and conditions of the NWPs (see 33 CFR 330.1(c)), including general condition 18. If a project proponent does not comply with the requirements of general condition 18, including the PCN requirements in paragraph (c) of that general condition, the activity is not authorized by an NWP. When determining whether a proposed NWP activity may affect listed species or designated critical habitat, the district engineer applies the regulations issued by the U.S FWS and NMFS at 50 CFR part 402, including the definition of ``effects of the action'' and other provisions the determine the scope of the ESA section 7 consultation and analysis of effects or consequences This general condition is adopted with the modifications discussed above. GC 19. Migratory Birds and Bald and Golden Eagles. The Corps proposed to revise the wording of this general condition to clarify that members of the regulated public should determine for themselves, with the assistance of the U.S Fish and Wildlife Service, what ``take'' permits, if any, they might require under the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. This General Condition makes clear that Project Proponents are responsible for complying with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, including obtaining any ``take'' permits that may be required under the U.S Fish and Wildlife Service's regulations issued under those statutes. Several commenters expressed support for making no changes to this general condition. One commenter noted that even though the Solicitor's Opinion has been vacated, the Corps should move text from the preamble to the general condition if reforms to the Migratory Bird Treaty Act are finalized by the administration before the final NWPs are issued. One commenter said that applicants should be encouraged to coordinate with wildlife agencies. Several commenters stated that reference to the Solicitor's Opinion in the preamble should be stricken because it was recently vacated by a federal district court. The text of the general condition is sufficient to address the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act without moving text from the preamble of the proposed rule to the general condition. Project proponents can coordinate their proposed projects with federal and state wildlife agencies. There is no need to strike the text that was in the preamble to the 2020 Proposal because it was background used to solicit public comment, and it was current at the time the proposal was published in the Federal Register. This general condition is adopted as proposed. GC 20. Historic Properties. The Corps proposed to modify paragraph (c) of this general condition to state that the district engineer's identification efforts for historic properties shall be commensurate with potential impacts. The Corps also proposed to modify paragraph (d) of this general condition to inform non-federal permittees that if pre-construction notification is required under paragraph (c) of this general condition, then he or she shall not begin the NWP activity until the district engineer has determined the proposed activity has no potential to cause effects to historic properties or has completed NHPA section 106 consultation. Paragraph (d) requires the district engineer to notify the non-federal applicant within 45 days of receipt of a complete PCN whether NHPA section 106 consultation is required. Several commenters expressed support for the proposed changes to this general condition. A few commenters suggested adding language to the general condition to require disclosure of the qualifications of the person who would make an effect determination for the purposes of Section 106 of the National Historic Preservation Act (NHPA). That individual would need to satisfy the Secretary of the Interior's Standards for Professional Qualifications in Archaeology and Historic Preservation.[[Page 2826]] The Corps does not believe it would be appropriate to add text to this general condition to require disclosure of the qualifications of people making effects determinations for the purposes of section 106 of the NHPA. Effect determinations may be made by a variety of agency officials, including Corps district staff. Many commenters stated that this general condition does not comply with the NHPA and does not satisfy the Corps Section 106 obligations with regards to the NWPs as it unlawfully delegates its Section 106 responsibilities to non-federal permittees and establishes a review process that is not consistent with the Advisory Council on Historic Preservation's (ACHP's) regulations at 36 CFR part 800. A few commenters said that this general condition should not reference Appendix C to 33 CFR part 325, because Appendix C has been determined by the federal courts, the ACHP, and other federal agencies to be unlawful. One commenter expressed support for the Corps' reliance on Appendix C and its interim guidance, stating that they are generally consistent with the ACHP's regulations. This general condition does not delegate the Corps' section 106 responsibilities to permit applicants. The responsibility for making effect determinations under section 106 of the NHPA for NWP activities falls to the district engineer. For non-federal permittees, paragraph (c) of general condition 20 requires the submission of a PCN for a proposed activity that might have the potential to cause effects to historic properties. The Corps' regulations for complying with section 106 of the NHPA are found at Appendix C to 33 CFR part 325. Appendix C remains in effect as a counterpart regulation to 36 CFR part 800, and no federal court has invalidated Appendix C. A few commenters objected to this general condition, saying that it encourages applicants to consult with State Historic Preservation Officers (SHPOs), Tribal Historic Preservation Officers (THPOs) and tribes. These commenters said that the Corps cannot delegate its tribal consultation obligations to applicants. One commenter stated that the proposed changes to general condition 20 will impact Native American cultural resources. Paragraph (c) of this general condition encourages permit applicants to seek assistance from SHPOs, THPOs, and designated tribal representatives to help ensure compliance with this general condition. Seeking assistance is not equivalent to conducting consultation. Section 106 consultation remains the responsibility of the Corps. The requirements of general condition 20, plus the changes being made in this final rule, will ensure that section 106 consultation occurs for NWP activities that have potential to cause effects to Native American cultural resources that meet the definition of ``historic property'' in Section F, Definitions. Several commenters said that the proposed change to paragraph (c), which states that the district engineer's identification efforts for historic properties shall be commensurate with potential impacts, should be further revised for clarity. A few commenters expressed opposition to this proposed change to paragraph (c) and requested that it be removed in the final rule. Several commenters stated that the text in paragraph (c) should make clear that the evaluation is only associated with the extent of the Corps' jurisdiction. One commenter said that the proposed change gives the Corps justification to decline to identify certain historic properties if the district engineer determines that the property or properties will not be impacted by the proposed activity. A few commenters opined that the Corps fails to evaluate areas outside its jurisdiction, particularly with linear projects, with is contrary to current regulations. The change to paragraph (c) regarding the district engineer's identification efforts for historic properties is consistent with the ACHP's regulations at 36 CFR 800.4(b)(1) regarding the level of identification efforts. Section 800.4(b)(1) states that the federal agency should take into account the ``magnitude and nature of the undertaking and the degree of federal involvement, the nature and extent of potential effects on historic properties, and the likely nature and location of historic properties within the area of potential effects.'' When evaluating an NWP PCN, the district engineer will identify the permit area in accordance with the criteria in paragraph 1(d) of Appendix C to 33 CFR part 325. The Corps will evaluate direct and indirect effects caused by the proposed NWP activity. If an historic property is not directly or indirectly affected by the proposed NWP activity, the Corps does not have the authority to prevent effects to historic properties caused by activities outside of its control and responsibility. One commenter recommended that the Corps adhere to the 45-day review time or as an alternative change paragraph (c) of this general condition so that the district engineer's review of the PCN does not exceed 90 days. One commenter stated that language requiring an applicant to continue to wait beyond 45 days if they have not heard back from the Corps creates the potential for an indefinite delay. This commenter suggested adding a requirement for the district to establish a deadline for notifying the applicant on whether NHPA section 106 consultation is required. Paragraph (d) of general condition 20 states that for non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete PCN whether NHPA section 106 consultation is required. The section 106 consultation process may take longer than 45 days. The NWP verification cannot be issued and the project applicant cannot proceed with the proposed activities under Corps jurisdiction until the section 106 consultation process has been completed. A few commenters said that Corps districts often override the permittees' determination as to whether a PCN is required for a proposed activity under paragraph (c). One commenter recommended modifying or revising paragraph (a) of general condition 20 in a manner consistent with paragraph (a) of general condition 18 to focus on the threshold that triggers the requirement for section 106 consultation, rather than determinations made by district engineers once a PCN is submitted. One commenter recommended timely review of scopes of work and requested that the Corps make final determinations regarding scopes of review and not allow any revisions to those determinations. For an NWP activity, it is ultimately the district engineer's responsibility to determine compliance with section 106 of the NHPA. As additional information is revealed during the review of a PCN or during section 106 consultation, it may be necessary to change the scope of review to ensure compliance with the requirements of section 106 of the NHPA. The Corps has modified paragraph (a) of this general condition to state that ``no activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.'' One commenter said that clarification is needed on who are the non-federal permittees that need to submit PCNs under paragraph (c). One commenter remarked that the terms ``might have the potential to cause'' and ``potentially[[Page 2827]]eligible'' are vague terms and that Corps districts are applying these requirements inconsistently and more expansively than appropriate. One commenter said that the ``might have the potential'' standard is a higher threshold than the threshold set forth in the ACHP's regulations at 36 CFR part 800. As a general matter, a non-federal permittee is a permittee that is not a federal agency. There may be limited circumstances where a non-federal agency might be considered as having NHPA section 106 obligations similar to those of a federal agency. For example, the Federal Highway Administration may assign a state Department of Transportation the responsibility for complying with non-NEPA environmental statutes such as the NHPA. The purpose of the ``might have the potential to cause effects'' threshold in paragraph (c) of this general condition is to require submittal of PCNs for proposed NWP activities that might have a possibility of causing effects to historic properties, so that the district engineer can determine whether section 106 consultation is required for a proposed NWP activity. ``Potentially eligible'' is another threshold that is intended to provide an opportunity for further review to determine whether a historic property is present. These thresholds cannot be precisely defined, and involve some degree of subjectivity. One commenter stated that paragraph (b) of this general condition improperly designates other federal agencies as the lead with respect to Section 106 without their agreement. This commenter further noted that this might be problematic given the proposal not to require PCNs from federal permittees for proposed activities that might have the potential to cause effects to historic properties. Other federal agencies have their own obligations to comply with section 106 of the NHPA. If a proposed NWP activity being undertaken by another federal agency requires a PCN, paragraph (b) of this general condition requires the federal permittee to submit appropriate documentation demonstrating compliance with the requirements of section 106. After reviewing that documentation, the district engineer may notify the federal permittee that additional section 106 consultation may be necessary. Non-federal and federal permittees have different thresholds under this general condition because their responsibilities under section 106 are different. This general condition is adopted with the modifications discussed above. GC 21. Discovery of Previously Unknown Remains and Artifacts. The Corps did not propose any changes to this general condition. One commenter recommended reissuance of the general condition with no additional restrictive provisions. This general condition is adopted as proposed. GC 22. Designated Critical Resource Waters. The Corps did not propose any changes to this general condition. One commenter recommended revising this general condition to include state designated critical resource waters rather than deferring to Corps district engineers to designate certain waters at a later date. One commenter recommended adding proposed new NWPs C and D to the list of NWPs in paragraph (a) of this general condition. This commenter also suggested adding proposed new NWPs A and B to the list of NWPs in paragraph (b) of this general condition. Two commenters said that if the Corps ***removes*** the PCN requirements for federal permittees, federal agencies should still be required to submit PCNs for proposed activities in designated critical resource waters. After providing notice and an opportunity for public comment, the Corps is continuing to require the long-standing practice of allowing district engineers to add specific waters to this general condition. States that want waters of particular environmental or ecological significance to be subjected to this general condition should provide their recommendations to the appropriate district engineer for consideration. Since NWP 12 has been in paragraph (a) of this general condition since it was first adopted in 2000 (65 FR 12872), for consistency the Corps has added new NWPs 57 and 58 to this general condition. New NWPs 55 (seaweed mariculture activities) and 56 (finfish mariculture activities) require PCNs for all activities, so it is unnecessary to add these NWPs to the list of NWPs in paragraph (b) of this general condition. In addition, the Corps is retaining PCN requirements for federal permittees. This general condition is adopted with the modifications discussed above. GC 23. Mitigation. The Corps proposed to modify paragraph (d) of this general condition to establish a threshold for requiring compensatory mitigation for losses of stream bed that is similar to the threshold for wetlands in paragraph (c) of this general condition. The Corps proposed to add a \1/10\-acre threshold for requiring compensatory mitigation for losses of stream beds that require pre-construction notification, unless the district engineer determines on a case-by-case basis that compensatory mitigation should not be required because other forms of mitigation would be more environmentally appropriate and issues an activity-specific waiver of this requirement. A few commenters expressed support for the changes to this general condition. One commenter objected to the proposed changes and recommended that this general condition be reissued with no changes. One commenter stated that compensatory mitigation should not be required when compensatory mitigation is required by other federal or state laws, rules, or regulations. Another commenter said that the Corps should focus on improving consistency between districts on when compensatory mitigation is required for NWP activities. Changes to this general condition are necessary to address the ***removal*** of the 300 linear foot limit for losses of stream bed under NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52. District engineers impose compensatory mitigation requirements on specific activities authorized by NWPs to ensure that those activities result in no more than minimal individual and cumulative adverse environmental effects. If a proposed NWP activity is regulated by another federal agency or a state, tribal, or local agency, and that agency requires compensatory mitigation for that proposed activity, the district engineer may consider those compensatory mitigation requirements before determining whether additional compensatory mitigation is required for that activity. The Corps should not be imposing duplicative compensatory mitigation requirements when the resource concerns are already being addressed by another federal, tribal, state, or local agency. The Corps believes that federal and state regulatory programs should complement rather than duplicate one another (see 33 CFR 320.1(a)(5). Since aquatic resources can vary substantially across the country, different Corps districts may establish different compensatory mitigation requirements. One commenter disagreed that project proponents design projects to minimize losses of waters of the United States to qualify for NWP authorizations to avoid the cost of providing compensatory mitigation to offset the authorized losses. One commenter said that other forms of mitigation used for NWP activities should include best management practices, minimization measures, activities that result in improvement of wetland and stream habitat, and actions that improve water quality. Another commenter disagreed[[Page 2828]]that best management practices and other forms of mitigation are more environmentally preferable forms of mitigation, and that best management practices should be implemented during the design, construction, and operations stages of a project. The data the Corps collects on the impacts to waters of the United States authorized by the NWPs shows that 82 percent of verified impacts authorized by NWPs in 2018 are less than \1/10\-acre (see Figure 5.1 of the Regulatory Impact Analysis for this final rule). During 2018, only 5% of the verified impacts authorized by NWPs resulted in impacts to 0.25 acre to 0.5 acre. For those NWPs that have a qualitative limit in acres, a \1/2\-acre limit is the most common acreage limit. The small percentage of verified NWP activities that impact between 0.25 and 0.5 acre compared to the much larger percentage of verified NWP activities that impact less than \1/10\-acre demonstrates the reduction of impacts (i.e , minimization) that is incentivized by general condition 23. District engineers determine the compensatory mitigation requirements for specific NWP activities, and can require forms of mitigation other than compensatory mitigation to ensure that the authorized NWP activity results in no more than minimal individual and cumulative adverse environmental effects. The use of other forms of mitigation is consistent with the watershed approach to compensatory mitigation described in the Corps' regulations at 33 CFR 332.3(c). The use of best management practices and other forms of mitigation may be effective at reducing adverse environmental effects so that compensatory mitigation is not necessary to ensure that an NWP activity results in only minimal individual and cumulative adverse environmental effects. A couple of commenters said that compensatory mitigation cannot legally be used to make minimal adverse effects determinations and that Section 404(e) of the Clean Water Act does not state that mitigation will be considered to ensure activities would cause only minimal adverse environmental effects. These commenters objected to the use of compensatory mitigation to allow more impacts to waters and wetlands. One commenter stated that the Corps has not provided any scientific or factual evidence to conclude that compensatory mitigation helps ensure that NWP activities do not result in more than minimal adverse environmental effects. A couple of commenters said that compensatory mitigation does not adequately or fully replace wetland or stream bed losses. Several commenters said they do not support the use of mitigation as a means to allow more impacts and justify findings of no more than minimal adverse environmental effects. The use of compensatory mitigation and other forms of mitigation to ensure that activities authorized by an NWP result in no more than minimal individual and cumulative adverse environmental effects is codified in the Corps' NWP regulations at 33 CFR 330.1(e)(3). Section 404(e) of the Clean Water Act does not prescribe how the Corps is to ensure that the categories of activities authorized by general permits such as the NWPs will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment. Therefore, the Corps has discretion on how to comply with the requirement in the statute. Wetlands can be restored to improve the degree of ecological functions they provide (e.g , NRC 2001), to offset wetland losses authorized by the NWPs and other types of DA permits. Streams can also be restored to increase the degree of ecological functions they provide (e.g , Wohl et al. 2015), which can also be used to offset losses of stream functions caused by activities authorized by NWPs and other types of DA permits. One commenter stated that this general condition should require compensatory mitigation for all losses of wetlands, special aquatic sites, and stream beds authorized by an NWP, not just those losses exceeding \1/10\-acre that require PCNs. One commenter said that current compensatory mitigation requirements only replace, not improve, aquatic resources, and to protect tribal treaty rights, the Corps should require improvements of aquatic resources to ensure the successful recovery of salmon. Compensatory mitigation and other forms of mitigation are only required by district engineers when it is necessary to ensure that NWP activities result in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)), and the Corps has determined that \1/10\-acre is an appropriate threshold with respect to wetland mitigation. Compensatory mitigation can be provided through the restoration, enhancement, establishment, and protection of aquatic resources to offset losses of those functions caused by activities authorized by the NWPs and other types of DA permits. A compensatory mitigation credit is a unit of measure (e.g , a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site (see 33 CFR 332.2). Compensatory mitigation required for NWP activities can help improve aquatic resources that may assist in the successful recovery of salmon. One commenter said the Corps relies too heavily on mitigation banks and in-lieu fee programs to provide compensatory mitigation despite a large body of scientific evidence that concluded that wetland banks are ineffective and poorly monitored. A couple of commenters stated that mitigation banks and in-lieu fee programs do not replace lost functions and values at impact sites. One commenter said that the Corps relies on unrealized mitigation requirements to allow significant environmental harm to occur under the NWP program and that previous reports from the National Research Council and the Government Accountability Office have shown that mitigation under the NWP program has not proven successful and therefore, does not compensate for lost wetlands. Regulations for the establishment and use of mitigation banks and in-lieu fee programs to provide compensatory mitigation for activities authorized by the NWPs and other forms of DA authorization were issued by the Corps in 2008 (see 73 FR 19594). The 2008 rule establishes establish performance standards and criteria for the use of permittee-responsible compensatory mitigation, mitigation banks, and in-lieu programs to improve the quality and success of compensatory mitigation projects for activities authorized by Department of the Army permits. The 2008 mitigation rule incorporated many of the recommendations made by the National Research Council in its 2001 titled ``Compensating for Wetland Losses Under the Clean Water Act'' to improve the ecological outcomes of wetland compensatory mitigation projects. The 2005 Government Accountability Office report titled ``Wetlands Protection: Corps of Engineers Does Not Have an Effective Oversight Approach to Ensure That Compensatory Mitigation Is Occurring'' also included recommendations for improving the Corps' oversight and outcomes of compensatory mitigation projects performed by permittees, mitigation banks, and in-lieu-fee program sponsors, and the Corps incorporated those recommendations in the 2008 mitigation rule. One commenter said the NWP program should not be used to authorize activities that requiring compensatory mitigation and that project proponents should have to apply for individual[[Page 2829]]permits for activities requiring compensatory mitigation. One commenter stated that using mitigation to reduce impacts below a threshold of significance violates the National Environmental Policy Act. The use of compensatory mitigation for NWP activities is an important tool for authorizing activities that have no more than minimal individual and cumulative adverse environmental effects by NWP. Requiring individual permits for any NWP activity that requires compensatory mitigation would not provide any additional environmental protection because the ecological outcomes of compensatory mitigation projects is more dependent on site selection, planning, and implementation, as well as monitoring and adaptive management to address deficiencies in the compensatory mitigation project that impede the ecological success of that project. The type of DA authorization used to authorize a regulated activity is not linked to the ecological outcomes of compensatory mitigation projects. Under the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act, mitigation can be used to reduce project impacts so that they are not significant (see 40 CFR 1501.6(c)). A couple commenters recommended that an economic analysis be performed to evaluate the economic effects of the proposed changes to this general condition, to assess the costs of the additional time and resources needed to overhaul stream credit programs, evaluate losses to mitigation providers and contractors, and the capacity to determine if the Corps can reasonably implement the proposed changes. The changes to this general condition do not require an overhaul of stream credit programs. Compensatory mitigation credits, including stream credits, can be quantified in acres, linear feet, functional assessment units, or other suitable metrics of particular resource types (see 33 CFR 332.8(o)(1)). The preamble to the 2008 mitigation rule states that district engineers retain the discretion to quantify stream impacts and required compensatory mitigation in terms of area or other appropriate units of measure (see 73 FR 19633). This discretion also applies to the issuance of the NWPs by Corps Headquarters, to determine appropriate units of measure for efficient administration of the NWP program. Existing inventories of stream credits can be used to provide compensatory mitigation for losses of stream bed authorized by these NWPs. For those current inventories of stream credits quantified in linear feet or other linear metrics, the permittee and mitigation provider can engage in discussions to determine how many linear feet of stream credits are roughly proportional to the area of stream bed filled or excavated as a result of an activity authorized by an NWP. Each mitigation bank and in-lieu fee project has an approved mitigation plan, and that mitigation plan can be used to estimate how many linear feet of stream credits might be used to offset a specified number of acres or square feet filled or excavated as a result of an NWP activity. Over the years, there have been numerous changes to the Corps Regulatory Program, and each of those changes require some adjustment by Corps personnel, permit applicants, consultants, contractors, mitigation providers, and other people. One commenter recommended NWPs and/or regional conditions authorizing the use of compensatory mitigation, mitigation banks, and/or in-lieu fee programs be withdrawn. One commenter said that this general condition should be modified to state that out-of-kind mitigation is prohibited for losses of designated critical resource waters identified in general condition 22. Division engineers can add regional conditions to the NWPs to establish lower thresholds for stream compensatory mitigation, and for the use of mitigation banks, in-lieu fee programs, and permittee-responsible mitigation for activities authorized by NWPs. Out-of-kind mitigation may be beneficial to designated critical resource waters. Therefore, the Corps declines to make the recommended change to general conditions 22 or 23. Several commenters said that this general condition should be modified to require applicants to take all practicable steps to avoid and minimize effects to waters of the United States. One commenter stated that avoidance and minimization of waters of the United States during the planning and siting phases of project development are not appreciated or considered by regulatory agencies. Paragraph (a) of general condition 23 already requires the NWP activity to be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e , on site). A description of the mitigation measures being undertaken by the project proponent, including avoidance and minimization on the project site, in the PCN can assist the district engineer in his or her decision whether the proposed activity qualifies for NWP authorization. One commenter expressed support for allowing the district engineer to waive compensatory mitigation requirements for wetland losses if she or he makes an activity-specific determination that other forms of mitigation would be environmentally preferable. One commenter requested the Corps identify, at a national level, the minimum amount of compensatory mitigation required to offset resource losses. Several commenters said that compensatory mitigation should be required consistently for all NWPs with areal and linear thresholds. The Corps has retained the ability of district engineers to waive compensatory mitigation requirements for wetland losses when they determine that the proposed activity, without wetland compensatory mitigation, will result in no more than minimal individual and cumulative adverse environmental effect. Compensatory mitigation decisions are made on a case-by-case basis by district engineers, so it would be inappropriate to establish national minimums for compensatory mitigation requirements, or for all NWPs that have quantitative limits. One commenter stated that paragraph (c) should be modified to allow for protection, restoration, or enhancement of areas next to wetlands as compensatory mitigation, similar to the proposed language in paragraph (d). A couple of commenters said that a one-for-one impact-to-compensation ratio only works if all compensatory mitigation efforts are successfully implemented and the Corps monitors and enforces compensatory mitigation requirements. These commenters recommended modifying this general condition to clarify how the ecological outcomes of compensatory mitigation projects would be improved and how the Corps would ensure that no-net-loss of aquatic resources is achieved. The Corps' compensatory mitigation regulations at 33 CFR 332.3(i) allow district engineers to require the restoration, establishment, enhancement, and preservation, as well as the maintenance, of riparian areas and/or buffers around aquatic resources where necessary to ensure the long-term viability of those resources. This provision also applies to all types of DA permits, including the NWPs. There is no need to explicitly state this information in the text of the general condition. The Corps' compensatory mitigation regulations requires monitoring of compensatory mitigation projects, and for district engineers to take action to ensure that compensatory[[Page 2830]]mitigation projects achieve their objectives and offset the losses of waters of the United States. Adaptive management may be required to ensure that those compensatory mitigation objectives are met. The ecological outcomes of compensatory mitigation projects are more appropriately addressed on a case-by-case basis, through compliance efforts by district engineers. A couple commenters supported the continued use of a \1/10\-acre threshold for requiring compensatory mitigation and said that the threshold has been effective in encouraging avoidance and minimization of adverse effects to wetlands. Several commenters said that a one-for-one impact-to-compensation ratio should be required to compensate for all wetland losses to ensure no-net-loss, not just those losses that exceed \1/10\-acre. Several commenters remarked that the proposed \1/10\-acre threshold to require compensatory mitigation for losses of wetlands and stream bed does not achieve a goal of no-net-loss of aquatic resources. One commenter said no-net-loss should not be applied to areas that have been previously and heavily modified. The Corps is retaining the \1/10\-acre threshold for wetland compensatory mitigation in paragraph (c) of this general condition based on its experience administering the program. There is no requirement in Section 404 or the Clean Water Act, the Corps' regulations at 33 CFR parts 320 to 332, or the U.S EPA's 404(b)(1) Guidelines for no net loss of wetlands or other types of aquatic resources. For all DA permits, including the NWPs, compensatory mitigation requirements are determined on a case-by-case basis. Compensatory mitigation may be required by district engineers to ensure that an activity that requires authorization under section 404 of the Clean Water Act and/or sections 9 or 10 of the Rivers and Harbors Act of 1899 is not contrary to the public interest (see 33 CFR 332.1(d)). Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a section 404 permit complies with the Section 404(b)(1) Guidelines (see 33 CFR 332.1(c)(3)). One commenter said that paragraph (c) of this general condition should be modified to allow mitigation bank credits to be used at a one-for-one ratio rather than performing a functional analysis. A commenter stated that \1/10th\-acre may be too restrictive of a compensatory mitigation threshold in some Corps districts or watersheds and compensatory mitigation may not be required to achieve no more than minimal adverse environmental effects for certain NWP activities. Another commenter suggested the applicant be required to provide documentation of credit availability or credit reservation if proposing to satisfy compensatory mitigation requirements with credits from a mitigation bank. One commenter said that this general condition should be modified to state that mitigation bank credits are preferred where practicable, and to elucidate that mitigation banks are not practicable in the State of Alaska. Paragraph (c) of this general condition does not require the use of a functional analysis to determine whether mitigation bank credits can be used to provide compensatory mitigation for an NWP activity. District engineers have the discretion to waive the compensatory mitigation requirement for losses of greater than \1/10\-acre of wetlands, or to require another form of mitigation to ensure that the NWP activity results in no more than minimal individual and cumulative adverse environmental effects. If the district engineer determines that compensatory mitigation is required for a proposed NWP activity, the applicant can propose to use mitigation bank credits or in-lieu fee program credits to fulfill the compensatory mitigation requirement. The district engineer can require the applicant to provide a statement of credit availability, so that the applicant does not have to prepare a mitigation proposal for a permittee-responsible mitigation project. The framework for evaluating compensatory mitigation options, that is the use of mitigation bank credits, in-lieu fee program credits, or permittee-responsible mitigation, is provided in the Corps' regulations at 33 CFR 332.3(b). Mitigation banks can be practicable in the State of Alaska. One commenter requested clarification on PCN and compensatory mitigation requirements for NWP activities involving mechanized ***land*** clearing in ***forested*** wetlands for utility line rights-of-way since paragraph (i) of general condition 23 states that compensatory mitigation may be required for activities that convert a ***forested*** or scrub-shrub wetland to an herbaceous wetland. A commenter said that compensatory mitigation should be provided on-site or in the sub-basin where impacts occur. Consistent with paragraph (i) of this general condition, if a proposed NWP activity involves mechanized ***land*** clearing in a ***forested*** wetland, and it requires a PCN, the district engineer can require compensatory mitigation to ensure the proposed activity result in no more than minimal individual and cumulative adverse environmental effects. For an NWP activity that requires compensatory mitigation, the district engineer will determine whether on-site or off-site compensatory mitigation is required, and the appropriate geographic scale for consideration of off-site compensatory mitigation options. One commenter said that general condition 23 should clearly state whether compensatory mitigation would or would not be required for wetland and stream bed losses for NWP activities that do not require PCNs. One commenter recommended that compensatory mitigation be provided for all losses of wetland or stream bed that exceed \1/10\-acre, not just those losses requiring PCNs. A few commenters stated that compensatory mitigation for wetland and stream bed losses should be required at ratios greater than one-for-one to account for temporal loss and the difficulty of replacing wetlands and stream bed, and to ensure that habitat is recovered at a greater degree than it is being lost. One commenter said that there is no basis for wetlands and streams to have the same \1/10\-acre compensatory mitigation threshold. For those NWP activities that do not require PCNs, compensatory mitigation is not required because the district engineer is not notified of those activities and cannot add permit conditions to the NWP authorization in accordance with 33 CFR 332.3(k). The district engineer determines the appropriate amount of compensatory mitigation in accordance with the Corps' regulations at 33 CFR 332.3(f). As discussed below, in response to comments received on the proposed rule, the Corps is changing the threshold in paragraph (d) of this general condition from \1/10\-acre to \3/100\-acre. A few commenters stated that compensatory mitigation should only be required for the losses of jurisdictional wetlands and streams and compensatory mitigation should not be required for losses of ephemeral stream bed or losses of other non-jurisdictional waters. Several commenters said that compensatory mitigation should only be required for permanent impacts and that temporary impacts should not be counted in the \1/10\-acre threshold. One commenter suggested that this general condition should be modified to clarify if the \1/10\-acre threshold would be applied individually or cumulatively in cases where both stream bed and wetlands would be lost. Several commenters said the \1/10\-acre threshold in paragraphs (c) and (d) should be applied cumulatively so that any[[Page 2831]]combination of wetland and stream losses exceeding \1/10\-acre would require compensatory mitigation. Since ephemeral streams are excluded from Clean Water Act jurisdiction, (see 33 CFR 328.3(b)(3)), NWP authorization is not applicable to ephemeral streams. Compensatory mitigation is not required for losses of ephemeral stream bed, or for losses of any other non-jurisdictional waters. The \1/10\-acre and \3/100\-acre thresholds in paragraphs (c) and (d) of this general condition apply to losses of waters of the United States, as that term is defined in Section F of the NWPs (Definitions). These thresholds apply to single and complete projects authorized by the NWPs. Several commenters said it is important to maintain the Corps' flexibility as proposed to allow district engineers to determine that other forms of mitigation are appropriate or to waive mitigation requirements for specific NWP activities. Several commenters objected to allowing district engineers to waive compensatory mitigation requirements. One commenter said that if federal agencies are not required to submit PCNs, those agencies would not have to provide compensatory mitigation for wetland or stream bed losses that exceed \1/10\-acre because the \1/10\-acre threshold proposed in paragraphs (c) and (d) only applies to NWP activities that require PCNs. Several commenters said that paragraphs (c) and (d) should be modified to state that advanced mitigation is preferred. The general condition retains flexibility for district engineers to determine the appropriate mitigation for a particular NWP activity to ensure that the activity causes no more than minimal individual and cumulative adverse environmental effects. After the district engineer reviews a PCN, he or she may determine that no mitigation is necessary for the proposed activity to be authorized by an NWP. For these 16 final NWPs, federal agencies are subjected to the same PCN requirements as non-federal permittees. They are also subject to the mitigation requirements in this general condition. Advance compensatory mitigation can be used to satisfy compensatory mitigation requirements added to NWP authorizations by district engineers. One commenter voiced support for the addition of a \1/10\-acre threshold for requiring compensatory mitigation for losses of stream beds that require pre-construction notification. Another commenter expressed support for the addition of a compensatory mitigation threshold for stream bed losses represented in either linear feet or acres. One commenter stated that compensatory mitigation for stream bed losses should result in net gains in area or functions. A few commenters said that headwater streams are fundamentally different and offer different services than non-tidal wetlands and therefore should not be regulated the same. Additionally, minimal adverse environmental effects are different for distinct aquatic resources. One commenter opposed the elimination of ``other open waters'' from paragraph (d) and said it would create uncertainty for when compensatory mitigation would be required for losses of other open waters. A couple commenters said that reducing compensatory mitigation requirements also reduces the incentive to minimize impacts. Stream compensatory mitigation projects are expected to result in increases in stream functions, since the purpose of compensatory mitigation is to offset unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Stream compensatory mitigation projects produce credits that represent the accrual or attainment of stream functions at a compensatory mitigation site, consistent with the definition of ``credit'' in the Corps' regulations at 33 CFR 332.2 While headwater streams exhibit some differences in structure and function than downstream streams in a tributary network, when those headwater streams are considered waters of the United States, they are subjected to the same regulatory requirements as other waters of the United States. Headwater streams have no special status under the Clean Water Act or its implementing regulations, including the 404(b)(1) Guidelines issued by the U.S EPA. The only streams that are special aquatic sites under the 404(b)(1) Guidelines are riffle and pool complexes (see subpart E of 40 CFR part 230). When reviewing a PCN for a proposed activity that may cause the loss of headwater stream bed, the district engineer will consider the functions being performed by the headwater streams. The Corps proposed to redesignate paragraph (d) of the 2017 general condition 23 as paragraph (e) of the 2021 general condition 23, so it did not propose to ***remove*** ``other open waters'' from the paragraph that discusses the use of riparian areas next to open waters as compensatory mitigation for NWP activities. The Corps did not propose to reduce any compensatory mitigation requirements. Several commenters stated the \1/10\-acre stream compensatory mitigation threshold is too broad to apply nationally. One commenter recommended establishing thresholds for requiring compensatory mitigation for stream bed losses through regional conditions instead of general condition 23 to account for the regional variability of streams across the United States. Several commenters stated that implementation of a \1/10\-acre threshold for stream compensatory mitigation does not achieve a goal of no-net-loss of aquatic resources. A couple commenters said that paragraph (d) allows for incremental losses of stream bed, which is contrary to the Corps' no-net-loss objective and is inconsistent with restoring habitat necessary to provide sustainable fish populations. One commenter stated that reductions in the amount of required mitigation to compensate for headwater stream losses would have large impacts on downstream waters, including large rivers. One commenter said that implementing a \1/10\-acre threshold for requiring compensatory mitigation for stream bed losses would increase the regulatory burden on downstream applicants due to declining water quality. Since the NWPs authorize activities across the country, paragraph (d) of this general condition establishes a national threshold for stream compensatory mitigation, but there is flexibility in the general condition to allow district engineers to make activity-specific determinations on whether stream compensatory mitigation should be required for activities that result in the loss of stream bed. Division engineers can add regional conditions to the NWPs to establish a lower threshold for requiring stream compensatory mitigation. As discussed above, there is no requirement for no net loss of stream bed in the Clean Water Act or the Corps' regulations for implementing the Clean Water Act. Previous versions of this general condition in prior NWP rulemakings did not have a threshold for compensatory mitigation for losses of stream bed. A stream compensatory mitigation threshold was added to this general condition to provide an additional mechanism to help ensure that activities authorized by the 10 NWPs from which the 300 linear foot limit for losses of stream bed was removed result in no more than minimal individual and cumulative adverse environmental effects. Similar to the \1/10\-acre wetland compensatory mitigation threshold, this compensatory mitigation threshold for stream bed losses is expected to provide incentives for project proponents to design their[[Page 2832]]projects to minimize losses of stream bed, and help sustain downstream functions and water quality. One commenter said that stream compensatory mitigation should only be required for new impacts associated with the maintenance or replacement of previously authorized structures. Another commenter stated that given the difficulties to achieve successful stream mitigation, requiring compensatory mitigation for stream bed losses greater than \1/10\-acre will be unrealistic in areas where permittee-responsible mitigation is the only option available. A few commenters suggested that thresholds reflect what would be required to ensure activities result in only minimal adverse environmental effects. Many commenters said that the \1/10\-acre threshold for requiring compensatory mitigation for stream bed losses is too large for headwater streams. District engineers will determine on a case-by-case basis whether to require compensatory mitigation for losses of stream bed authorized by NWPs. When determining whether to require compensatory mitigation, the district engineer will also consider practicability, including whether permittee-responsible mitigation is likely to be ecologically successful in offsetting the permitted impacts. As discussed below, the Corps has changed the \1/10\-acre threshold to \3/100\-acre to account for stream size. One commenter said the compensatory mitigation requirement for losses of stream bed greater than \1/10\-acre reduces the flexibility of the district engineer in making compensatory mitigation decisions. A few commenters objected to including a threshold for compensatory mitigation for the loss of stream bed, stating that it may result in unnecessary additional mitigation requirements and would not reduce burdens on the regulated public. Several commenters said the \1/10\-acre threshold for compensatory mitigation for stream bed losses or the district engineer's determination to waive compensatory mitigation requirements would individually and cumulatively would directly or indirectly result in more than minimal adverse environmental effects. The text of this general condition is written to provide district engineers with substantial flexibility in determining whether compensatory mitigation is required for NWP activities and what the required compensatory mitigation should be for a particular NWP activity. Corps districts have been requiring stream compensatory mitigation for a number of years, so the changes to this general condition will not impose additional burdens on the regulated public. If the district engineer determines, after reviewing a PCN, that stream compensatory mitigation is not necessary to ensure that the NWP activity result in no more than minimal adverse environmental effects, he or she will not require stream compensatory mitigation for that activity. Many commenters suggested requiring compensatory mitigation for stream bed losses of 300 linear feet or more instead of the proposed \1/10\-acre threshold. One commenter said that a linear foot threshold is more appropriate than acreage and recommended revising paragraph (d) to require compensatory mitigation for stream bed losses greater than 100 linear feet. One commenter recommended revising paragraph (d) to require compensatory mitigation for stream bed losses greater than 150 linear feet. One commenter recommended changing paragraph (d) to require compensatory mitigation for stream bed losses of \1/10\-acre or 300 linear feet. Many commenters said that the proposed \1/10\-acre stream mitigation threshold would result in more impacts with less compensatory mitigation being required. One commenter suggested using a scaled approach for establishing a stream compensatory mitigation threshold, such as a length threshold of five times the bankfull width or five times the width between ordinary high water marks. This commenter said a scaled approach would better account for variations in headwater streams and large rivers, compared to a \1/10\-acre threshold. After evaluating the comments received in response to the proposed modification of general condition 23, the Corps is changing the threshold for stream compensatory mitigation in paragraph (d) from \1/10\-acre to \3/100\-acre. This is consistent with the stream compensatory mitigation threshold established in some Corps districts under the 2017 NWPs and the compensatory mitigation threshold recommended by several commenters. For the 2017 NWPs, a number of Corps districts have regional conditions requiring compensatory mitigation for losses of greater than 300 linear feet of stream bed. This is consistent with the recommendation for a 300 linear foot threshold made by many commenters in response to this proposed rule. The \3/100\-acre threshold in paragraph (d) was calculated by estimating the average width of stream fills (4 feet) authorized by the 2017 NWPs under the 10 NWPs and multiplying that figure by 300 linear feet. The average width of stream filling or excavation was calculated from ORM2 data for NWP verifications issued between March 19, 2017, and March 19, 2019, for those NWP verifications where the average width of the stream fill or excavation was recorded by Corps district staff. The \3/100\-acre threshold is anticipated to result in similar stream compensatory mitigation requirements for the NWPs in this final rule compared to the 2017 NWPs, and therefore is generally consistent with current agency practice. A scaled approach for establishing a stream compensatory mitigation threshold would add another level of complexity to a permit program that is intended to regulate, with little delay or paperwork, activities that result in minimal adverse environmental effects. A few commenters said the \1/10\-acre threshold for stream losses requiring compensatory mitigation is not scientifically supported or lacks supporting analysis. A couple commenters said they do not agree with the change in threshold from linear feet of impact to acres for requiring compensatory mitigation for losses of stream beds that require PCNs. A few commenters stated that the use of stream length rather than acreage has been used in many programs as a basis for determining mitigation credits to compensate for the loss of stream bed, and that the \1/10\-acre threshold would create uncertainty and additional costs for applicants, the public, mitigation banks, and in-lieu fee programs. One commenter said that if the threshold for requiring stream compensatory mitigation is going to be changed from linear feet to acres, the acreage should include all of the affected area on the valley bottom, not just the area between ordinary high water marks of a river or stream. The establishment of the \3/100\-acre threshold for stream compensatory mitigation for NWP activities is an administrative decision to facilitate consistent implementation across districts. It is intended to be a conservative threshold based on the complexities of riverine systems, the substantial variation in riverine systems across the country, and the subjectivity inherent in the threshold for the NWPs (i.e , no more than minimal individual and cumulative adverse environmental effects). The use of acres to quantify stream compensatory mitigation is consistent with the Corps' compensatory mitigation regulations at 33 CFR 332.8(o)(1), which does not mandate the use of a particular metric for quantifying stream compensatory mitigation credits. It would be inappropriate to use the area of a valley bottom, since the Corps only has jurisdiction over certain categories of waters and wetlands, and valley[[Page 2833]]bottoms may consist of a substantial proportion of upland area or other features that are outside of the Corps' jurisdiction. Several commenters said the change to an area-based approach would not provide accounting consistency and would result in dual accounting systems for credits and debits generated under both linear feet and acreage-based scenarios and it would create inconsistencies, and would create confusion over how to handle sold versus proposed credits. One commenter expressed concern that ecological values of mitigation credits would not carry over in the conversion from linear feet to acres, creating the potential for activities to result in more than minimal individual and cumulative adverse environmental effects. There is no requirement in the Corps' regulations to quantify stream compensatory mitigation credits in linear feet. Compensatory mitigation credits, including stream credits, can be quantified in acres, linear feet, functional assessment units, or other suitable metrics of particular resource types (33 CFR 332.8(o)(1)). This final rule does not affect prior credit transactions for previously authorized NWP activities where the permittee secured stream compensatory mitigation credits from mitigation bank or in-lieu fee program sponsors. This final rule only applies to activities authorized by these NWP after they go into effect. The Corps acknowledges that a period of adjustment will be required, and that different agencies may require the use of different metrics to quantify losses of stream bed and stream compensatory mitigation credits. The ecological values of mitigation credits from the accrual or attainment of aquatic functions at a compensatory mitigation site (see the definition of ``credit'' at 33 CFR 332.2). Quantifying stream mitigation credits in acres or linear feet is a surrogate for the increases in stream functions expected to result from a stream compensatory mitigation project, when there is no method available to assess the specific functional gains through a rapid ecological assessment method or other method. The amount of compensatory mitigation required for an NWP activity has to be sufficient to replace lost aquatic resource functions (see 33 CFR 332.3(f)(1)), and the mitigation provider can use his or her judgment or the approved mitigation plans to determine how many stream credits quantified in linear feet are needed to offset a particular acreage of stream bed that is filled or excavated as a result of an NWP activity. It is important to note that the mitigation industry provides a service to permittees, as an option to fulfill the compensatory mitigation requirements in NWP authorization and other forms of DA authorizations. The Corps is making these changes for administrative efficiency, to provide NWP authorization for more activities that result in no more than minimal individual and cumulative adverse effects. The 300 linear foot limit for losses of stream bed in the 2017 NWPs and prior NWPs required the Corps to process individual permits for activities that likely would have otherwise qualified for NWP authorization. In the 2007 NWPs, general condition 23 was modified to state that district engineers could require stream compensatory mitigation for losses of stream bed, but there was no acreage threshold as there was for wetland losses. In paragraph (d) of this general condition, the Corps has established a\ 3/100\-acre threshold for stream compensatory mitigation. District engineers can require compensatory mitigation for losses of less than \3/100\-acre of stream bed, and they can require compensatory mitigation for losses of up to \1/2\-acre of stream bed. One commenter said mitigation banks and in-lieu fee programs would be negatively affected because less compensatory mitigation would be required for the loss of stream beds. A few commenters said they have reservations about the implementation of a compensatory mitigation threshold for losses of stream bed and that there may not be bank or in-lieu fee program credits available. The ***removal*** of the 300 linear foot limit for losses of stream bed from NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 and the changes to this general condition will not result in less compensatory mitigation being required for losses of stream bed authorized by NWPs. By providing equivalent quantitative limits for all non-tidal jurisdictional waters and wetlands in these 10 NWPs (i.e , the \1/2\-acre limit), there will likely be more NWP activities for which district engineers require compensatory mitigation. As discussed above, the Corps has changed the threshold from \1/10\-acre to \3/100\-acre to require stream compensatory mitigation that is more aligned with current practices and the recommendations of many commenters. The existing stream credits can be used for NWP activities, even though the authorized impacts will be quantified in acres. Several commenters supported the flexibility of the district engineer to allow other forms of mitigation as determined appropriate and to waive compensatory mitigation requirements after an activity specific determination that other forms of mitigation would be environmentally preferable. Several commenters said that increased impacts and allowing the district engineer to waive compensatory mitigation requirements would be counterproductive to the success of salmon recovery efforts, and therefore would not be protective of tribal treaty rights. Several commenters said the district engineer should be able to consider other site-specific activities required by other regulatory programs, such as mine site reclamation to considered as mitigation for activities affecting stream beds. One commenter stated that requiring a compensatory mitigation decision by the district engineer could delay issuance of a permit and to modify paragraph (d) to allow the district engineer or designee to waive the compensatory mitigation requirement. One commenter expressed concern that allowing the district engineer to waive compensatory mitigation requirements could allow for up to \1/2\-acre of stream bed loss which would result in adverse environmental impacts. The ***removal*** of the 300 linear foot limit from the NWPs (while retaining the \1/2\-acre limit, PCN process, and other tools to ensure no more than minimal adverse environmental effects) and the changes to general condition 23 will allow district engineers to authorize certain activities by NWP and require compensatory mitigation when necessary. It will provide more flexibility in the NWP and allow district engineers to devote more staff and other resources to proposed activities that have the potential for more substantial adverse environmental effects. These changes will not impair salmon recovery efforts, and for those proposed NWP activities that the district engineer determines ``may affect'' listed salmon species, additional protection to those listed species will be provided through the ESA section 7 process. The flexibility in general condition 23 allows district engineers to consider mitigation and other site-specific activities required by other agencies, such as mine reclamation, when determining whether to require compensatory mitigation for NWP activities. District engineers are required to make compensatory mitigation decisions within the 45-day review period for NWP PCNs. The district engineer has the decision-making authority for whether compensatory mitigation is required for an NWP activity.[[Page 2834]] One commenter said the Corps should develop clear expectations and performance standards for the types of other mitigation that could be utilized to compensate for stream bed losses. One commenter suggested modifying paragraph (d) to list acceptable alternatives to compensatory mitigation. One commenter expressed support for compensatory mitigation requirements could be fulfilled through restoration or enhancement of riparian areas next to streams. Several commenters said that riparian restoration or enhancement results in out-of-kind mitigation since they do not always replace lost stream functions. One commenter suggested the proposed paragraph (d) be modified to state that riparian restoration or enhancement may only satisfy compensatory mitigation requirements when other in-kind mitigation options are unavailable or are not practicable. Ecological performance standards for stream compensatory mitigation projects are determined by district engineers when they review and approve mitigation plans. Permit applicants may propose potential alternatives to compensatory to district engineers, who will determine whether that alternative mitigation is appropriate and likely to be effective in reducing adverse environmental effects so that it is not necessary to require compensatory mitigation. While the restoration or enhancement of riparian areas might not replace all stream functions, they can help improve some stream functions and help reduce nutrient and pollutant loads to streams. District engineers will determine on a case-by-case basis whether the restoration or enhancement of riparian areas is appropriate and practicable compensatory mitigation for an NWP activity. One commenter said that the general condition should be modified to require the applicant to provide project specifications addressing the Natural Stream Channel Design Techniques and Review Checklist, developed by the U.S EPA and U.S FWS. One commenter said there currently are no national or regional tools developed by the Corps to guide compensatory mitigation for stream bed losses. One commenter stated the Corps and U.S EPA are currently collaborating on a peer-reviewed study analyzing the environmental and policy consequences of stream restoration metrics. This commenter recommended not modifying the NWPs until they are scheduled to expire in 2022 to allow for the results of the study to be completed and the results to be considered. One commenter said general condition 23 should be incorporated into every applicable NWP rather than referring to the loss of 300 linear feet in each NWP. District engineers evaluate stream compensatory mitigation proposals and should be provided the flexibility to consider a variety of potential stream restoration or rehabilitation approaches. This includes river and stream restoration approaches, such as dam ***removals***, culvert replacements, and other process-based methods that may be more ecologically effective than natural channel design in improving stream functions (e.g , Palmer et al. 2014). The Corps is ***removing*** the 300 linear foot limit for losses of stream bed from 10 NWPs and modifying general condition 23 for more efficient administration of the NWP program. The study on stream metrics may have some utility in future rulemakings and the development of guidance, but it is not necessary to delay this rulemaking to wait for that study to be completed. General condition 23 applies to all NWPs. Several commenters supported the proposed changes to paragraph (e). Several commenters said that paragraph (e) of general condition 23 should be modified to eliminate the district engineer's ability to allow riparian area compensatory mitigation for wetland losses. One commenter suggested modifying paragraph (e) to allow the planting of adapted seed mixes that may contain non-native species and to allow for the replacement of existing vegetation when restoring riparian areas. One commenter said the proposed condition should be modified to state that use of native vegetation is preferred, rather than required, and to allow for consideration of regionally appropriate vegetation. A few commenters expressed opposition to the proposed changes the changes to paragraph (e) and expressed concerns that allowing non-native species would result in negative environmental effects. One commenter said they were concerned that allowing non-native species in the restored areas could negate the prevention, control, and management of non-native species performed by other government agencies, non-government organizations, and citizens and could introduce a source for spread among those activities. The restoration and enhancement of riparian areas may be used to offset wetland losses as another form of mitigation that could be more environmentally appropriate, since riparian areas perform a number of functions that are also performed by wetlands (NRC 1995, NRC 2002). There may be a number of seed mixes that are acceptable for revegetating riparian areas. Paragraph (e) contains flexibility because it states that native species should be planted; it does not require native species to be planted. As discussed in the proposed rule, non-native species can have positive, negative, or neutral effects on ecosystems and the functions they perform. Compensatory mitigation requirements, including long-term management activities, must be practicable (see 33 CFR 332.3(a)(1)). For a particular compensatory mitigation site, the district engineer may determine that the management of invasive or non-native species is not practicable cause of site or watershed conditions, the degree to which the invasive or non-native species is established in the region, and other factors. If other government agencies and non-governmental organizations want to undertake efforts to control invasive or non-native species, they can do that under their authorities or mission statements. Several commenters said there is no support for allowing narrow riparian areas of 25-50 feet wide on each side of the stream that would support habitat needed by federally threatened or endangered salmon. Buffers of 100 feet or more are needed. One commenter said that riparian area restoration and enhancement requirements (e.g minimum riparian width, historical and existing site conditions) should be addressed regionally rather than included in paragraph (e). One commenter said that restoring or enhancing riparian areas does not achieve no-net-loss of the stream bed. The recommended riparian area width of 25-50 feet was established in the NWP program in 2000 (65 FR 12833) because riparian areas of that width can provide important aquatic habitat functions and water quality benefits. The establishment of wider riparian areas for listed species be more appropriately addressed through the ESA section 7 consultation process. Division and district engineers can establish regional requirements for riparian areas. The purpose of restoring and enhancing riparian areas is to help improve stream functions and water quality. The improved functions are expected to occur in nearby stream bed and in downstream waters. One commenter recommended modifying paragraph (f)(4) of this general condition to state that if permittee-responsible mitigation is the proposed compensatory mitigation option, and the proposed compensatory mitigation site is located on ***land*** in which another federal agency holds an easement, the district engineer will[[Page 2835]]coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement. The Corps added the suggested text to paragraph (f)(4) of general condition 23. This general condition is adopted with the modifications discussed above. GC 24. Safety of Impoundment Structures. The Corps did not propose any changes to this general condition. One commenter recommended adding ``federal'' to this general condition because some federal agencies may have established federal dam safety criteria. The Corps added ``federal'' to the text of this general condition so that district engineers can require non-federal applicants to demonstrate that the structures comply with established federal dam safety criteria. This general condition is adopted as with the modification discussed above. GC 25. Water Quality. The Corps proposed to modify this general condition to articulate that if the state, authorized tribe, or EPA (i.e , the certifying authority under section 401 of the Clean Water Act) issued a water quality certification (WQC) for the issuance of an NWP, and the permittee cannot comply with all of the conditions in that water quality certification, he or she must submit a certification request to the certifying authority that satisfies the requirements of 40 CFR 121.5(b) for a water quality certification or waiver for the activity involving a specific discharge to be authorized by the NWP. One commenter expressed general support for the proposed changes to general condition 25. Several commenters supported the proposed changes clarifying that applicants need to request certification from the certifying authority for specific discharges when he or she cannot comply with all of the conditions in the WQC for the NWP. One commenter said that general condition 25 should be clarified to state that WQCs must be consistent with 33 CFR 325.4 and 40 CFR 121.7(d), and that any WQC condition not within the established scope of the certification, may not be included as a regional condition. The proposed changes have been incorporated into this general condition. The Corps has added text to this general condition to state that if the certifying authority issues a water quality certification for the proposed discharge authorized by a specific NWP activity, the permittee must submit a copy of the certification to the district engineer. Furthermore, the general condition states that if certification is required for a specific discharge, the discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied. When water quality certification is required for a specific discharge authorized by an NWP, and the Corps has completed its review of the PCN and has determined that the activity is authorized by an NWP as long as water quality certification is issued or waived for that discharge, the district engineer will send a provisional notification to the permittee. The provisional notification will inform the project proponent that the activity will be authorized by an NWP once water quality certification for the proposed discharge is obtained or waived. If water quality certification is issued for the proposed discharge, the district engineer will conduct coordination that may be required under Section 401(a)(2) of the Clean Water Act. After that process, the district engineer will issue the NWP verification letter with the water quality certification. The district engineer may add conditions to the NWP authorization to ensure the authorized activity results in no more than minimal individual and cumulative adverse environmental effects. The district engineer will also add to the NWP authorization conditions in the water quality certification that are not waived pursuant to 40 CFR 121.9(b). The Corps divided the text of this general condition into three paragraphs to make the general condition easier to read. This general condition is adopted with the modifications discussed above. GC 26. Coastal Zone Management. The Corps proposed to modify this general condition to say that if the state issued a general Coastal Zone Management Act (CZMA) consistency concurrence for the NWP, and the permittee cannot comply with all conditions of that general concurrence, then he or she must obtain an individual CZMA consistency concurrence or presumption of concurrence from the state in order for the activity to be authorized by an NWP. Several commenters expressed support for the change, stating that it provided clarification of the consistency concurrence process and additional flexibility. The commenters further noted that the proposed language makes it clear that the permittee is expected to fully comply with all the conditions of the general concurrence or seek an individual CZMA consistency concurrence or presumption of concurrence from the state coastal program. To qualify for NWP authorization, the proposed activity must comply with all of the NWP's terms and conditions (see 33 CFR 330.1(c)). The Corps will consider unauthorized any activity requiring Corps authorization if that activity is under construction or completed and does not comply with all of the terms and conditions of an NWP. This includes any conditions added to the NWP authorization through a categorical or individual CZMA consistency concurrence. If the applicant cannot comply with all of the conditions in the general CZMA consistency concurrence, then in order to comply with the requirements of the CZMA, she or he would need to apply to the state for an individual CZMA consistency concurrence, or obtain a presumption of concurrence. The inability to comply with all conditions of a general CZMA consistency concurrence does not preclude the use of the NWP to authorize the permitted activities; such circumstances would be considered a denial without prejudice until the project proponent obtains an individual CZMA consistency concurrence or a presumption of concurrence. When CZMA consistency concurrence is required for a specific activity authorized by an NWP, and the Corps has completed its review of the PCN and has determined that the activity is authorized by an NWP as long as CZMA consistency concurrence is issued or a presumption of concurrence occurs for the activity, the district engineer will send a provisional notification to the permittee. The provisional notification will inform the project proponent that the activity will be authorized by an NWP once CZMA consistency concurrence for the proposed activity is obtained or a presumption of concurrence occurs. The district engineer may add conditions to the NWP authorization to ensure the authorized activity results in no more than minimal individual and cumulative adverse environmental effects. The general condition is adopted as proposed. GC 27. Regional and Case-By-Case Conditions. The Corps did not propose any changes to this general condition. No comments were received. The general condition is adopted as proposed. GC 28. Use of Multiple Nationwide Permits. The Corps proposed changes to this general condition to address the use of more than one NWP to authorize a single and complete project, when two of those NWPs have different acreage limits. The proposed changes were[[Page 2836]]intended to ensure that use of an NWP with a higher acreage limit could not circumvent the lower acreage limit for another NWP, when the two NWPs are combined to authorize a single and complete project. A few commenters expressed support for the change and said that it clarified language regarding the use of multiple NWPs for a single and complete project. Several commenters recommended making no changes to this general condition, and retaining the general condition language from the 2017 NWPs. One commenter suggested that the NWP numbers used in the example in the text of the general condition should match the NWP numbers used in the example in the preamble to the proposed rule, specifically by using NWP 39 rather than NWP 29. One commenter said that no more than two NWPs should be used to authorize a single and complete project. One commenter stated that the use of multiple NWPs to authorize a single and complete project should not cumulatively exceed the threshold of the highest limit. In the example in the text of this general condition, the Corps has replaced NWP 29 with 39 to make the example clearer. Nationwide permit 29 has a subdivision provision that adds an additional layer of complexity, so it would be simpler to use NWP 39 in the example since that NWP has no subdivision provision. There may circumstances in which more than three NWPs may be appropriate for authorizing a single and complete project. One commenter stated that the use of multiple NWPs to authorize a single and complete project should not cumulatively exceed the threshold of the highest limit. The general condition does limit the acreage loss of waters of the United States to the highest specified acreage limit, but it does not allow the acreage limit of an NWP with a lower acreage limit to be exceeded. One commenter stated that the proposed language would limit use of NWPs with no acreage limit, such as NWP 3 in combination with other NWPs, where it may be desirable to allow additional work beyond a specified acreage to occur as it would promote re-use and rehabilitation of existing structures rather than construction of new structures. One commenter recommended that the Corps provide clarification regarding how temporary and cumulative impacts would be addressed when more than one NWP is used to authorize a single and complete project. The text in paragraph (a) of this general condition will limit the use of NWPs with no acreage limits, as it has since this text was incorporated into this general condition in 2000 (47 FR 12896). The general condition applies to losses of waters of the United States, as that term is defined in Section F of the NWPs. It does not include temporary impacts. Cumulative impacts are addressed separately during the district engineer's review of the PCN, in accordance with paragraph 2 of Section D, District Engineer's Decision. Several commenters stated that the Corps must prohibit the use of multiple NWPs and NWPs with other general or individual permits as the Corps is not assessing the cumulative impacts. A few commenters stated that the proposed change may result in a greater loss of waters, and expressed concern that allowing two NWPs with different specified acreage limits to be used would result in larger impacts than allowed by each individual NWP. A few commenters said that allowing the use of more than one NWP to authorize a single and complete project will result in more than minimal individual and cumulative adverse environmental effects. One commenter suggested that the Corps eliminate the use of multiple NWPs to authorize individual segments of linear projects. The Corps considers cumulative impacts when it evaluates PCNs for proposed NWP activities (see paragraph 2 of Section D, District Engineer's Decision). General condition 28 does not address the use of NWPs with individual permits; it only addresses the use of multiple NWPs to authorize a single and complete project. The use of NWPs with individual permits is addressed in the Corps' NWP regulations at 33 CFR 330.6(d). The modification of this general condition is specifically intended to prohibit the circumvention of the specified acreage limits of the NWPs, so that the loss of waters of the United States under a particular NWP is not exceeded. Not allowing any deviation from the specified acreage limits of the NWPs used to authorize a single and complete project will help ensure that authorized activities will result in no more than minimal individual and cumulative adverse environmental effects. This general condition does not apply to the long-standing practice of allowing each separate and distant crossing of waters of the United States for a linear project to be considered a separate NWP authorization. This general condition does apply to circumstances where a linear project may involve two separate utility lines (e.g , an electric utility line authorized by NWP 57 and a water line authorized NWP 58) both cross a waterbody. In this situation, the \1/2\-acre limit would apply to the cumulative loss of waters of the United States caused by the electric line and water line crossing of that waterbody. The general condition is adopted with the modifications discussed above. GC 29. Transfer of Nationwide Permit Verifications. The Corps did not propose any changes to this general condition. No comments were received. The general condition is adopted as proposed. GC 30. Compliance Certification. The Corps did not propose any changes to this NWP. No comments were received. The general condition is adopted as proposed. GC 31. Activities Affecting Structures or Works Built by the United States. The Corps proposed to modify this general condition to be consistent with the current Engineer Circular (EC) for processing requests to alter Corps Civil Works Projects pursuant to 33 U.S.C 408 (EC 1165-2-220, issued on September 10, 2018). Under the current EC, Corps districts are required to conduct section 10 and section 404 permit evaluations and requests for 408 permissions in a coordinated and concurrent manner. One commenter supported the proposed changes to this general condition. One commenter stated that a PCN should not be required for a Section 408 review or permission if the underlying NWP activity does not otherwise require a PCN. One commenter said that the proposed text raises concerns about timely processing of NWPs. Pre-construction notifications are required for proposed NWP activities that also require Section 408 permissions so that the appropriate coordination can occur between district staff involved in the NWP authorization and Section 408 permission processes. The Corps acknowledges that it may take longer for NWP verification letters to be issued by the district engineer, because the NWP verification cannot be issued before the Section 408 permission process is completed. The general condition is adopted as proposed. GC 32. Pre-Construction Notification. The Corps proposed several modifications to this general condition to provide consistency with proposed changes to the NWPs and to clarify pre-construction notification requirements. The Corps proposed to change paragraph (a)(2) of this general condition by ***removing*** the following sentence: ``Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval[[Page 2837]]from the Corps.'' This proposed change will conform to one of the changes we are proposing for these three NWPs, which is to ***remove*** the term requiring the permittee to obtain a written verification from the district engineer before commencing the regulated activities in waters of the United States. As discussed above, the Corps proposed to make NWPs 21, 49, and 50 consistent with the other NWPs that require pre-construction notification, where the project proponent can proceed with the authorized work if the district engineer does not respond to the PCN within 45 days (see 33 CFR 330.1(e)(1)). Many commenters expressed concern with the 45-day clock and the default authorization of PCNs and questioned whether this was a sufficient review period. Many commenters stated that the Corps should hold districts accountable regarding when the 45-day PCN review period starts and limit information requests to a single request. These commenters further stated that some Corps districts make numerous information requests to reset the 45-day review period or request additional information not listed in the text of the general condition. One commenter suggested that the Corps provide more direction/guidance to districts on the ability to use sketches (rather than engineered drawings). A few commenters said that no additional information requirements should be added to the PCN process that would further complicate or burden the process. One commenter recommended that district engineer use their discretionary authority to expedite certain time-sensitive maintenance and inspection projects associated with key energy infrastructure projects. Forty-five days is sufficient time for district engineers to review PCNs and determine whether proposed activities qualify for NWP authorization or whether discretionary authority should be exercised to require individual permits. Exceptions to the 45-day review period when district engineers have to complete ESA section 7 consultation, NHPH section 106 consultations, or other required consultations. District engineers are supposed to make only one request for additional information to make PCNs complete. District engineers can make additional requests only when the project proponent has not submitted the requested information to the district engineer. A complete PCN only requires the information listed in general condition 32, plus the text of the NWP itself if the ``Notification'' provision includes additional information requirements. The sketches submitted with a PCN have to be sufficiently detailed to help a district engineer understand the proposed activity, but it does not have to be an engineering drawing or a comparably detailed drawing. The Corps has not added any more information requirements beyond what was proposed in the 2020 Proposal. The Corps does not agree that general condition 32 should be modified to state that a district engineer has discretionary authority to expedite certain time-sensitive maintenance and inspection activities. District engineers already have the discretion to manage their workload. The Corps also proposed to modify paragraph (b)(4) of this general condition by dividing it into subparagraphs to clarify different requirements of a complete PCN: The description of the proposed NWP and associated information (subparagraph (b)(4)(i)); the quantities of anticipated losses of waters, wetlands, and other special aquatic sites for linear projects (subparagraph (b)(4)(ii)); and the inclusion of sketches with the PCN (subparagraph (b)(4)(iii)). In subparagraph (b)(4)(i), the Corps also proposed to add ``(including the same NWP for activities that do not require PCNs)'' after ``any other NWP(s)'' to clarify that the PCN must identify non-PCN NWPs that are used to authorize any part of the proposed project or related activity, including separate and distant crossings of waters and wetlands for linear projects. In subparagraph (b)(4)(ii), the Corps proposed to clarify the information requirements for linear projects, and state that these information requirements do not trigger a PCN requirement for those crossings authorized by an NWP that do not require PCNs. The Corps also proposed to modify this subparagraph to state that this information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project. A few commenters expressed support for the proposed changes, particularly the clarification that a PCN must identify non-PCN NWPs used to authorize other aspects of projects, including linear projects. The Corps has incorporated the proposed changes into paragraph (b)(4). In the first sentence of paragraph (b)(5), the Corps proposed to ***remove*** the phrase ``and perennial, intermittent, and ephemeral streams,'' and replace it with ``streams.'' If there are streams on the project site, then the PCN must include a delineation of those streams. In addition, the Corps proposed to modify paragraph (b)(5) to be consistent with its proposal to ***remove*** the 300 linear foot limit for losses of stream bed in NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52, and rely on the \1/2\-acre limit, PCN review process, and the ability of division and district engineers, based on regional or local conditions, to modify, suspend, or revoke NWP authorizations on a regional or case-by-case basis, respectively, to comply with the requirement that NWPs may only authorize those activities that have no more than minimal individual and cumulative adverse environmental effects. The delineation of streams on the project site will be used to calculate the area of stream bed is proposed to be filled or excavated and thus results in a loss of stream bed. The area of jurisdictional stream bed filled or excavated would be applied to the \1/2\-acre limit for these NWPs, to determine whether the loss of stream bed plus the losses of any other non-tidal jurisdictional waters and wetlands exceeds the \1/2\-acre limit. A few commenters stated that the Corps should add the word ``jurisdictional'' to ``streams'' in paragraph (b)(5). One commenter recommended that the Corps clarify that paragraph (b)(5) only applies to jurisdictional waters. One commenter stated that the use of the word ``ephemeral'' in paragraph (b)(5) is inconsistent with the Navigable Waters Protection Rule and recommended omitting the term from the general condition. One commenter opposed the addition of ``streams'' in paragraph (b)(6) and requiring PCNs for stream losses in excess of \1/10\-acre, since the ***removal*** of the 300-foot limit only applies to 10 NWPs. The Corps declines to add the word ``jurisdictional'' to modify the word ``stream'' or other types of waters listed in paragraph (b)(5) because an approved jurisdictional determination is not required for an NWP PCN. If the project proponent did not obtain an approved jurisdictional determination for the project site prior to submitting the PCN, for the purposes of evaluating the PCN the district engineer will presume the wetlands, streams, and other waters on the project site are subject to Clean Water Act jurisdiction. The Corps has removed the word ``ephemeral'' from paragraph (b)(5). Paragraph (b)(6) does not impose any additional PCN requirements for losses of stream bed. The first sentence of paragraph (b)(6) has been revised as follows to incorporate the mitigation thresholds in general condition 23: ``If the proposed activity will result in the loss of greater than \1/10\-acre of wetlands or \3/100\-acre of stream bed and a PCN is required, the prospective permittee must submit a[[Page 2838]]statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required.'' The Corps proposed to modify paragraph (c) to state that the PCN should be submitted using Form ENG 6082 that was approved earlier this year. Form ENG 6082 should be used instead of ENG 4345, which is the standard individual permit application form. Block 18 of Form ENG 6082 has a space for the project proponent to identify the specific NWP(s) she or he wants to use to authorize the proposed activity. Therefore, the Corps proposed to ***remove*** the text of paragraph (c) that stated that a completed ENG 4345 must clearly indicated that it is an NWP PCN and must include all of the information required by subparagraphs (b)(1) through (10) of this general condition. One commenter stated that paragraph (c), which references the use of ENG 6082, should be altered to include allowance for states that have a joint application process. The ENG Form 6082 has been approved for purposes of the Paperwork Reduction Act, but joint state-federal forms have not been approved. Therefore, the Corps declines to make this suggested change. Because of the proposal to ***remove*** the 300 linear foot limit for losses of stream bed in NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52, as well as the associated waiver provision for losses of intermittent and ephemeral stream bed, the Corps proposed to modify paragraph (d)(2) of the agency coordination provisions of this general condition. The Corps proposed to ***remove*** the requirement for agency coordination for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed. Several commenters objected to the ***removal*** of the agency coordination process with the ***removal*** of the 300 linear foot limit for loss of stream bed. One commenter stated that ***removal*** of the agency coordination process resulting from the ***removal*** of PCN requirements may lead to the Corps being the only entity involved in the review of potential source water (i.e drinking water) impacts. One commenter stated that the PCN requirement is a benefit for state agency coordination, which assists the applicant and regulatory agencies in permit streamlining. The Corps has removed the agency coordination provisions for waivers for losses of greater than 300 linear feet of intermittent or ephemeral stream bed for activities authorized by NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52. The NWPs do not require district engineers to coordinate proposed activities that may affect source waters or drinking water supplies. Pre-construction notifications are required for certain NWP activities, and coordination with state agencies is only required for specific activities identified in paragraph (d) of this general condition. This general condition is adopted with the modifications discussed above.I. Discussion of Proposed Modifications to Section D, District Engineer's Decision In paragraph 1 of Section D, the Corps proposed to ***remove*** provisions that refer to potential waivers of the 300 linear foot limit for losses of stream bed authorized by NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52. The Corps proposed this change to be consistent with our proposal to ***remove*** the 300 linear foot limit and the waiver provision from those NWPs. In the second sentence of paragraph 4, the Corps proposed to ***remove*** ``or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50'' because we are proposing to ***remove*** the requirement that permittees obtain written verification from the district engineer before these activities are authorized. Pre-construction notifications for activities authorized by NWPs 21 and 50 will be subject to the same timeframes as other NWP activities that require PCNs, because the Corps removed the provision from these NWPs that required the permittee to obtain written verification from the Corps before commencing the authorized activity. This includes the ability for the permittee to presume that her or his project qualifies for the NWP unless she or he is otherwise notified by the district engineer within a 45-day period (see 33 CFR 330.1(e)(1)), or Endangered Species Act Section 7 consultation and/or National Historic Preservation Act Section 106 consultation needs to be completed for non-federal permittees to comply with the requirements of general conditions 18 and 20. One commenter said the Corps should only use functional assessments that have been developed, peer reviewed, and subject to public and stakeholder comment at the regional level, and that the Corps not unilaterally revise the tools or substitute alternative methodologies only when the Corps prefers. The Corps determines which functional assessments are appropriate for use in evaluating NWP PCNs and other applications for DA authorization. The Corps does not require functional assessments to be peer reviewed, but acknowledges that peer review can help improve functional assessments to better assess aquatic resource functions. The Corps has modified the first sentence of paragraph 3 of this section to be consistent with the wetland and stream mitigation thresholds in general condition 23. That sentence has been changed to read: ``If the proposed activity requires a PCN and will result in the loss of greater than \1/10\-acre of wetlands or \3/100\-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN.''J. Discussion of Proposed Modifications to Section F, Definitions In the 2020 Proposal, the Corps proposed changes to some of the NWP definitions and the Corps proposed to ***remove*** some definitions. Several commenters stated that the definitions in Section F should match the definitions used in the Navigable Waters Protection Rule and in other regulations. A few commenters suggested retaining the definitions for intermittent stream and ephemeral stream. One commenter suggested repeating all ``geographic definitions'' in the NWP definitions. One commenter requested definitions for levee, berm and dike. One commenter asked that the Corps differentiate between ``top of bank,'' ``ordinary high water mark'' and ``bankfull elevation.'' One commenter expressed concern with the proposed ***removal*** of definitions for ``protected tribal resources,'' ``ephemeral streams'' and ``intermittent streams.'' As discussed in the proposed rule, the Corps proposed to modify the definitions of ``ordinary high water mark'' and ``perennial stream'' to be consistent with the Navigable Waters Protection Rule at 33 CFR 328.3(c)(7) and 33 CFR 328.3(c)(8). The Corps is ***removing*** the definitions of intermittent stream and ephemeral stream because they are no longer used in the text of the NWPs. The Corps does not believe it is necessary to copy the entire definition of ``waters of the United States'' into the NWPs because that definition is available at 33 CFR 328.3 The Corps declines to add definitions of the terms ``levee,'' ``berm,'' ``dike,'' and ``top of bank.'' The Corps does not see a need to differentiate or define the terms ``top of bank'' or ``bankfull elevation'' because those terms are not used in the NWPs. The definition of ``protected tribal resources'' has been removed because that phrase is no longer in the text of general condition 17, tribal rights. The term ``protected tribal resources'' continues to be applied[[Page 2839]]through the Corps' implementation of the 1998 Department of Defense American Indian and Alaska Native Policy. One commenter stated that unless a definition of ``water of the United States'' is included or referenced all waterbodies should be defined within the NWPs to avoid confusion. One commenter requested a definition of ``adjacent wetlands'' that is consistent across all regulations. One commenter suggested adding a definition of ``oil and gas pipeline.'' One commenter supported retention of the definitions for ``single and complete linear project,'' ``single and complete non-linear project'' and ``independent utility.'' One commenter suggested adding a definition of ``stream'' to differentiate between linear wetlands and streams for compensatory mitigation purposes. The phrase ``waters of the United States'' is defined at 33 CFR part 328.3 The term ``adjacent wetlands'' is defined at 33 CFR 328.3(c)(1)). The term ``oil or natural gas pipeline'' is defined in the text of NWP 12. The Corps declines to add a definition of ``stream'' because the NWPs include a definition of ``stream bed.' Best management practices (BMPs). The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Compensatory mitigation. The Corps did not propose any changes to this definition. The Corps did not receive any comments. The definition is adopted as proposed. Currently serviceable. The Corps did not propose any changes to this definition. One commenter stated that the proposed definition includes the unclear phrase ``some maintenance'' and requested clarification. The Corps declines to clarify the phrase ``some maintenance'' because it is subject to application on a case-by-case basis. The definition is adopted as proposed. Direct effects. The Corps did not propose any changes to this definition and did not receive any comments. The definition is adopted as proposed. Discharge. The Corps did not propose any changes to this definition. One commenter said that the proposed definition includes the word being defined in its definition and suggested edit of the definition replacing the word discharge in the definition with ``addition'', ``release'', or ``placement.'' The Corps declines to make the suggested changes because the Corps regulates discharges of dredged or fill material and those terms are more comprehensively defined in 33 CFR 323.2 The definition is adopted as proposed. Ecological reference. The Corps did not propose any changes to this definition. The Corps We did not receive any comments on the proposed definition. The definition is adopted as proposed. Enhancement. The Corps did not propose any changes to this definition. The Corps We did not receive any comments on the proposed definition. The definition is adopted as proposed. Ephemeral stream. The Corps proposed to ***remove*** the definition of ``ephemeral stream'' in conjunction with the proposal to ***remove*** the 300 linear foot limit for losses of stream bed and the ability of district engineers to waive that 300 linear foot limit for losses of ephemeral stream bed on a case-by-case basis. It should also be noted that ephemeral features, including ephemeral streams, are excluded from the definition of ``waters of the United States'' at 33 CFR 328.3(b)(3). Section 328.3 of the Corps' regulations defines ``waters of the United States'' for the purposes of the Clean Water Act. A few commenters stated that the definition of ``ephemeral stream'' should be retained given the importance of stream categorization in jurisdiction and thus whether an NWP is necessary. One commenter stated that the definition should be retained to differentiate ephemeral streams from intermittent and perennial streams. One commenter supported the ***removal*** of the definition given proposed elimination of the 300 linear foot limit from the NWPs and the exclusion of ephemeral streams from jurisdiction under the Navigable Waters Protection Rule. One commenter expressed opposition to the definition's ***removal*** based on opposition to ***removal*** of the 300 linear foot limit from the NWPs. One commenter stated that the term should be retained because a cumulative impacts analysis may include a determination of flow through ephemeral and intermittent streams. The Corps is ***removing*** this definition as proposed because, in accordance with the Navigable Waters Protection Rule, ephemeral features, including ephemeral streams, are categorically excluded from the definition of ``waters of the United States'' under the Clean Water Act (see 33 CFR 328.3(b)(3)). Establishment (creation). The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. High Tide Line. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Historic property. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Independent utility. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Indirect effects. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Intermittent stream. The Corps proposed to ***remove*** the definition of ``intermittent stream,'' in conjunction with the proposal to ***remove*** the 300 linear foot limit for losses of stream bed which obviated the need to reference a waiver for losses of an intermittent stream bed. One commenter supported the ***removal*** of the definition given proposed elimination of the 300 linear foot limit from the NWPs and the exclusion of ephemeral streams from jurisdiction under the Navigable Waters Protection Rule. One commenter objected to the ***removal*** of the definition of intermittent streams since they are in the Navigable Waters Protection Rule. One commenter opposed the definition's ***removal*** based on opposition to ***removal*** of the 300 linear foot limit from the NWPs. One commenter stated that the term should be retained because a cumulative impacts analysis may include a determination of flow through ephemeral and intermittent streams. The Corps is ***removing*** this definition as proposed because this term is no longer used in the text of the NWPs. Loss of waters of the United States. The Corps proposed to rearrange the sentences in this definition so that the sentence that defines the loss of stream bed is moved to become the second sentence of this definition. In addition, the Corps proposed to modify this sentence to state that the stream bed would have to be permanently adversely affected, to be consistent with the first sentence of this definition. For consistency with the proposal to ***remove*** the 300 linear foot limit for losses of stream bed from 21, 29, 39, 40, 42, 43, 44, 51, and 52, and rely on the \1/2\-acre limit and other tools to comply with the statutory requirement that the NWPs only authorize those activities that have[[Page 2840]]no more than minimal individual and cumulative adverse environmental effects, the Corps proposed to ***remove*** ``linear feet'' from the third sentence of this definition. This would provide consistency among the various types of waters when applying the fourth sentence of this definition, which states that the acreage loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP. One commenter stated that the Corps should not ***remove*** the words ``linear feet'' from the definition because of opposition to ***removing*** a method of calculating stream loss relative to compensatory mitigation. One commenter expressed support for the changes as it makes clear that loss is limited to stream beds permanently adversely impacted. One commenter said that ***removal*** of linear feet from the definition would result in more than minimal adverse environmental effects. One commenter stated that conversion of ***forested*** wetlands to other wetland types should be included in the definition of permanent adverse effects which is included in the ``loss of waters of the United States'' definition. The Corps has removed the 300 linear foot limit for losses of stream bed from NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52. Therefore, the Corps is ***removing*** ``linear feet'' from this definition. The Corps declines to include the conversion of ***forested*** wetlands to other wetland types in the definition of ``loss of waters of the United States'' because those areas remain wetlands and they continue to provide wetland functions. This definition is adopted as proposed. Navigable waters. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Non-tidal wetland. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Open water. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Ordinary high water mark. The Corps proposed to modify this definition to be consistent with the definition in the Navigable Waters Protection Rule defining ``waters of the United States'' (see 33 CFR 328.3(c)(7)). One commenter said that the definition includes only a discussion of the stream bed and omits reference to the bank contrary to the definition in other Clean Water Act rules and regulations. The lateral extent of Clean Water Act jurisdiction ends at the ordinary high water mark, not the bank, if no adjacent wetlands are present. See 33 CFR 328.4(c). The definition is adopted as proposed. Perennial stream. The Corps proposed to modify the definition of ``perennial stream'' to be consistent with the definition of ``perennial'' in the Navigable Waters Protection Rule defining ``waters of the United States'' (see 33 CFR 328.3(c)(8)). One commenter stated support for the proposed change because of the elimination of the 300 linear foot limit for losses of stream bed and changes made to the definition in the Navigable Waters Protection Rule. One commenter said that the previous definition was clearer in instances when perennial streams are diverted underground. One commenter stated that the definition does not match the definition in the Navigable Waters Protection Rule, and recommended changing the definition to match that definition. The Navigable Waters Protection Rule at 33 CFR 328.3(c)(8) defines the term ``perennial'' not ``perennial stream.'' The Corps used the definition of ``perennial'' at 33 CFR 328.3(c)(8) to modify the NWP definition of ``perennial steam.'' The definition is adopted as proposed. Practicable. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Pre-construction notification. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Preservation. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Protected tribal resources. Because of the proposed changes to NWP general condition 17, tribal rights, the Corps proposed to ***remove*** this definition from the NWPs since this term is not in the text of the proposed general condition. The term ``protected tribal resources'' does not appear elsewhere in the text of NWPs, general conditions, or definitions, or in Section D, ``District Engineer's Decision.'' A few commenters opposed the ***removal*** of the definition because they opposed changing the text of general condition 17. A few commenters said that that ***removal*** of the definition and the change to general condition 17 will result in substantial impacts to tribal waters, treaty, trust and cultural resources. One commenter suggested adding the definition to general condition 17. The Corps is ***removing*** this definition as proposed because it is no longer used in the text of the NWPs or the general conditions. Re-establishment. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Rehabilitation. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Restoration. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Riffle and pool complex. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Riparian areas. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Shellfish seeding. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Single and complete linear project. The Corps did not propose any changes to this definition. Many commenters stated support for retaining the definition given longstanding presence in regulation, practice by the Corps and upholding in court cases. Several commenters stated that the definition violates the Clean Water Act Section 404(e) minimal impact limitation, the National Environmental Policy Act the Endangered Species Act and other statutes and regulations. A few commenters stated that the definition recognizes ``that discharges of dredged or fill material along a utility line, with narrow crossings of separate and distant waters, will typically have minimal effects both on the individual waters crossed and cumulatively on watersheds.'' One commenter supported continued use of the definition but said[[Page 2841]]that it is vague and has led to inconsistent application among districts, particularly relative to multiple crossings of a single water with multiple channels. One commenter stated that the definition is inconsistently applied and should be revised to require or strongly promote the concept of ``multiple'' single and complete linear projects. One commenter requested clarification of the definition to allow a determination of permit requirements and compensatory mitigation by the permittee. The definition is consistent with the Corps' regulations at 33 CFR 330.2(i), which was promulgated in 1991, and with long-standing practice for authorizing linear projects by NWP. This definition does not violate the Clean Water Act, the National Environmental Policy Act, or the Endangered Species Act. It is based on a regulation that was promulgated in accordance with the Administrative Procedure Act. District engineers have discretion in applying this definition, and in identifying separate and distant crossings of waters of the United States. Only the district engineer has the authority to require compensatory mitigation for activities authorized by NWPs. The permit applicant is responsible for submitting a mitigation plan to the district engineer for consideration. The definition is adopted as proposed. Single and complete non-linear project. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Stormwater management. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Stormwater management facilities. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Stream bed. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Stream channelization. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Structure. The Corps did not propose any changes to this definition. One commenter suggested that the definition be altered to be consistent with language used in proposed new NWP C. Specifically, the commenter, proposes replacing the example of ``power transmission line'' with ``utility line'' so it includes other types of lines. The Corps declines to make the suggested change to this definition because it covers a wide variety of structures that may be authorized by NWPs. The definition is adopted as proposed. Tidal wetland. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Tribal ***lands***. The Corps did not propose any changes to this definition. One commenter stated that the definition of tribal ***Lands*** used by the U.S EPA and the Corps' definition is different and suggested that they be revised to be consistent. This definition was adopted from the 1998 Department of Defense American Indian and Alaska Native Policy, so the Corps is retaining that definition. The definition is adopted as proposed. Tribal rights. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Vegetated shallows. The Corps did not propose any changes to this definition. The Corps did not receive any comments on the proposed definition. The definition is adopted as proposed. Waterbody. The Corps did not propose any changes to this definition. Several commenters said that the term ``waterbody'' can be confused with ``water body,'' which describes both jurisdictional and non-jurisdictional features, for example as used in the Navigable Waters Protection Rule. The commenter suggested deletion of ``waterbody'' and instead use of ``waters of the United States'' to avoid confusion. One commenter recommended ***removal*** of the last sentence of this definition. The Corps declines to make the suggested changes, except for the ***removal*** of the last sentence, because this term is used through the NWPs. The definition of ``waters of the United States'' at 33 CFR 328.3 is used to identify waterbodies, including adjacent wetlands. The definition is adopted as proposed.III. Compliance With Relevant StatutesA. National Environmental Policy Act Compliance The Corps has prepared a decision document for each NWP. Each decision document contains an environmental assessment (EA) to fulfill the requirements of the National Environmental Policy Act (NEPA). The EA includes the public interest review described in 33 CFR part 320.4(b). The EA generally discusses the anticipated impacts the NWP will have on the human environment and the Corps' public interest review factors. If a proposed NWP authorizes discharges of dredged or fill material into waters of the United States, the decision document also includes an analysis conducted pursuant to the Clean Water Act section 404(b)(1), in particular 40 CFR part 230.7 These decision documents evaluate, from a national perspective, the environmental effects of each NWP. The final decision document for each NWP is available on the internet at: [*www.regulations.gov*](http://www.regulations.gov) (docket ID number COE-2020-0002) as Supporting and Related Materials for this final rule. Before the 2021 NWPs go into effect, division engineers will issue supplemental documents to evaluate environmental effects on a regional basis (e.g , a state or Corps district) and to determine whether regional conditions are necessary to ensure that the NWPs will result in no more than minimal individual and cumulative adverse environmental effects on a regional basis. The supplemental documents are prepared by Corps districts, but must be approved and issued by the appropriate division engineer, since the NWP regulations at 33 CFR 330.5(c) state that the division engineer has the authority to modify, suspend, or revoke NWP authorizations in a specific geographic area within his or her division. For some Corps districts, their geographic area of responsibility covers an entire state. For other Corps districts, their geographic area of responsibility may be based on watershed boundaries. For some states, there may be more than one Corps district responsible for implementing the Corps regulatory program, including the NWP program. In states with more than one Corps district, there is a lead Corps district responsible for preparing the supplemental decision documents for all of the NWPs. The supplemental decision documents will also discuss regional conditions imposed by division engineers to protect the aquatic environment and other public interest review factors and ensure that any[[Page 2842]]adverse environmental effects resulting from NWP activities in that region will be no more than minimal, individually and cumulatively. The Corps solicited comments on the draft national decision documents, and any comments received were considered when preparing the final decision documents for the NWPs. Before the final NWPs go into effect, division engineers will issue supplemental documents to evaluate environmental effects on a regional basis (e.g , state or Corps district). The supplemental documents are prepared by Corps districts, but must be approved and formally issued by the appropriate division engineer, since the NWP regulations at 33 CFR 330.5(c) state that the division engineer has the authority to modify, suspend, or revoke NWP authorizations for any specific geographic area within his or her division. For some Corps districts, their geographic area of responsibility covers an entire state. For other states, there is more than one Corps district responsible for implementing the Corps Regulatory Program, including the NWP program. In those states, there is a lead Corps district responsible for preparing the supplemental documents for all of the NWPs. The supplemental documents will discuss regional conditions imposed by division engineers to protect the aquatic environment and ensure that any adverse environmental effects resulting from NWP activities in that region will be no more than minimal, individually and cumulatively. For the NWPs, the assessment of cumulative effects under the Corps' public interest review occurs at three levels: National, regional, and the verification stage. Each national NWP decision document includes a national-scale cumulative effects analysis under the Corps' public interest review. Each supplemental document has a cumulative effects analysis under the Corps' public interest review conducted for a region, which is usually a state or Corps district. When a district engineer issues a verification letter in response to a PCN or a voluntary request for a NWP verification, the district engineer prepares a brief decision document. That decision document explains whether the proposed NWP activity, after considering permit conditions such as mitigation requirements, will result in no more than minimal individual and cumulative adverse environmental effects. If the NWP is not suspended or revoked in a state or a Corps district, the supplemental document includes a certification that the use of the NWP in that district, with any applicable regional conditions, will result in no more than minimal cumulative adverse environmental effects. After the NWPs are issued or reissued and go into effect, district engineers will monitor the use of these NWPs on a regional basis (e.g , within a watershed, county, state, Corps district or other appropriate geographic area), to ensure that the use of a particular NWP is not resulting in more than minimal cumulative adverse environmental effects. The Corps staff that evaluate NWP PCNs that are required by the text of the NWP or by NWP general conditions or regional conditions imposed by division engineers, or voluntarily submitted to the Corps district by project proponents to receive written NWP verifications, often work in a particular geographic area and have an understanding of the activities that have been authorized by NWPs, regional general permits, and individual permits over time, as well as the current environmental setting for that geographic area. If the Corps district staff believe that the use of an NWP in that geographic region may be approaching a threshold above which the cumulative adverse environmental effects for that category of activities may be more than minimal, the district engineer may either make a recommendation to the division engineer to modify, suspend, or revoke the NWP authorization in that geographic region in accordance with the procedures in 33 CFR 330.5(c). Alternatively, under the procedures at 33 CFR 330.5(d), the district engineer may also modify, suspend, or revoke NWP authorizations on a case-by-case basis to ensure that the NWP does not authorize activities that result in more than minimal cumulative adverse environmental effects. A few commenters said that the Council on Environmental Quality's amended NEPA regulations are currently being litigated, and that the Corps should continue to apply the 1978 regulations. Several commenters stated that an environmental assessment would conclude that a finding of no significant impact cannot be achieved for the NWPs, and therefore, an environmental impact statement must be prepared for the issuance of the NWPs. Several commenters said that a reasonable range of actual alternatives must be evaluated, including a no action alternative, for each NWP. A few commenters said because NWPs are in effect for five years, the Corps should include reasonably foreseeable future actions. A few commenters stated the Corps decision documents fail to take a ``hard look'' at direct, indirect, and cumulative analysis required by NEPA, and that the Corps decision documents fail to consider or analyze relevant factors necessary to determine significance. The Corps prepared NEPA components of the draft and final national decision documents in accordance with the Council on Environmental Quality's current NEPA regulations, published in the Federal Register on July 16, 2020 (85 FR 43304). The commenters objecting to the preparation of environmental assessments for the issuance of the NWPs do not provide any substantive information backing their claims that the issuance of the NWPs requires an environmental impact statement. The national decision document prepared for each NWP issued by this final rule discusses alternatives, consistent with CEQ's current NEPA regulations at 40 CFR 1501.5(c). The national decision documents examine the effects and impacts of the proposed action (i.e , the issuance of the NWP by Corps Headquarters) consistent with the definition of ``effects or impacts'' at 40 CFR 1508.1(g). A few commenters said the decision documents somehow imply that the NWPs provide site-specific NEPA analysis, but that the Corps does not undertake any NEPA analysis at a project-specific level. One commenter stated that the Corps cannot defer its NEPA obligations to consider mitigation measures, public comments, or alternatives analysis to the regional or project level review because there is no guarantee any further NEPA analysis would occur. Several commenters said the national decision documents do not provide an a NEPA-level cumulative effects analysis, and that the Corps cannot defer the analysis at a later stage of review. The Corps did not defer any of its NEPA obligations during the preparation of the national decision documents for these NWPs. No further NEPA analysis is required for specific activities authorized by NWPs because the Corps fulfills the requirements of NEPA when it prepares an environmental assessment with a finding of no significant impact for each NWP's national decision document, to inform the decision whether to issue or reissue that NWP. The 2020 CEQ NEPA regulations altered how cumulative effects are considered under NEPA (see the definition of ``effects or impacts'' at 40 CFR 1508.1(g)). The Corps considered the effects of the proposed action in its national decision documents.[[Page 2843]] One commenter requested information on what type of NEPA assessment has been completed to determine the effects on aquatic resources as a result of the proposed changes, and what type of studies have been performed to show these changes will not result in more than minimal effects. One commenter stated the national decision documents do not provide a list of agencies or persons consulted in the development of the environmental assessment. One commenter said the national decision documents do not include tribal interests or treaty responsibilities. The Corps' NEPA assessment is provided in the national decision document for each NWP. Further, the Corps considered public comments received on the 2020 Proposal and on the draft national decision documents. Tribal interests and treaty responsibilities are more appropriately addressed through consultations between Corps districts and tribes on matters related to the NWP program and its implementation.B. Compliance With Section 404(e) of the Clean Water Act The NWPs are issued in accordance with Section 404(e) of the Clean Water Act and 33 CFR part 330. These NWPs authorize categories of activities that are similar in nature. The ``similar in nature'' requirement does not mean that activities authorized by an NWP must be identical to each other. We believe that the ``categories of activities that are similar in nature'' requirement in Clean Water Act section 404(e) is to be interpreted broadly, for practical implementation of this general permit program. Nationwide permits, as well as other general permits, are intended to reduce administrative burdens on the Corps and the regulated public while maintaining environmental protection, by efficiently authorizing activities that have no more than minimal adverse environmental effects, consistent with Congressional intent expressed in the 1977 amendments to the Federal Water Pollution Control Act. The NWPs provide incentives for project proponents to minimize impacts to jurisdictional waters and wetlands to qualify for NWP authorization instead of having to apply for individual permits. Keeping the number of NWPs manageable is a key component for making the NWPs protective of the environment and streamlining the authorization process for those general categories of activities that have no more than minimal individual and cumulative adverse environmental effects. The various terms and conditions of these NWPs, including the NWP regulations at 33 CFR 330.1(d) and 330.4(e), allow district engineers to exercise discretionary authority to modify, suspend, or revoke NWP authorizations or to require individual permits, and ensure compliance with section 404(e) of the Clean Water Act. For each NWP that may authorize discharges of dredged or fill material into waters of the United States, the national decision documents prepared by Corps Headquarters include a 404(b)(1) Guidelines analysis. The supplemental documents prepared by division engineers will discuss regional circumstances to augment the 404(b)(1) Guidelines analyses in the national decision documents. These 404(b)(1) Guidelines analyses are conducted in accordance with 40 CFR part 230.7 The 404(b)(1) Guidelines analyses in the national decision documents also include cumulative effects analyses done in accordance with 40 CFR 230.7(b) and 230.11(g). A 404(b)(1) Guidelines cumulative effects analysis is provided in addition to the NEPA cumulative effects analysis because the implementing regulations for NEPA and the 404(b)(1) Guidelines define ``cumulative impacts'' or ``cumulative effects'' differently.C. 2020 Revisions to the Definition of ``Waters of the United States'' (i.e , the Navigable Waters Protection Rule) Corps general permits are not intended to make or imply a conclusion or determination regarding what water bodies are or are not subject to CWA jurisdiction. Instead, a Corps general permit merely states that, if a person complies with all of the terms and conditions of the general permit, that person's proposed discharges of dredged or fill material into the waterbody will be consistent with the CWA, on the ground that any such discharges either (1) are legally authorized under the CWA (to the extent that the waterbody is subject to CWA jurisdiction) or (2) are otherwise consistent with the CWA to the extent that the waterbody is not jurisdictional under the CWA. The Corps acknowledges that some members of the public may seek to comply with the conditions of a general permit even for water bodies that are not jurisdictional or may not be jurisdictional under the CWA. Such practice, though not required, is not unlawful. The Corps is not required to make a formal determination whether a particular wetland or water is subject to jurisdiction under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899 before issuing an individual permit or a general permit verification. Many project proponents prefer the time savings that can occur when the Corps issues an individual permit or general permit verification without expending the time and resources needed to make a formal, definitive determination whether those wetlands and waters are in fact jurisdictional and thus regulated under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act of 1899. On April 21, 2020, the U.S Environmental Protection Agency (EPA) and the Department of the Army published the Navigable Waters Protection Rule, revising the definition of ``waters of the United States'' (85 FR 22250). Specifically, this final rule revises the Corps' regulations at 33 CFR part 328.3, where the definition of ``waters of the United States'' is located for the purposes of implementing Section 404 of the Clean Water Act. On June 22, 2020, the Navigable Waters Protection Rule became effective in all states and jurisdictions except for the State of Colorado due to a federal district court-issued stay in that state (the case is currently under appeal). The rule has also been challenged in several other federal district courts. Please note that some of the NWPs could authorize activities that involve the discharge of dredged or fill material into water bodies that are not subject to CWA jurisdiction, or that may not be subject to CWA jurisdiction. For example, a project proponent could proceed with an NWP activity that does not require submission of a PCN to the Corps in a non-jurisdictional water without getting a definitive determination from the Corps that the wetland or waterbody is not a water of the United States and thus not subject to CWA jurisdiction. As another example, if a proposed NWP activity requires pre-construction notification, the district engineer could issue the NWP verification based on the delineation of wetlands, other special aquatic sites, and other waters provided with the PCN in accordance with paragraph (b)(5) of NWP general condition 32, without the Corps making any formal determination as to whether those wetlands, special aquatic sites, and other waters are ``waters of the United States.'' During the pendency of any litigation challenging the Navigable Waters Protection Rule, the NWPs will continue to authorize discharges of dredged or fill material in all water bodies that are subject to CWA jurisdiction, or that may[[Page 2844]]be subject to CWA jurisdiction, at the time those discharges occur. Where a particular waterbody into which a person proposes to discharge dredged or fill material is subject to CWA jurisdiction, compliance with the terms and conditions of one or more NWPs, or an individual permit, will be necessary. An affected party has the opportunity to request an approved jurisdictional determination from the Corps if the affected party would like the Corps' formal determination on the jurisdictional status of a water or feature under the CWA.D. Compliance With the Endangered Species Act The NWP regulations at 33 CFR 330.4(f) and NWP general condition 18, endangered species, ensure that all activities authorized by NWPs comply with section 7 of the Endangered Species Act (ESA). Those regulations and general condition 18 require non-federal permittees to submit PCNs for any activity that might affect listed species or designated critical habitat, as well as species proposed for listing and critical habitat proposed for such designation. When the district engineer evaluates a PCN, he or she determines whether the proposed NWP activity may affect listed species or designated critical habitat. The Corps established the ``might affect'' threshold in 33 CFR 330.4(f)(2) and paragraph (c) of general condition 18 because it is more stringent than the ``may affect'' threshold for section 7 consultation in the U.S Fish and Wildlife Service's (FWS) and National Marine Fisheries Service's (NMFS) ESA section 7 consultation regulations at 50 CFR part 402. The word ``might'' is defined as having ``less probability or possibility'' than the word ``may'' (Merriam-Webster's Collegiate Dictionary, 10th edition). Since ``might'' has a lower probability of occurring, it is below the threshold (i.e , ``may affect'') that triggers the requirement for ESA section 7 consultation for a proposed Federal action. As discussed below, each year the Corps conducts thousands of ESA section 7 consultations with the FWS and NMFS for activities authorized by NWPs. In recent years, an average of more than 10,800 formal, informal, and programmatic ESA section 7 consultations are conducted each year between the Corps and the FWS and/or NMFS in response to NWP PCNs, including those activities that required PCNs under paragraph (c) of general condition 18 under the ``might affect'' threshold. If the project proponent is required to submit a PCN and the proposed activity might affect listed species or designated critical habitat, species proposed for listing, or critical habitat proposed for such designation, the activity is not authorized by an NWP until either the district engineer makes a ``no effect'' determination or makes a ``may affect'' determination and completes formal or informal ESA section 7 consultation. The district engineer may also use a regional programmatic consultation to comply with the requirements of section 7 of the ESA. When evaluating a PCN, where necessary and appropriate, the Corps district will either make a ``no effect'' determination or a ``may affect'' determination. If the district engineer makes a ``may affect'' determination, she or he will notify the non-federal project proponent and the activity is not authorized by the NWP until ESA Section 7 consultation has been completed. In making these determinations, the district engineer will apply the definition of ``effects of the action'' in the FWS's and NMFS's ESA consultation regulations at 50 CFR 402.02 If the district engineer initiates section 7 consultation with the FWS and/or NMFS, that consultation will also consider ESA section 7 cumulative effects, in accordance with the definition of ``cumulative effects'' at 50 CFR 402.02 If the non-federal project proponent does not comply with 33 CFR 330.4(f)(2) and general condition 18, and does not submit the required PCN, then the activity is not authorized by an NWP. In such situations, it is an unauthorized activity and the Corps district will determine an appropriate course of action under its regulations at 33 CFR part 326 to respond to the unauthorized activity, if and when the Corps learns about that unauthorized activity. Federal agencies, including state agencies (e.g , certain state Departments of Transportation) to which the Federal Highway Administration has assigned its responsibilities for ESA section 7 consultation pursuant to 23 U.S.C 327(a)(2)(B), are required to follow their own procedures for complying with Section 7 of the ESA (see 33 CFR 330.4(f)(1) and paragraph (b) of general condition 18). This includes circumstances where an NWP activity is part of a larger overall federal project or action. The federal agency's ESA section 7 compliance covers the NWP activity because it is undertaking the NWP activity and possibly other related activities that are part of a larger overall federal project or action. For those NWPs that require pre-construction notification for proposed activities, the federal permittee is required to provide the district engineer with the appropriate documentation to demonstrate compliance with section 7 of the ESA. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the proposed activity to fulfill both the federal agency's and the Corps' obligations to comply with the ESA. The only activities that potentially could be immediately authorized by NWPs, assuming they meet all other applicable NWP conditions, are activities that would have ``no effect'' on listed species or designated critical habitat within the meaning of Section 7 of the ESA and its implementing regulations at 50 CFR part 402. Therefore, the issuance or reissuance of NWPs does not require ESA section 7 consultation because no activities authorized by any NWPs ``may affect'' listed species or critical habitat without first completing activity-specific ESA Section 7 consultations with the Services, as required by general condition 18 and 33 CFR 330.4(f). Regional programmatic ESA section 7 consultations may also be used by district engineers to satisfy the requirements of the NWPs in general condition 18 and 33 CFR 330.4(f) if a proposed NWP activity is covered by that regional programmatic consultation. In the August 27, 2019, issue of the Federal Register (84 FR 44976) the FWS and NMFS published a final rule that amended their regulations for interagency cooperation under Section 7 of the ESA. That final rule went into effect on October 28, 2019. With respect to making effects determinations for proposed federal actions, such as activities authorized by NWPs, the FWS and NMFS made two important changes to 50 CFR part 402: (a) Introducing the term ``consequences'' to help define what is an effect under ESA section 7, and (b) emphasizing that to be considered an ``effect of the action'' under section 7 consultation, the consequences caused by the action would not occur but for the proposed action and must be reasonably certain to occur (see 84 FR 44977). Further clarification of ``activities that are reasonably certain to occur'' and ``consequences caused by the proposed action'' were provided by the FWS and NMFS in rule text added at 50 CFR 402.17(a) and (b), respectively. Applying the 2019 amendments to the section 7 regulations to the NWP program, consequences to listed species and designated critical habitat caused[[Page 2845]]by proposed NWP activities must be reasonably certain to occur. In the preamble to their final rule, the FWS and NMFS stated that for a ``consequence of an activity to be considered reasonably certain to occur, the determination must be based on clear and substantial information'' (see 84 FR 44977). The FWS and NMFS explained that ``clear and substantial'' means that there has to be a firm basis for supporting a conclusion that a consequence of a federal action is reasonably certain to occur. The determination that a consequence is reasonably certain to occur should not be based on speculation or conjecture, and the information used to make that determination should have a ``degree of certitude'' (see 84 FR 44977). The Corps will apply these considerations when evaluating pre-construction notifications for proposed NWP activities. When the district engineer receives a pre-construction notification for a proposed NWP activity, he or she is responsible for applying the current definition of ``effect of the action'' to the proposed NWP activity and to determine the consequences caused by the proposed action and which activities are reasonably certain to occur. The district engineer determines whether the proposed NWP activity ``may affect'' listed species or designated critical habitat and initiates formal or informal section 7 consultation, unless she or he determines that the proposed NWP activity will have ``no effect'' on listed species or designated critical habitat. As a general rule, the district engineer documents his or her ``no effect'' determination in writing for every pre-construction notification that the district engineer receives and responds to. The NWP program has been structured, through the requirements of NWP general condition 18 and 33 CFR 330.4(f), to focus ESA section 7 compliance at the activity-specific and regional levels. Each year, an average of more than 10,800 formal, informal, and regional programmatic ESA section 7 consultations are conducted by Corps districts with the FWS and/or NMFS in response to NWP PCNs for specific NWP activities (see below). Focusing ESA section 7 compliance at the activity-specific scale and regional programmatic scale is more efficient for the permittees, the Corps, and the FWS and NMFS, than doing so at the national level because of the similarities in ecosystem characteristics and associated listed species and critical habitat within a particular region. For a proposed NWP activity that may affect listed species or designated critical habitat, a biological opinion with an incidental take statement is needed for the NWP activity to go forward unless the FWS or NMFS issued a written concurrence that the proposed NWP activity is not likely to adversely affect listed species or designated critical habitat. It is through activity-specific section 7 consultations and regional programmatic section 7 consultations between the Corps and the FWS and NMFS that effective protection of listed species and their designated critical habitat is achieved. After applying the current ESA section 7 regulations at 50 CFR part 402 to the NWP rulemaking process, the Corps continues to believe that the issuance or reissuance of the NWPs has ``no effect'' on listed species or designated critical habitat, and that the ESA section 7 compliance is most effectively achieved by applying the requirements of general condition 18 and 33 CFR 330.4(f) to specific proposed NWP activities that are identified after the NWPs are issued and go into effect. Compliance with the requirements of ESA section 7 can also be achieved by district engineers applying appropriate formal or informal regional programmatic ESA section 7 consultations that have been developed by Corps districts with regional offices of the FWS and NMFS. Section 7 of the Endangered Species Act requires each federal agency to ensure, through consultation with the Services, that ``any action authorized, funded, or carried out'' by that agency ``is not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitat.'' (See 16 U.S.C 1536(a)(2).) Accordingly, the Services' section 7 regulations specify that an action agency must ensure that the action ``it authorizes,'' including authorization by permit, does not cause jeopardy or adverse modification. (See 50 CFR 402.01(a) and 402.02). Thus, in assessing application of ESA section 7 to NWPs issued or reissued by the Corps, the proper focus is on the nature and extent of the specific activities ``authorized'' by the NWPs and the timing of that authorization. The issuance or reissuance of the NWPs by the Chief of Engineers imposes express limitations on activities authorized by these NWPs. These limitations are imposed by the NWP terms and conditions, including the general conditions that apply to all NWPs regardless of whether pre-construction notification is required by a specific NWP. With respect to listed species and critical habitat, general condition 18 expressly prohibits any activity ``which `may affect' a listed species or designated critical habitat, unless section 7 consultation addressing the effects of the proposed activity has been completed.'' General condition 18 also states that if an activity ``might affect'' a listed species or designated critical habitat (or a species proposed for listing or critical habitat proposed for such designation), a non-federal applicant must submit a PCN and ``shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized.'' In addition, 33 CFR 330.4(f)(2) imposes a PCN requirement for proposed NWP activities by non-federal permittees where listed species (or species proposed for listing) or critical habitat might be affected or are in the vicinity of the proposed NWP activity. Section 330.4(f)(2) also prohibits those permittees from beginning the NWP activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. Permit applicants that are Federal agencies must and will follow their own requirements for complying with the ESA (see 33 CFR 330.4(f)(1)). Thus, because no NWP can or does authorize an activity that may affect a listed species or critical habitat absent an activity-specific ESA section 7 consultation or applicable regional programmatic ESA section 7 consultation, and because any activity that may affect a listed species or critical habitat must undergo an activity-specific consultation or be in compliance with a regional programmatic ESA section 7 consultation before the district engineer can verify that the activity is authorized by an NWP, the issuance or reissuance of NWPs has ``no effect'' on listed species or critical habitat. Accordingly, the action being ``authorized'' by the Corps (i.e , the issuance or re-issuance of the NWPs themselves) has no effect on listed species or critical habitat. To help ensure protection of listed species and critical habitat, general condition 18 and 33 CFR 330.4(f) establish a more stringent threshold than the threshold set forth in the Services' ESA section 7 regulations for initiation of section 7 consultation. Specifically, while section 7 consultation must be initiated for any activity that ``may affect'' listed species or critical habitat, for non-federal permittees general condition 18 require submission of a PCN to the Corps if ``any listed species (or species proposed[[Page 2846]]for listing) or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat'' or critical habitat proposed for such designation, and prohibits work until ``notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized.'' (See paragraph (c) of general condition 18.) The PCN must ``include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed work or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed work.'' (See paragraph (b)(7) of the ``Pre-Construction Notification'' general condition.) Paragraph (f) of general condition 18 notes that information on the location of listed species and their critical habitat can be obtained from the Services directly or from their websites. General condition 18 makes it clear to project proponents that an NWP does not authorize the ``take'' of an endangered or threatened species. Paragraph (e) of general condition 18 also states that a separate authorization (e.g , an ESA section 10 permit or a biological opinion with an ``incidental take statement'') is required to take a listed species. In addition, paragraph (a) of general condition 18 states that no activity is authorized by an NWP which is likely to ``directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation'' or ``which will directly or indirectly destroy or adversely modify the critical habitat of such species.'' Such activities would require district engineers to exercise their discretionary authority and subject the proposed activity to the individual permit review process, because an activity that would jeopardize the continued existence of a listed species, or a species proposed for listing, or that would destroy or adversely modify the critical habitat of such species would not result in no more than minimal adverse environmental effects and thus cannot be authorized by an NWP. The Corps' NWP regulations at 33 CFR 330.1(c) state that an ``activity is authorized under an NWP only if that activity and the permittee satisfy all of the NWP's terms and conditions.'' Thus, if a project proponent moves forward with an activity that ``might affect'' an ESA listed species without complying with the PCN or other requirements of general condition 18, the activity is not authorized under the CWA. In this case, the project proponent could be subject to enforcement action and penalties under the CWA. In addition, if the unauthorized activity results in a ``take'' of listed species as defined by the ESA and its implementing regulations, then he or she could be subject to penalties, enforcement actions, and other actions by the FWS or NMFS under section 11 of the ESA. For listed species (and species proposed for listing) under the jurisdiction of the FWS, information on listed species that may be present in the vicinity of a proposed activity is available through the Information Planning and Consultation (IPaC) system,\4\ an on-line project planning tool developed and maintained by the FWS.--------------------------------------------------------------------------- \4\ [*https://ecos.fws.gov/ipac/.---------------------------------------------------------------------------*](https://ecos.fws.gov/ipac/.---------------------------------------------------------------------------) During the process for developing regional conditions, Corps districts collaborate with FWS and/or NMFS regional or field offices to identify regional conditions that can provide additional assurance of compliance with general condition 18 and 33 CFR 330.4(f)(2). Such regional conditions can add PCN requirements to one or more NWPs in areas inhabited by listed species or where designated critical habitat occurs. Regional conditions can also be used to establish time-of-year restrictions when no NWP activity can take place to ensure that individuals of listed species are not adversely affected by such activities. Corps districts will continue to consider through regional collaborations and consultations, local initiatives, or other cooperative efforts additional information and measures to ensure protection of listed species and critical habitat, the requirements established by general condition 18 (which apply to all uses of all NWPs), and other provisions of the Corps regulations ensure full compliance with ESA section 7. Corps district office personnel meet with local representatives of the FWS and NMFS to establish or modify existing procedures, where necessary, to ensure that the Corps has the latest information regarding the existence and location of any threatened or endangered species or their critical habitat, including species proposed for listing or critical habitat proposed for such designation. Corps districts can also establish, through local procedures or other means, additional safeguards that ensure compliance with the ESA. Through formal ESA section 7 consultation, or through other coordination with the FWS and/or the NMFS, as appropriate, the Corps establishes procedures to ensure that NWP activities will not jeopardize any threatened and endangered species or result in the destruction or adverse modification of designated critical habitat. Such procedures may result in the development of regional conditions added to the NWP by the division engineer, or in activity-specific conditions to be added to an NWP authorization by the district engineer. The Corps has prepared a biological assessment for this rulemaking action. The biological assessment concludes that the issuance or reissuance of NWPs has ``no effect'' on listed species and designated critical habitat and does not require ESA section 7 consultation. This conclusion was reached because no activities authorized by any NWPs ``may affect'' listed species or critical habitat without first completing activity-specific ESA Section 7 consultations with the Services, as required by general condition 18 and 33 CFR 330.4(f). Based on the fact that NWP issuance or reissuance of the NWPs is contingent upon any proposed NWP activity that ``may affect'' listed species or critical habitat undergoing an activity-specific or regional programmatic ESA section 7 consultation, there is no requirement that the Corps undertake consultation for the NWP program. The national programmatic consultations conducted in the past for the NWP program were voluntary consultations despite the inclusion of procedures to ensure consultation under Section 7 for proposed NWP activities that may affect listed species or designated critical habitat. Regional programmatic consultations can be conducted voluntarily by Corps districts and regional or local offices of the FWS and/or NMFS to tailor regional conditions and procedures to ensure the ``might affect'' threshold is implemented consistently and effectively. Examples of regional programmatic consultations currently in effect, with the applicable Service the Corps consulted with, include: The Standard Local Operating Procedures for Endangered Species in Mississippi (2017--FWS); the Endangered Species Act Section 7 Programmatic Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Tidal Area Restoration Authorized, Funded, or Implemented by the Corps of Engineers, Federal Emergency Management Agency, and Federal Highways Administration, in Oregon and the Lower Columbia River (NMFS--2018); the U.S Army Corps of Engineers Jacksonville District's Programmatic Biological Opinion (JAXBO) (NMFS--2017); Missouri Bat Programmatic[[Page 2847]]Informal Consultation Framework (FWS--2019); Revised Programmatic Biological/Conference Opinion for bridge and culvert repair and replacement projects affecting the Dwarf Wedgemussel, Tar River Spinymussel, Yellow Lance and Atlantic Pigtoe. Programmatic Conference Opinion (PCO) for Bridge and Culvert Replacement/Repairs/Rehabilitations in Eastern North Carolina, NCDOT Divisions 1-8 (FWS--2018); and the Corps and NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) Not Likely to Adversely Affect Program Programmatic Consultation (NMFS--2017). The programmatic ESA section 7 consultations that the Corps conducted for the 2007 and 2012 NWPs were voluntary consultations. The voluntary programmatic consultation conducted with the NMFS for the 2012 NWPs resulted in a biological opinion issued on February 15, 2012, which was replaced by a new biological opinion issued on November 24, 2014. A new biological opinion was issued by NMFS after the proposed action was modified and triggered re-initiation of that programmatic consultation. The programmatic consultation on the 2012 NWPs with the FWS did not result in a biological opinion. For the 2017 NWPs, the Corps did not request a national programmatic consultation. In the Corps Regulatory Program's automated information system (ORM), the Corps collects data on all individual permit applications, all NWP PCNs, all voluntary requests for NWP verifications where the NWP or general conditions do not require PCNs, and all verifications of activities authorized by regional general permits. For all written authorizations issued by the Corps, the collected data include authorized impacts and required compensatory mitigation, as well as information on all consultations conducted under section 7 of the ESA. Every year, the Corps evaluates approximately 35,000 NWP PCNs and requests for NWP verifications for activities that do not require PCNs, and provides written verifications for those activities when district engineers determine those activities result in no more than minimal adverse environmental effects. During the evaluation process, district engineers assess potential impacts to listed species and critical habitat and conduct section 7 consultations whenever they determine proposed NWP activities ``may affect'' listed species or critical habitat. District engineers will exercise discretionary authority and require individual permits when proposed NWP activities will result in more than minimal adverse environmental effects. Each year, the Corps conducts thousands of ESA section 7 consultations with the FWS and NMFS for activities authorized by NWPs. These section 7 consultations are tracked in ORM. In FY 2018 (October 1, 2017 to September 30, 2018), Corps districts conducted 640 formal consultations and 3,048 informal consultations under ESA section 7 for NWP PCNs. During that time period, the Corps also used regional programmatic consultations for 7,148 NWP PCNs to comply with ESA section 7. Therefore, each year an average of more than 10,800 formal, informal, and programmatic ESA section 7 consultations are conducted between the Corps and the FWS and/or NMFS in response to NWP PCNs, including those activities that required PCNs under paragraph (c) of general condition 18. For a linear project authorized by NWPs 12 or 14, where the district engineer determines that one or more crossings of waters of the United States that require Corps authorization ``may affect'' listed species or designated critical habitat, the district engineer initiates a single section 7 consultation with the FWS and/or NMFS for all of those crossings that he or she determines ``may affect'' listed species or designate critical habitat. The number of section 7 consultations provided above represents the number of NWP PCNs that required some form of ESA section 7 consultation, not the number of single and complete projects authorized by an NWP that may be included in a single PCN. A single NWP PCN may include more than one single and complete project, especially if it is for a linear project such as a utility line or road with multiple separate and distant crossings of jurisdictional waters and wetlands from its point of origin to its terminal point. During the process for reissuing the NWPs, Corps districts coordinated with regional and field offices of the FWS and NMFS to discuss whether new or modified regional conditions should be imposed on the NWPs to improve implementation of the ``might effect'' threshold and improve protection of listed species and designated critical habitat and ensure that the NWPs only authorize activities with no more than minimal individual and cumulative adverse environmental effects. Regional conditions must comply with the Corps' regulations at 33 CFR 325.4 for adding permit conditions to DA authorizations. The Corps decides whether suggested regional conditions identified during this coordination are appropriate for the NWPs. During this coordination, other tools, such as additional regional programmatic consultations or standard local operating procedures, might be developed by the Corps, FWS, and NMFS to facilitate compliance with the ESA while streamlining the process for authorizing activities under the NWPs. Section 7 consultation on regional conditions occurs only when a Corps districts makes a ``may affect'' determination and initiates formal or informal section 7 consultation with the FWS and/or NMFS, depending on the species that may be affected. Otherwise, the Corps district coordinates the regional conditions with the FWS and/or NMFS. Regional conditions, standard local operating procedures, and regional programmatic consultations developed by the Corps, FWS, and NMFS are important tools for protecting listed species and critical habitat and helping to tailor the NWP program to address specific species, their habitats, and the stressors that affect those species. The Corps received numerous comments regarding compliance with the Endangered Species Act for both the rulemaking process for issuing, reissuing, and modifying the NWPs by Corps Headquarters, and compliance for specific activities authorized by NWPs. Many commenters expressed support for the Corps' current method of ESA compliance without need for a national programmatic section 7 consultation. These commenters said that the requirements of general condition 18 provide a sufficiently low threshold to trigger necessary ESA section 7 consultations for NWP activities. Many commenters said that there is no requirement for the Corps to consult under the ESA for the reissuance of the NWPs because the reissuance of the NWPs has no effect on listed species and consultation for each NWP activity occurs as necessary. One commenter suggested that the Corps voluntarily consult on reissuance of the NWPs to provide regulatory certainty to the business community, and said that this voluntary consultation should not delay issuance of a final rule. Many commenters expressed opposition to reissuing the NWPs without completing a national programmatic ESA section 7 consultation and addressing cumulative impacts to listed species. Several commenters stated that the Corps had failed to ensure that NWP activities are not likely to jeopardize the continued existence of listed species or adversely modify or destroy critical habitat, in violation of the ESA. A few commenters said that the Corps' programmatic ``no effect'' determination for the NWPs is in error because it is arbitrary and[[Page 2848]]capricious, in violation of the ESA, and/or in violation of federal court decisions. With this final rule, the Corps is continuing to implement its current approach to ESA section 7 compliance, through general condition 18 and 33 CFR 330.4(f). The Corps has determined that the issuance of this final rule will have no effect on endangered or threatened species or critical habitat, completed a Biological Assessment to inform that conclusion, and therefore will not be submitting a request to the FWS and NMFS for a voluntary national programmatic ESA section 7 consultation. The Corps will continue to comply with the requirements of Section 7(a)(2) of the ESA through activity-specific and regional programmatic section 7 consultations conducted between district engineers and regional and field offices of the FWS and NMFS. A few commenters stated that general 18 unlawfully delegates the Corps' ESA section 7 responsibilities to permittees. By requiring project proponents to submit PCNs if listed species ``might be'' affected, some commenters stated that the Corps unlawfully delegates the initial effect determination to the permittee. A few commenters said that the definition of agency ``action'' in the ESA which requires ESA section 7(b) consultation includes programmatic actions such as the Corps issuance of the NWPs. A few commenters said that formal programmatic consultation between the Corps and the Services is necessary to meet the requirements of the ESA, asserting that such consultation allows for consideration of the cumulative impacts of a program and guides implementation of the program by establishing criteria to avoid adverse effects. These commenters also said that project-specific consultation must then be undertaken for specific actions under the program, which is when incidental take is authorized. One commenter said that the Corps' programmatic ``no effect'' with reliance on project specific consultation for compliance with the ESA is in error as it does not address cumulative impacts to species. The commenter further stated that this is clear based on past court cases, a past national programmatic consultation with NMFS, and the Services' listing decisions and critical habitat designations whereby they assess activities permitted by NWP as a cause of the listing or designation decision. General condition 18 does not delegate the Corps' ESA section 7 responsibilities to permittees. Consultation under section 7(a)(2) of the ESA is only required when a federal agency determines that its proposed action may affect listed species or designated critical habitat. As explained in this section of the final rule, the ``might affect'' threshold in paragraph (c) of general condition 18 is lower than the ``may affect'' threshold for triggering a requirement for consultation with the FWS and/or NMFS. The district engineer, not the permit applicant, is responsible for making a ``may effect'' or ``no effect'' determination under ESA section 7. The non-federal permittee is responsible for complying with paragraph (c) of general condition 18 and submitting a PCN to the district engineer when a proposed NWP activity triggers one of the PCN thresholds in that paragraph. As discussed above, the Corps evaluated the programmatic action of rulemaking to issue these NWPs and determined that the issuance or reissuance of the NWPs by Corps Headquarters has no effect on listed species or designated critical habitat; that evaluation is documented in a Biological Assessment that supports its no effect determination. Therefore, an ESA section 7(a)(2) consultation with the FWS and NMFS is not required on a national, programmatic level for the issuance or reissuance of the NWPs in this final rule. The Corps considered the effects of its proposed action (i.e , the issuance or reissuance of the NWPs through the rulemaking process), including the cumulative effects anticipated to be caused by that proposed action. Those cumulative impacts include the projected use of the NWPs during the 5-year period those NWPs are anticipated to be in effect, along with the estimated impacts to jurisdictional waters and wetlands and other resources, and the estimated compensatory mitigation required by district engineers to offset the authorized impacts. When issuing or reissuing the NWPs, or determining whether specific activities are authorized by an NWP, the Corps considers the individual and cumulative adverse environmental effects caused by those activities, including adverse environmental effects to a variety of resources, including jurisdictional waters and wetlands and the species that inhabit those waters and wetlands. With respect to cumulative effects under ESA section 7, the FWS and NMFS define ``cumulative effects'' as the ``effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation'' (see 50 CFR 402.02). The Corps does not have the legal authority to regulate or control future state or private actions that do not involve activities that require DA authorization under Section 10 of the Rivers and Harbors Act of 1899 or Section 404 of the Clean Water Act. Therefore, the Corps does not have the authority or discretion to control cumulative effects to listed species or designated critical habitat that are caused by future state or private activities. Incidental take is addressed through activity-specific and regional programmatic formal ESA section 7 section consultations when district engineers determine proposed NWP activities may affect listed species or designated critical habitat. Previous national ESA section 7 programmatic consultations on the NWPs were voluntary consultations. Even though some listing decisions by the FWS or NMFS may have identified activities that may require DA permits as one of the contributing factors to listing a particular species as endangered or threatened under the ESA, those listing decisions usually acknowledge that section 7 consultations will be conducted for proposed federal actions that may affect those species, including activities that require DA authorization under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. An example is the final rule issued by NMFS on June 28, 2005, for the final listing determinations for 16 evolutionary significant units of west coast salmon (see 70 FR 37195). One commenter suggested that the Corps require PCNs for all NWPs to ensure that the Corps is consulting as necessary under the ESA and is able to accurately track and evaluate cumulative impacts. One commenter stated that there is no requirement for the Corps to consult under the ESA for the NWPs but believes the Corps needs to rebut the findings in the Montana district court case in the text of the rule for purposes of future litigation. One commenter said that the Corps' ``no effect'' determination and deferral of ESA consultation until the project is proposed is in alignment with recent changes to ESA implementing regulations at 50 CFR 402.17(a) and (b). Specifically, these commenters assert that the change to the ESA section 7 regulations require that ``program actions that are reasonably certain to occur'' and the potential consequences of proposed actions be based on ``clear and substantial information.'' Information that, the commenter argues, is not available until the project and its location are proposed.[[Page 2849]] It is neither practical nor necessary to require PCNs for all activities authorized by NWPs to ensure compliance with section 7 the ESA. There are many activities authorized by the NWPs each year that have no effect on listed species or designated critical habitat, despite approximately 10,800 ESA section 7 consultations occurring annually. Listed species are not uniformly distributed across the United States and tend to be concentrated in specific geographic areas (``hotspots'') (e.g , Evans et al. 2016), and there are areas in the country with jurisdictional waters and wetlands that have no or few listed species where NWP activities proceed with no effects to listed species or critical habitat. In addition, requiring PCNs for all activities authorized by NWPs would nearly double the number of PCNs reviewed by Corps district each year. In Appendix A of the Regulatory Impact Analysis for the 2020 Proposal, the Corps estimates that nearly 32,000 NWP activities proceed without PCNs each year. The Regulatory Impact Analysis for the 2020 proposal is available in the [*www.regulations.gov*](http://www.regulations.gov) docket for this rule (docket number COE-2020-0002). That increase in the Corps' workload could result in changes in the effectiveness and efficiency in the review of PCNs by district engineers, as well as their evaluations of other activities requiring DA authorization, including activities authorized by individual permits and regional general permits. The increase in the Corps' workload could also affect its ability to conduct enforcement and compliance actions. Finally, and as explained above, General Condition 18 addresses this commenter's concerns regarding PCN requirements. The Corps agrees that its ``no effect'' determination for the issuance or reissuance of the NWPs complies with the ESA section 7 regulations at 50 CFR part 402, because section 7 consultation is not required when a federal agency determines its proposed action will have no effect on listed species or designated critical habitat. In the biological assessment prepared by the Corps for this rulemaking activity, the Corps presents a substantial amount of data to demonstrate the actions it takes to comply with section 7 of the ESA, including the number of formal and informal section 7 consultations it conducts with the FWS and NMFS and the number of regional programmatic consultations and other tools it has developed with the FWS and NMFS. One commenter said that the when the Corps implements an incidental take statement as a condition in its NWP verification it must undertake a project specific NEPA analysis. One commenter stated that the incidental take statement must be applied to entire project and not just the areas over which the Corps has control and responsibility. If not, the project proponent must obtain an ESA section 10(a)(1)(B) permit from the Services to ensure compliance with the ESA. Absent this, general condition 18 has the potential to continuously violate the ESA. When a district engineer adds conditions to an NWP authorization to comply with the ESA or other federal laws, including terms and conditions from reasonable and prudent measures identified in an incidental take statement in a biological opinion that apply to the activity authorized by an NWP, a project-specific NEPA analysis is not required. The Corps complies with the requirements of NEPA when it prepares environmental assessments in the national decision documents for the issuance or reissuance of the NWPs by Corps Headquarters. The activities to which an incidental take statement in a biological opinion issued by the FWS or NMFS applies is dependent on project-specific circumstances identified in that biological opinion. When the FWS or NMFS write an incidental take statement for a biological opinion, under section 7(b)(4)(iv) of the ESA they can assign responsibility of specific terms and conditions of the incidental take statement to the federal action agency (e.g , the Corps), the applicant, or both taking into account their respective roles, authorities, and responsibilities (see 84 FR 44977). Paragraph (f) of general condition 18 addresses ESA section 10(a)(1)(B) incidental take permits and their potential application for NWP activities. The Corps has carefully considered and evaluated all comments that were provided regarding this issue. The Corps reaffirms that its ``no effect'' determination for the promulgation of the NWPs is correct and appropriate, for the reasons explained above.E. Compliance With the Essential Fish Habitat Provisions of the Magnuson-Stevens Fishery Conservation and Management Act The NWP Program's compliance with the essential fish habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act will be achieved through EFH consultations between Corps districts and NMFS regional offices. This approach continues the EFH Conservation Recommendations provided by NMFS Headquarters to Corps Headquarters in 1999 for the NWP program. Corps districts that have EFH designated within their geographic areas of responsibility will coordinate with NMFS regional offices, to the extent necessary, to develop NWP regional conditions that conserve EFH and are consistent with the NMFS regional EFH Conservation Recommendations. Corps districts will conduct consultations in accordance with the EFH consultation regulations at 50 CFR 600.920 One commenter said that consultation with NMFS needs to occur for all NWPs used in essential fish habitat. The Corps continues to implement the EFH Conservation Recommendation provided by NMFS in 1999. In those Corps districts where essential fish habitat has been designated, district engineers review PCNs for proposed NWP activities to determine whether those proposed activities may adversely affect essential fish habitat. If the district engineer determines a proposed NWP activity may adversely affect essential fish habitat, she or he initiates EFH consultation with the NMFS. Division engineers can add PCN requirements via regional conditions to those NWPs that do not require PCNs for all activities to ensure that EFH consultation is conducted for proposed activities that may adversely affect EFH.F. Compliance With Section 106 of the National Historic Preservation Act The NWP regulations at 33 CFR 330.4(g) and the ``Historic Properties'' general condition (general condition 20), ensure that all activities authorized by NWPs comply with section 106 of the NHPA. The ``Historic Properties'' general condition requires non-federal permittees to submit PCNs for any activity that might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. The Corps then evaluates the PCN and makes an effect determination for the proposed NWP activity for the purposes of NHPA section 106. We established the ``might have the potential to cause effects'' threshold in paragraph (c) of the ``Historic Properties'' general condition to require PCNs for those activities so that the district engineer can evaluate the proposed NWP activity and determine whether it has no potential to cause effects to historic properties or whether it has potential to cause effects to historic properties and thus require section 106 consultation. If the project proponent is required to submit a PCN and the proposed activity might have the potential to cause effects[[Page 2850]]to historic properties, the activity is not authorized by an NWP until either the Corps district makes a ``no potential to cause effects'' determination or completes NHPA section 106 consultation. When evaluating a PCN, the Corps will either make a ``no potential to cause effects'' determination or a ``no historic properties affected,'' ``no adverse effect,'' or ``adverse effect'' determination. If the Corps makes a ``no historic properties affected,'' ``no adverse effect,'' or ``adverse effect'' determination, it will notify the non-federal applicant and the activity is not authorized by an NWP until NHPA Section 106 consultation has been completed. If the non-federal project proponent does not comply with the ``Historic Properties'' general condition, and does not submit the required PCN, then the activity is not authorized by an NWP. In such situations, it is an unauthorized activity and the Corps district will determine an appropriate course of action to respond to the unauthorized activity. The only activities that are immediately authorized by NWPs are ``no potential to cause effect'' activities under section 106 of the NHPA, its implementing regulations at 36 CFR part 800, and the Corps' ``Revised Interim Guidance for Implementing Appendix C of 33 CFR part 325 with the Revised Advisory Council on Historic Preservation Regulations at 36 CFR part 800,'' dated April 25, 2005, and amended on January 31, 2007. Therefore, the issuance or reissuance of NWPs does not require NHPA section 106 consultation because no activities that might have the potential to cause effects to historic properties can be authorized by an NWP without first completing activity-specific NHPA Section 106 consultations, as required by the ``Historic Properties'' general condition. Programmatic agreements (see 36 CFR 800.14(b)) may also be used to satisfy the requirements of the NWPs in the ``Historic Properties'' general condition if a proposed NWP activity is covered by that programmatic agreement. NHPA section 106 requires a federal agency that has authority to license or permit any undertaking, to take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register, prior to issuing a license or permit. The head of any such Federal agency shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking. Thus, in assessing application of NHPA section 106 to NWPs issued or reissued by the Corps, the proper focus is on the nature and extent of the specific activities ``authorized'' by the NWPs and the timing of that authorization. The issuance or reissuance of the NWPs by the Chief of Engineers imposes express limitations on activities authorized by those NWPs. These limitations are imposed by the NWP terms and conditions, including the general conditions that apply to all NWPs regardless of whether pre-construction notification is required. With respect to historic properties, the ``Historic Properties'' general condition expressly prohibits any activity that ``may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places,'' until the requirements of section 106 of the NHPA have been satisfied. The ``Historic Properties'' general condition also states that if an activity ``might have the potential to cause effects'' to any historic properties, a non-federal applicant must submit a PCN and ``shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that consultation under Section 106 of the NHPA has been completed.'' Permit applicants that are Federal agencies should follow their own requirements for complying with section 106 of the NHPA (see 33 CFR 330.4(g)(1) and paragraph (b) of the ``Historic Properties'' general condition). Thus, because no NWP can or does authorize an activity that may have the potential to cause effects to historic properties, and because any activity that may have the potential to cause effects to historic properties must undergo an activity-specific section 106 consultation (unless that activity is covered under a programmatic agreement) before the district engineer can verify that the activity is authorized by an NWP, the issuance or reissuance of NWPs has ``no potential to cause effects'' on historic properties. Accordingly, the action being ``authorized'' by the Corps, which is the issuance or re-issuance of the NWPs by Corps Headquarters, has no potential to cause effects on historic properties. To help ensure protection of historic properties, the ``Historic Properties'' general condition establishes a higher threshold than the threshold set forth in the Advisory Council's NHPA section 106 regulations for initiation of section 106 consultation. Specifically, while section 106 consultation must be initiated for any activity that ``has the potential to cause effects to'' historic properties, for non-federal permittees the ``Historic Properties'' general condition requires submission of a PCN to the Corps if ``the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties.'' The ``Historic Properties'' general condition also prohibits the proponent from conducting the NWP activity ``until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that consultation under Section 106 of the NHPA has been completed.'' (See paragraph (c) of the ``Historic Properties'' general condition.) The PCN must ``state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property.'' (See paragraph (b)(8) of the ``Pre-Construction Notification'' general condition.) During the process for developing regional conditions, Corps districts can coordinate or consult with State Historic Preservation Officers, Tribal Historic Preservation Officers, and tribes to identify regional conditions that can provide additional assurance of compliance with the ``Historic Properties'' general condition and 33 CFR 330.4(g)(2) for NWP activities undertaken by non-federal permittees. Such regional conditions can add PCN requirements to one or more NWPs where historic properties occur. Corps districts will continue to consider through regional consultations, local initiatives, or other cooperative efforts and additional information and measures to ensure protection of historic properties, the requirements established by the ``Historic Properties'' general condition (which apply to all uses of all NWPs), and other provisions of the Corps regulations and guidance ensure full compliance with NHPA section 106. Based on the fact that NWP issuance or reissuance has no potential to cause effects on historic properties and that any activity that ``has the potential to cause effects'' to historic properties will undergo activity-specific NHPA section 106 consultation, there is no requirement that the Corps undertake programmatic consultation for the NWP program. Regional programmatic agreements can be established by Corps districts and State Historic Preservation Officers and/or Tribal Historic Preservation Officers to comply with the requirements of section 106 of the NHPA.[[Page 2851]] One commenter stated the reissuance of the NWPs does not require Section 106 NHPA consultation, but specific activities may require section 106 consultation. One commenter said the Corps should programmatically address the potential adverse effects from undertakings permitted pursuant to the NWPs either by creating a national programmatic agreement or a division-specific programmatic agreement. One commenter stated that the Corps' position that effects to historic properties would be evaluated on an individual activity phase is not consistent with the 36 CFR part 800 regulations. One commenter disagreed with the Corps' position that the issuance or reissuance of the NWPs has ``no potential to cause effect'' on historic properties and does not require compliance with Section 106 of the NHPA. This commenter said that reliance on general conditions 20, 21, and 32 is not a substitute for appropriate compliance with section 106 in individual cases. For most NWP activities, the need to conduct NHPA section 106 is determined on a case-by-case basis, as district engineers evaluate PCNs for proposed NWP activities, including PCNs submitted by non-federal permittees under paragraph (c) of general condition 20. The Corps believes that programmatic agreements for section 106 compliance are more appropriately developed at a regional level, between Corps districts and State Historic Preservation Officers and Tribal Historic Preservation Officers. The Advisory Council on Historic Preservation's regulations provide for section 106 consultation on a case-by-case basis, although it includes provisions for federal agency program alternatives, including alternative procedures and programmatic agreements (see 36 CFR 800.14). With respect to section 106 of the NHPA, the only activities immediately authorized by an NWP are those activities that have no potential to cause effects to historic properties. Paragraph (c) of general condition 20 requires non-federal permittees to submit PCNs for any proposed NWP activities that might have the potential to cause effects to historic properties. District engineers review these PCNs to determine whether NHPA section 106 consultation is required for a proposed NWP activity. Several commenters stated that Appendix C to 33 CFR part 325 and the 2005 and 2007 interim guidance documents issued by the Corps does not constitute an acceptable federal agency program alternative under 36 CFR 800.14 One commenter said that the Corps does not have the authority under the Clean Water Act and the River and Harbors Act of 1899 to promulgate its own regulations for compliance with Section 106 of the National Historic Preservation Act (i.e , Appendix C to 33 CFR part 325) rather than complying with 36 CFR part 800. The Corps continues to use Appendix C and the 2005 and 2007 interim guidance to comply with section 106 of the NHPA. Section 110(a)(2)(E)(i) of the NHPA states that federal agencies can develop their own procedures for complying with section 106 as long as those procedures are consistent with the regulations issued by the Advisory Council on Historic Preservation. A few commenters stated the NWPs and the general conditions violate the NHPA by delegating the effects determination to non-federal permittees by allowing permittees to make a determination of effect for NWP activities that do not require PCNs. Several commenters said that general condition 20 is inconsistent with the 36 CFR part 800 regulations. One commenter stated that general condition 20 does not provide a standard by which the permittee must determine a PCN is necessary because of potential effects to historic properties. The NWPs and their general conditions do not delegate effects determinations under section 106 of the NHPA to non-federal permittees. Paragraph (c) of general condition 20 requires non-federal permittees to submit PCNs to district engineers for any proposed NWP activity that might have the potential to cause effects to historic properties. District engineers will review those PCNs and determine whether section 106 NHPA consultation is required for proposed NWP activities. The ``might have the potential to cause effects'' to any historic property is a standard to guide permittees as to when they need to submit PCNs so that district engineers can determine whether section 106 consultation is required for a proposed NWP activity. A few commenters said that the Corps' permit area (area of potential effects) for section 106 compliance should not be limited to the activity within waters of the United States that requires DA authorization, and that the area of potential effects should encompass the entire project that requires the permit. One commenter stated that the Corps' limited permit area causes costly delays to the project proponent when section 106 disputes are triggered, and that by limiting the permit area, the Corps undertaking does not adequately consider direct or indirect effect on historic properties. The Corps' permit area or area of potential effects is limited to those areas and activities where the Corps has control and responsibility to address effects to historic properties through its permitting authorities under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. District engineers work with permit applicants and other consulting parties to resolve disagreements about permit areas for section 106 compliance. When evaluating PCNs, district engineers consider direct and indirect effects to historic properties. A few commenters said that a federal agency must consult with the Advisory Council on Historic Preservation, State Historic Preservation Offices, Tribal Historic Preservation Officers, tribes, and Native Hawaiian organization, where applicable, when effects to historic properties cannot be fully determined, and said that if a PCN is not warranted, these groups are not provided an opportunity to comment. One commenter said that the Corps must afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking, and when no PCN is required for an NWP activity, there is no consultation on the undertaking. Non-federal permit applicants are responsible for complying with general condition 20, including the requirement to submit PCNs for any proposed NWP activity that might have the potential to cause effects to historic properties, so that the district engineer can determine whether section 106 consultation is required for proposed activity. If the district engineer determines section 106 consultation is necessary, she or he will identify consulting parties and initiate section 106 consultation with those consulting parties. District engineers provide the Advisory Council on Historic Preservation with a reasonable opportunity to comment when the Council enters the section 106 process in accordance with Appendix A to 36 CFR part 800.G. Section 401 of the Clean Water Act A water quality certification issued by a state, authorized tribe, or EPA, or a waiver thereof, is required by section 401 of the Clean Water Act, for an activity authorized by an NWP which may result in a discharge from a point source into waters of the United States. Water quality certifications may be granted without conditions, granted with conditions, denied, or waived for specific NWPs. Nationwide permits 21, 29, 39, 40, 42, 43, and 50 would authorize activities that may result in discharges to waters[[Page 2852]]of the United States and therefore section 401 water quality certification or waiver is required for those NWPs. Nationwide permits 12, 48, 51, 52, 57, and 58 would authorize various activities, some of which may result in a discharge to waters of the United States and require section 401 water quality certification or waiver, and others which may not. Nationwide permits 55, and 56 do not require section 401 water quality certification because they would authorize activities which, in the opinion of the Corps, could not reasonably be expected to result in a discharge into waters of the United States. In the case of NWP 8, it only authorizes activities seaward of the territorial seas where the Clean Water Act does not apply. Prior to the issuance of the 16 NWPs, certifying authorities made their decisions on whether to issue, deny, or waive water quality certification (WQC) for the issuance of the NWPs. If a certifying authority issued water quality certifications with conditions for the issuance of these NWPs, district engineers reviewed the conditions in those water quality certifications to determine whether they comply with the requirements in 40 CFR 121.7(d). If the district engineer determines that any condition in the water quality certification for the issuance of the NWPs does not comply with the requirements of 40 CFR 121.7(d), and is waived pursuant to 40 CFR 121.9(d), the district engineer will notify the certifying authority and the EPA Administrator in accordance with 40 CFR 121.9(c). The conditions in the water quality certification for the issuance of the NWP that comply with the requirements of 40 CFR 121.7(d) and are not waived become conditions of the NWP authorization in accordance with Section 401(d) of the Clean Water Act. If a certifying agency denies WQC for the issuance of an NWP, then the proposed discharges are not authorized by that NWP unless and until a project proponent obtains WQC for the specific discharge from the certifying authority, or a waiver of WQC occurs. In the 2020 Proposal, the Corps noted that EPA issued revisions to its regulations governing the Clean Water Act section 401 certification process on June 1, 2020. In the future, it may be necessary or appropriate for the Corps to revise its own section 401 regulations, including 33 CFR 330.4, in light of EPA's Clean Water Act Section 401 Certification Rule. The Corps invited comments from the public on whether and, if so, when the Corps should revise those regulations in light of the new EPA regulations. In response to the proposed rule and the associated requests for water quality certification, many certifying authorities requested an extension of the 60-day reasonable period of time to review and certify the proposed NWPs. A few commenters said that many states cannot comply with the 60 days provided due to public participation requirements, including public hearings. A few commenters stated that the 60-day review period is not sufficient time to review the proposed NWPs considering recent changes to EPA's regulations for Section 401 of the Clean Water Act and the issuance of the final Navigable Waters Protection Rule. One commenter voiced support for 60 days certifying their complete WQC decision for the proposed NWPs. One commenter stated that the 60-day reasonable period of time should be extended to 180 days to provide adequate time to review the proposed rule including the proposed NWPs. One commenter said that the abbreviated timeline undermines and limits state and tribal input. A few commenters said the Corps should request certification on the final NWPs. One commenter said that 60 days to act on the certification request is not consistent with the terms of a 1992 settlement agreement between the Pennsylvania Department of Environmental Resources and the Corps. In light of the timeframe for issuing the final NWPs, the Corps did not grant extensions to the 60-day reasonable period of time for water quality certification. Section 401 of the Clean Water Act and EPA's regulations at 40 CFR 121.6 give the Corps the authority to establish the reasonable period of time. For this issuance of these NWPs, the Corps complied with EPA's final rule, which was published in the Federal Register on July 13, 2020, and went into effect on September 11, 2020. That final rule went into effect a few days before the proposed NWPs were published in the Federal Register for public comment. The Corps worked with the Commonwealth of Pennsylvania to address the 1992 settlement agreement. Many commenters said that the reasonable period of time for certification of the NWPs should be extended until the final rule is issued. A few commenters stated that certifying the proposed NWPs prior to the NWPs being finalized is problematic as there are significant proposed changes in the NWPs. Several commenters said that the procedure is outside of the normal standard practice of certifying the NWPs after the final NWPs are issued. Many commenters expressed concern and disagreement over reviewing and certifying the proposed NWPs at the same time. Several commenters said that water quality certification conditions could change if the final NWPs are modified from the proposed NWPs. Section 401 of the Clean Water Act states that no permit shall be issued until water quality certification has been obtained or waived. Therefore, the water quality certification process must be completed before the final NWPs are issued. That process is consistent with the Corps' NWP regulations at 33 CFR 330.4(c)(1), which says that ``water quality certification pursuant to section 401 of the Clean Water Act, or waiver thereof, is required prior to the issuance or reissuance of NWPs authorizing activities which may result in a discharge into waters of the United States.'' The water quality certification regulations issued by EPA this year also state that water quality certification requests are made for proposed general permits, not the final general permits. The regulations issued by EPA include no provisions for modifying water quality certifications after the certifying authority has acted on the federal agency's certification request. If the federal agency is planning to make changes to the general permit in response to public comments, those changes may trigger a requirement for a new certification before the federal agency can issue the final general permit (see 85 FR 42279). A few commenters said that requesting state certification of the proposed NWPs does not recognize that there may be changes to the final NWPs based upon the public comments received. A few commenters stated that they should have the opportunity to fully evaluate the final version of the NWPs and modify their water quality certifications as necessary. A few commenters expressed disagreement with the request to certify the proposed NWPs and requested the Corps provide a reasonable review time and issue the WQC on the final NWPs after any changes have been made after considering public comments. A few commenters said that water quality certifications may be issued conditionally and only valid if the final NWPs are not different than the proposed NWPs. A few commenters noted that the Corps' request to certify the proposed NWPs is a departure from past practice whereby states issue water quality certifications on the final NWPs before those NWPs go into effect. As discussed above, certifying authorities must act on certification requests before the Corps can issue the final NWPs. The Corps acknowledges[[Page 2853]]that the water quality certification process for the 2020 Proposal is a departure from past practice; however, it is consistent with section 401 and EPA's final certification regulation at 40 CFR part 121. In the 16 NWPs issued in this final rule, there were no substantive changes that trigger a requirement for the Corps to submit new certification requests for the NWPs. A few commenters said that the separate review 60-day timeline for water quality certification and the 90-day timeline for CZMA consistency determinations bifurcates the review process and is unnecessarily cumbersome and suggested that a joint 90-day review period should be provided. The Corps established different review periods for water quality certification and CZMA consistency determinations because those are separate processes that are governed by distinctly different laws and regulations. Section 401 of the Clean Water Act gives the permitting authority the ability to establish the reasonable period of time for a certify authority to act on a request for water quality certification. The CZMA consistency determination process is governed by regulations issued by the Department of Commerce at 15 CFR part 930. Several commenters stated that subsequent changes from the proposed NWPs to the final NWPs may result in in missing or inappropriate conditions and leave the certifying agencies with no opportunity to remedy a deficient certification. One commenter said that changes between the proposed NWPs and the final NWPs may require certifying authorities to deny certification due to insufficient information. One commenter stated that denying water quality certification for all of the proposed NWPs would have significant implications for streamlining federal permitting of discharges authorized by the NWPs. One commenter said that should water quality certification for the issuance of the NWPs be denied, there will be additional burdens on permittees. One commenter said the Corps would need to request water quality certification on the final NWPs to have valid water quality certifications. One commenter said that some states operate under state general permits where NWPs are revoked. This commenter noted that the denied certifications for NWPs will raise conflicts and issues when state general permits are reissued. As discussed above, water quality certification decisions by certifying authorities must be made before the Corps issues the final NWPs. Certifying authorities can deny water quality certifications if they believe they do not have sufficient information to issue water quality certification (see 40 CFR 121.7(e)(2)). The Corps acknowledges that denial of water quality certifications for the issuance of the NWPs creates burdens on the regulated public in terms of having to obtain water quality certifications or waivers for specific discharges authorized by NWPs. The issuance of the NWPs by Corps Headquarters is an independent process from the issuance of regional general permits by district engineers. One commenter stated a website where all final WQC conditions are posted would be helpful. One commenter said the Corps should provide proposed water quality certification conditions for the NWPs and let the state agencies review those proposed conditions to make the certification process for the NWPs. One commenter stated that the Corps should not revise its water quality certification regulations. After the final NWPs are issued and division engineers have approved the final regional conditions for the NWPs, Corps districts will issue public notices announcing the final regional conditions for the NWPs and the disposition of water quality certifications and CZMA consistency concurrences for the final NWPs. The Corps will post copies of these district public notices in the [*www.regulations.gov*](http://www.regulations.gov) docket for this rulemaking action (docket number COE-2020-0002). It is the certifying authorities' responsibility to develop conditions for their water quality certifications for the issuance of the NWPs. The Corps will be revising the provisions in its regulations for water quality certification, to be consistent with EPA's new water quality certification regulations.H. Section 307 of the Coastal Zone Management Act (CZMA) Any state with a federally-approved CZMA program must concur with the Corps' determination that activities authorized by NWPs which are within, or will have reasonably foreseeable effects on any ***land*** or water uses or natural resources of, the state's coastal zone, are consistent with the CZMA program to the maximum extent practicable. Coastal Zone Management Act consistency concurrences may be issued without conditions, issued with conditions, or denied for specific NWPs. Prior to the issuance of the 16 NWPs, states made their decisions on whether to concur with or object to the Corps' CZMA consistency determination for the issuance of the NWPs. If a state issued a concurrence with conditions for the issuance of these NWPs, district engineers reviewed the conditions in those consistency concurrences to determine whether they comply with the Corps' regulations for permit conditions at 33 CFR 325.4 If a state objected to the Corps' CZMA consistency determination for the issuance of an NWP, then the activity is not authorized by that NWP unless and until a project proponent obtains a consistency concurrence from the state or a presumption of concurrence occurs. The Corps' CZMA consistency determination only applied to NWP authorizations for activities that are within, or affect, any ***land***, water uses or natural resources of a State's coastal zone. A state's coastal zone management plan may identify geographic areas in federal waters on the outer continental shelf, where activities that require federal permits conducted in those areas require consistency certification from the state because they affect any coastal use or resource. In its coastal zone management plan, the state may include an outer continental shelf plan. An outer continental shelf plan is a plan for ``the exploration or development of, or production from, any area which has been leased under the Outer Continental Shelf ***Lands*** Act'' and regulations issued under that Act (see 15 CFR 930.73). Activities requiring federal permits that are not identified in the state's outer continental shelf plan are considered unlisted activities. If the state wants to review an unlisted activity under the CZMA, then it must notify the applicant and the federal permitting agency that it intends to review the proposed activity. Nationwide permit authorizations for activities that are not within or would not affect a state's coastal zone do not require the Corps' CZMA consistency determinations and thus are not contingent on a State's concurrence with the Corps' consistency determinations. If a state objects to the Corps' CZMA consistency determination for an NWP, then the affected activities are not authorized by an NWP within that state until a project proponent obtains an individual CZMA consistency concurrence, or sufficient time (i.e , six months) passes after requesting a CZMA consistency concurrence for the applicant to make a presumption of consistency, as provided in 33 CFR 330.4(d)(6). However, when applicants request NWP verifications for activities that require individual consistency concurrences, and the Corps determines that those activities meet the terms and conditions of the NWP, in accordance[[Page 2854]]with 33 CFR 330.6(a)(3)(iii) the Corps will issue provisional NWP verification letters. The provisional verification letter will contain general and regional conditions as well as any activity-specific conditions the Corps determines are necessary for the NWP authorization. The Corps will notify the applicant that he or she must obtain an activity-specific CZMA consistency concurrence or a presumption of concurrence before he or she is authorized to start work in waters of the United States. That is, NWP authorization will be contingent upon obtaining the necessary CZMA consistency concurrence from the state, or a presumption of concurrence. Anyone wanting to perform such activities where pre-construction notification to the Corps is not required has an affirmative responsibility to present a CZMA consistency determination to the appropriate state agency for concurrence. Upon concurrence with such CZMA consistency determinations by the state, the activity would be authorized by the NWP. This requirement is provided at 33 CFR 330.4(d). In response to the 2020 proposal several commenters said that the Corps is providing a CZMA federal consistency determination for the proposed rule and is asking the states to concur with a federal action that is not final. These commenters said that if there are changes in the final NWPs, those changes may result in missing or inappropriate conditions and leave states with no opportunity to remedy deficiencies. Several commenters stated that the Corps should have allowed comment on the proposed rule prior to initiating the federal consistency review process. A few commenters said there is a disconnect between the 60-days allowed for water quality certifications and the 90-days allowed for CZMA consistency reviews. One commenter requested an extension of time until mid-January 2021 for the state to complete its review and make its determinations. The CZMA consistency concurrence process for the issuance of the NWPs must be completed before the final NWPs are issued. The Department of Commerce's CZMA regulations at 15 CFR 930.36(b)(1) state that the federal agency's consistency determination shall be provided to state agencies at least 90 days before final approval of the federal agency's activity unless both the federal agency and the state agency agree to an alternative notification schedule. Therefore, the CZMA consistency concurrence process must be completed before the Corps issues the final NWPs. If the Corps were to make substantial changes to the proposed NWPs, then the Corps would conduct supplemental coordination with the states. In these 16 final NWPs, the Corps did not make any substantial changes that would trigger supplemental coordination with states. The Corps acknowledges that under 15 CFR 930.41(a), it could have requested responses from state agencies within 60 days of receipt of the Corps' consistency determination and supporting information. Under 15 CFR 930.41(b), federal agencies are required to approve one extension period of 15 days or less, if the state agency requests an extension of time within the 60-day review period. The WQC and CZMA consistency concurrence review periods are different because they are governed by different regulations.IV. Economic Impact The NWPs are expected to increase the number of activities eligible for NWP authorization, and reduce the number of activities that require individual permits. The Corps estimates that the proposed NWPs will authorize an 209 activities each year that would have otherwise required an individual permit. While applying for a NWP may entail some burden (namely, in the form of a PCN, when applicable), by authorizing more activities by NWP, this proposal will reduce net burden for the regulated public. Specifically, increasing the number of activities that can be authorized by NWPs is expected to decrease compliance costs for permit applicants since, as discussed below, the compliance costs for obtaining NWP authorization are less than the compliance costs for obtaining individual permits. In addition, the NWPs can incentivize some project proponents to design their projects in such a way that they would qualify for a NWP thereby reducing impacts to jurisdictional waters and wetlands. In FY2018, the average time to receive an NWP verification was 45 days from the date the Corps district receives a complete PCN, compared to 264 days to receive a standard individual permit after receipt of a complete permit application (see table 1.2 of the regulatory impact analysis for this final rule, which is available in the [*www.regulations.gov*](http://www.regulations.gov) docket (docket number COE-2020-0002)). As discussed in the Regulatory Impact Analysis for this proposed rule, the Corps estimates that a permit applicant's compliance cost for obtaining NWP authorization in 2019$ ranges from $4,412 to $14,705 (Institute for Water Resources (2001),\5\ adjusted for inflation using the GDP deflator approach). The Corps estimates that a permit applicant's compliance costs for obtaining an individual permit for a proposed activity impacting up to 3 acres of wetland ranges from $17,646 to $35,293 in 2019$. Considering how the proposed NWPs will increase the number of activities authorized by an NWP each year, the Corps estimates that the 16 final NWPs, when compared with the 2017 NWPs, will decrease compliance costs for the regulated public by approximately $3 million per year. The Corps invited comment on the assumptions and methodology used to calculate the compliance costs and burden in general associated with the NWP and received no comments.--------------------------------------------------------------------------- \5\ Institute for Water Resources (IWR). 2001. Cost analysis for the 2000 issuance and modification of nationwide permits. Institute for Water Resources (Alexandria, VA). 29 pp. plus appendices.------------------------------------------------------------------------ Nationwide permit(s) Changes Anticipated impacts------------------------------------------------------------------------ NWP 21............. Removed 300 linear Increase number of NWP 29............. foot limit for activities NWP 39............. losses of stream authorized by an NWP 40............. bed and rely on \1/ NWP; decrease NWP 42............. 2\-acre limit, pre- number of NWP 43............. construction activities NWP 44............. notification (PCN) requiring NWP 50............. review process, and individual permits. NWP 51............. other tools to NWP 52............. comply with Clean Water Act Section 404(e).[[Page 2855]] NWP 12............. Issued separate NWPs No change in number NWP 57............. for oil or natural of NWP NWP 58............. gas pipeline authorizations. activities, electric utility line and telecommunications activities, and utility lines for water and other substances; reduced number of PCN thresholds. NWP 21............. Removed requirement No change in number NWP 49............. for written of NWP NWP 50............. authorization authorizations. before commencing authorized activity. NWP 48............. Changed PCN Increased number of threshold to activities require PCNs for authorized by an activities directly NWP; decreased impacting more than number of \1/2\-acre of activities submerged aquatic requiring vegetation. Removed individual permits. \1/2\-acre limit for impacts to submerged aquatic vegetation. NWP 55............. Issued new NWP to Increased number of authorize seaweed activities mariculture authorized by an activities and NWP; decreased multi-trophic number of mariculture activities activities. requiring individual permits. NWP 56............. Issued new NWP to Increased number of authorize finfish activities mariculture authorized by an activities and NWP; decreased multi-trophic number of mariculture activities activities. requiring individual permits. General condition Restored text of No change in number 17, tribal rights. general condition of NWP in 2012 NWPs. authorizations. General condition Revised to address No change in number 18, endangered species. 2019 changes to 50 of NWP CFR part 402. authorizations. Clarified PCN requirements for species proposed for listing and proposed critical habitat to be consistent with 33 CFR 330.4(f)(2). General condition Added \3/100\-acre No change in number 23, mitigation. threshold for of NWP compensatory authorizations. mitigation for losses of stream bed. General condition Clarified that if No change in number 25, water quality. NWP activity does of NWP not comply with authorizations. conditions of a general water quality certification, an individual certification is required, unless a waiver occurs. Require permittee to provide district engineer with copy of water quality certification for individual discharge authorized by an NWP. General condition Clarified that if No change in number 26, coastal zone management. NWP activity does of NWP not comply with authorizations. conditions of a general consistency concurrence, and individual consistency concurrence is required, unless presumption occurs. General condition Modified general No change in number 28, use of multiple NWPs. condition to of NWP clarify application authorizations. to NWPs with different numeric limits. General condition Modified to No change in number 32, pre-construction encourage use of of NWP notification. Form ENG 6082 for authorizations. NWP pre- construction notifications.------------------------------------------------------------------------ Several commenters stated that the Corps' Regulatory Impact Analysis should include estimates of costs to the public due to losses of wetland and stream functions and losses of ecosystem services caused by activities authorized by NWPs. These commenters also said the Regulatory Impact Analysis should address flooding that is exacerbated by development in and around stream and wetland habitats. In addition, these commenters stated that the Regulatory Impact Analysis should evaluate the effect the proposed \1/10\-acre threshold for stream mitigation in general condition 23 would have in terms of a reduction in stream compensatory mitigation for NWP activities, and increases in losses of headwater streams. These commenters also stated that the Corps should analyze the effects of ***removing*** the PCN threshold for mechanized ***land*** clearing of ***forested*** wetlands in oil or natural gas pipeline rights-of-way from NWP 12. Several commenters said the Regulatory Impact Analysis should also analyze the economic impacts of the 2020 Proposal on the ecological restoration industry. One commenter said that a cost-benefit analysis or reissuing the NWPs ahead of schedule should be performed. The Regulatory Impact Analysis prepared by the Corps for this final rule was prepared in accordance with the Office of Management and Budget's (OMB) Circular A-4 and OMB's Memorandum M-17-21 for implementing E.O 13771. The Regulatory Impact Analysis provides some general information on the value of ecosystem services provided by general categories of aquatic resources that may be impacted by activities authorized by NWPs and thus result in some degree of loss of ecosystem services. Other activities authorized by NWPs (e.g , aquatic resource restoration and enhancement activities authorized by NWP 27 and the ***removal*** of low-head dams authorized by NWP 53) are generally expected to result in gains in some ecosystem services. Any consideration of ecosystem services lost as a result of activities authorized by NWPs must also take into account any gains in goods and services provided by activities authorized by NWPs or the operation of those activities, such as housing, food production, energy generation and transmission, transportation, public safety, providing potable water, ***removing*** sewage, etc. In the Regulatory Impact Analysis for this final rule, the Corps has added a general discussion of the goods and services that activities authorized by the NWPs provide for human well-being. Increases in downstream flooding are usually caused by development activities (e.g , the construction of houses, commercial buildings,[[Page 2856]]educational buildings, manufacturing buildings, roads, parking lots, etc.) that reduce the ***land*** area in a watershed where precipitation can infiltrate into the soil, and subsequently cause increases in surface runoff to downstream waters that increase the frequency and severity of flooding (NRC 2009). Upland development activities provide a significant contribution to these changes in watershed hydrology, because wetlands and streams occupy a relatively small percentage of ***land*** area in a watershed (e.g , Zedler and Kercher et al. 2005, Butman and Raymond 2011). State and local government agencies may require developers to construct stormwater management facilities and green infrastructure (e.g , rain gardens) to provide water storage and water infiltration within the watershed to reduce potential changes in downstream flooding. Stream compensatory mitigation was added to the mitigation general condition for the NWPs in 2007 (see general condition 20 in the 2007 NWP final rule at 72 FR 11193). That general condition did not have an acreage-based or linear foot based threshold for stream mitigation. In the 2012 and 2017 final rules for the issuance and reissuance of the NWPs (77 FR 10184 and 82 FR 1860, respectively), there was no acreage-based or linear foot based threshold for stream mitigation. Under the 2007, 2012, and 2017 NWPs, district engineers determined on a case-by-case basis whether stream compensatory mitigation is required for an NWP activity. The 2020 Proposal is the first time the Corps proposed a threshold in the mitigation general condition for the NWPs for stream compensatory mitigation. In response to comments received on the 2020 Proposal, the Corps changed the proposed \1/10\-acre stream mitigation threshold to \3/100\-acre to be consistent with the current practices of numerous Corps districts for when they require stream compensatory mitigation for proposed NWP activities. Therefore, the changes to general condition 23 are not expected to reduce stream compensatory mitigation for NWP or have substantive economic impacts on the compensatory mitigation industry. The ***removal*** of the PCN threshold in the 2017 NWP 12 for mechanized ***land*** clearing of a ***forested*** wetland in a utility line right-of-way will not eliminate compensatory mitigation requirements for those activities. If the impacts to ***forested*** wetlands caused by mechanized ***land*** clearing for an oil or natural gas pipeline right-of-way cannot be restored to pre-construction contours in waters of the United States, and there is a loss of greater than \1/10\-acre of ***forested*** wetlands, then the project proponent is required to submit a PCN to the district engineer. The district engineer may require compensatory mitigation to offset those losses of waters of the United States. The district engineer may also require compensatory mitigation to offset losses of specific wetland functions (see paragraph (i) of general condition 23). The Corps does not believe it is necessary to prepare a cost-benefit analysis for reissuing the NWPs earlier than many of the users of the NWPs expected. One of the reasons the Corps is conducting this rulemaking is to address recent court decisions.V. Administrative RequirementsPlain Language In compliance with the principles in the President's Memorandum of June 1, 1998, (63 FR 31885, June 10, 1998) regarding plain language, this preamble is written using plain language. In writing this final rule, the Corps used the active voice, short sentences, and common everyday terms except for necessary technical terms.Paperwork Reduction Act The paperwork burden associated with the NWP relates exclusively to the preparation of the PCN. While different NWPs require that different information be included in a PCN, the Corps estimates that a PCN takes, on average, 11 hours to complete. The 16 final NWPs would decrease the total paperwork burden associated with this program because the Corps estimates that under this final rule 59 more PCNs would be required each year. This increase is due to the number of activities that would be authorized under the 16 NWPs that previously required individual permits, and the changes in the PCN thresholds for NWP 48 for commercial shellfish mariculture activities and the modified PCN thresholds for NWP 12 (oil and natural gas pipeline activities). The paperwork burden associated with the 16 final NWPs is expected to increase by approximately 99 hours per year from 160,677 hours to 160,776 hours. The following table summarizes the projected changes in paperwork burden from the 2017 NWPs to the 16 NWPs issued in this final rule.-------------------------------------------------------------------------------------------------------------------------------------------------------- Estimated Number of NWP Estimated changes in Number of NWP activities not Estimated changes in number of PCNs per year requiring PCNs changes in NWP number of standard per year PCNs per year authorized NWP individual activities permits per year--------------------------------------------------------------------------------------------------------------------------------------------------------2017 NWPs................................................ 14,607 2,655 ................. ................. .................16 NWPs.................................................. 14,616 2,855 +591 +209 -209-------------------------------------------------------------------------------------------------------------------------------------------------------- An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. For the Corps Regulatory Program under section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, the current OMB approval number for information collection requirements is maintained by the Corps of Engineers (OMB approval number 0710-0003).Executive Order 12866 This action is a significant regulatory action under Executive Order 12866 (58 FR 51735, October 4, 1993) that was submitted to the Office of Management and Budget (OMB) for review.Executive Order 13771 This final rule is considered an E.O 13771 deregulatory action. Details on the estimated cost savings can be found in the rule's economic analysis.Executive Order 13132 Executive Order 13132, entitled ``Federalism'' (64 FR 43255, August 10, 1999), requires the Corps to develop an accountable process to ensure ``meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' The issuance and modification of NWPs does not have federalism implications. The Corps does[[Page 2857]]not believe that the final NWPs will have substantial direct effects on the states, on the relationship between the federal government and the states, or on the distribution of power and responsibilities among the various levels of government. These NWPs will not impose any additional substantive obligations on state or local governments. Therefore, Executive Order 13132 does not apply to this proposal.Regulatory Flexibility Act, as Amended by the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C 601 et seq. The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice-and-comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions. For purposes of assessing the impacts of the issuance and modification of NWPs on small entities, a small entity is defined as: (1) A small business based on Small Business Administration size standards; (2) a small governmental jurisdiction that is a government of a city, county, town, school district, or special district with a population of less than 50,000; or (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field. The statues under which the Corps issues, reissues, or modifies NWPs are Section 404(e) of the Clean Water Act (33 U.S.C 1344(e)) and section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 403). Under section 404, Department of the Army (DA) permits are required for discharges of dredged or fill material into waters of the United States. Under section 10, DA permits are required for any structures or other work that affect the course, location, or condition of navigable waters of the United States. Small entities proposing to discharge dredged or fill material into waters of the United States and/or install structures or conduct work in navigable waters of the United States must obtain DA permits to conduct those activities, unless a particular activity is exempt from those permit requirements. Individual permits and general permits can be issued by the Corps to satisfy the permit requirements of these two statutes. Nationwide permits are a form of general permit issued by the Chief of Engineers. Nationwide permits automatically expire and become null and void if they are not modified or reissued within five years of their effective date (see 33 CFR 330.6(b)). Furthermore, section 404(e) of the Clean Water Act states that general permits, including NWPs, can be issued for no more than five years. If the 2017 NWPs are not modified or reissued, they will expire on March 18, 2022, and small entities and other project proponents would be required to obtain alternative forms of DA permits (i.e , standard permits, letters of permission, or regional general permits) for activities involving discharges of dredged or fill material into waters of the United States or structures or work in navigable waters of the United States. Regional general permits that authorize similar activities as the NWPs may be available in some geographic areas, but small entities conducting regulated activities outside those geographic areas would have to obtain individual permits for activities that require DA permits. When compared with the compliance costs for individual permits, most of the terms and conditions of the NWPs are expected to result in decreases in the costs of complying with the permit requirements of sections 10 and 404. The anticipated decrease in compliance cost results from the lower cost of obtaining NWP authorization instead of standard permits. Unlike standard permits, NWPs authorize activities without the requirement for public notice and comment on each proposed activity. Another requirement of section 404(e) of the Clean Water Act is that general permits, including NWPs, authorize only those activities that result in no more than minimal adverse environmental effects, individually and cumulatively. The terms and conditions of the NWPs, such as acreage limits and the mitigation measures in some of the NWP general conditions, are imposed to ensure that the NWPs authorize only those activities that result in no more than minimal adverse effects on the aquatic environment and other public interest review factors. After considering the economic impacts of the NWPs on small entities, I certify that this action will not have a significant impact on a substantial number of small entities. Small entities may obtain required DA authorizations through the NWPs, in cases where there are applicable NWPs authorizing those activities and the proposed work will result in only minimal adverse effects on the aquatic environment and other public interest review factors. The terms and conditions of the revised NWPs will not impose substantially higher costs on small entities than those of the existing NWPs. If an NWP is not available to authorize a particular activity, then another form of DA authorization, such as an individual permit or a regional general permit authorization, must be secured. However, as noted above, the Corps estimates an increase in the number of activities than can be authorized through NWPs, because the Corps made some modifications to the NWPs to authorize additional activities. Because those activities required authorization through other forms of DA authorization (e.g , individual permits or regional general permits) the Corps expects a concurrent decrease in the numbers of individual permit and regional general permit authorizations required for these activities.Unfunded Mandates Reform Act Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. Under section 202 of the UMRA, the agencies generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ``federal mandates'' that may result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating a rule for which a written statement is needed, section 205 of the UMRA generally requires the agencies to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows an agency to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the agency publishes with the final rule an explanation why that alternative was not adopted. Before an agency establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed, under section 203 of the UMRA, a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of regulatory proposals with significant federal[[Page 2858]]intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements. The Corps has determined that the NWPs do not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. The NWPs are generally consistent with current agency practice, do not impose new substantive requirements and therefore do not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. Therefore, this final rule is not subject to the requirements of sections 202 and 205 of the UMRA. For the same reasons, the Corps has determined that the NWPs contain no regulatory requirements that might significantly or uniquely affect small governments. Therefore, the issuance and modification of NWPs is not subject to the requirements of section 203 of UMRA.Executive Order 13045 Executive Order 13045, ``Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997), applies to any rule that: (1) Is determined to be ``economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that we have reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, we must evaluate the environmental health or safety effects of the proposed rule on children and explain why the regulation is preferable to other potentially effective and reasonably feasible alternatives. The NWPs are not subject to this Executive Order because they are not economically significant as defined in Executive Order 12866. In addition, the proposed NWPs do not concern an environmental health or safety risk that the Corps has reason to believe may have a disproportionate effect on children.Executive Order 13175 Executive Order 13175, entitled ``Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 6, 2000), requires agencies to develop an accountable process to ensure ``meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' The phrase ``policies that have tribal implications'' is defined in the Executive Order to include regulations that have ``substantial direct effects on one or more Tribes, on the relationship between the federal government and the Tribes, or on the distribution of power and responsibilities between the federal government and Tribes.'' The issuance of these NWPs is generally consistent with current agency practice and will not have substantial direct effects on tribal governments, on the relationship between the federal government and the tribes, or on the distribution of power and responsibilities between the federal government and tribes. Therefore, Executive Order 13175 does not apply to this final rule. However, in the spirit of Executive Order 13175, the Corps specifically requested comments from tribal officials on the proposed rule. Their comments were fully considered during the preparation of this final rule. Each Corps district conducted government-to-government consultation with tribes, to identify regional conditions, other local NWP modifications to protect aquatic resources of interest to tribes, and coordination procedures with tribes, as part of the Corps' responsibility to protect tribal trust resources and fulfill its tribal trust responsibilities. Many commenters stated that they disagreed with the Corps' determination that the proposal to reissue and issue the NWPs would not have substantial direct effects on tribal governments, on the relationship between the federal government and the tribes, or on the distribution of power and responsibilities between the federal government and tribes. Most of these commenters said that the Corps is required to consult and coordinate with the tribes on the proposed rule. Many commenters stated that meaningful consultation with tribes is not possible given the short time frames set by the administration, lack of information, and complications resulting from the COVID pandemic. One commenter stated that the Corps should extend its comment period 60 days or should withdraw its proposal to allow early tribal engagement. While the NWPs are regulations, the Corps believe the final NWPs will not have substantial direct effects on tribal governments, on the relationship between the federal government and the tribes, or on the distribution of power and responsibilities between the federal government and tribes. In response to the proposed rule, the Corps received comments from 35 tribes and tribal organizations. The Corps has taken, and will continue to take, measures (such as Corps districts consulting with tribes on specific NWP activities that may have adverse effects on tribal rights and tribal trust resources) to ensure that the NWPs will not have substantial direct effects on tribal governments, on the relationship between the federal government and the tribes, or on the distribution of power and responsibilities between the federal government and tribes. General condition 17 has been modified to state that no NWP activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights. Tribes use NWPs for activities they conduct that require DA authorization under section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act of 1899. For example, tribes that conduct commercial shellfish mariculture activities have used NWP 48, and tribes that conduct aquatic habitat restoration activities have used NWP 27. For 16 NWPs issued in this final rule, Corps districts conducted consultations with tribes to identify regional conditions to ensure that NWP activities comply with general conditions 17 and 20. Through those consultations, district engineers can also develop coordination procedures with tribes to provide tribes with opportunities to review proposed NWP activities and provide their views on whether those activities will cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal ***lands***. When a Corps district receives a pre-construction notification that triggers a need to consult with one or more tribes, that consultation will be completed before the district engineer makes his or her decision on whether to issue the NWP verification. If, after considering mitigation, the district engineer determines the proposed NWP activity will have more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal ***lands***, he or she will exercise discretionary authority and require an individual permit. Division engineers can modify, suspend, or revoke one or more NWPs in a region to protect tribal rights. A district engineer can modify, suspend, or revoke an NWP to protect tribal rights, protected tribal resources, and tribal ***lands***. For the 2020 Proposal, the Corps provided a 60-day public comment period, which is consistent with the length of the comment period provided for past NWP rulemaking efforts. After the comment period for the 2020 Proposal ended on November 16, 2020, there was some additional time for Corps districts to conduct consultation[[Page 2859]]and coordination with tribes. For Corps district consultation and coordination with tribes, the Corps provided information similar to the information provided during past NWP rulemaking efforts. The Corps acknowledges that the pandemic complicated tribal consultation and coordination activities, but the rulemaking effort needed to be completed by the required time frame.Environmental Documentation A decision document has been prepared for each of the 16 NWPs being issued in this final rule. Each decision document includes an environmental assessment and public interest review determination. If an NWP authorizes discharges of dredged or fill material into waters of the United States, the decision document includes a 404(b)(1) Guidelines analysis. These decision documents are available at: [*www.regulations.gov*](http://www.regulations.gov) (docket ID number COE-2020-0002). They are also available by contacting Headquarters, U.S Army Corps of Engineers, Operations and Regulatory Community of Practice, 441 G Street NW, Washington, DC 20314-1000.Congressional Review Act The Congressional Review Act, 5 U.S.C 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. The Corps will submit a report containing the final 16 NWPs and other required information to the U.S Senate, the U.S House of Representatives, and the Government Accountability Office. A major rule cannot take effect until 60 days after it is published in the Federal Register. The 16 NWPs are not a ``major rule'' as defined by 5 U.S.C 804(2), because they are not likely to result in: (1) An annual effect on the economy of $100,000,000 or more; (2) a major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions; or (3) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic and export markets.Executive Order 12898 Executive Order 12898 requires that, to the greatest extent practicable and permitted by law, each federal agency must make achieving environmental justice part of its mission. Executive Order 12898 provides that each federal agency conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin. The NWPs are not expected to have any discriminatory effect or disproportionate negative impact on any community or group, and therefore are not expected to cause any disproportionately high and adverse impacts to minority or low-income communities.Executive Order 13211 This action is not a ``significant energy action'' because it is not likely to have a significant adverse effect on the supply, distribution or use of energy and has not otherwise been designated by the OIRA Administrator as a significant energy action.VI. References A complete list of all references cited in this document is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) in docket number COE-2020-0002 or upon request from the U.S Army Corps of Engineers (see FOR FURTHER INFORMATION CONTACT).Authority The Corps is reissuing 12 existing NWPs and issuing 4 new NWPs under the authority of Section 404(e) of the Clean Water Act (33 U.S.C 1344(e)) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 401 et seq.).William H. Graham,Major General, U.S Army, Deputy Commanding General for Civil and Emergency Operations.Nationwide Permits, Conditions, Further Information, and DefinitionsA. Index of Nationwide Permits, Conditions, District Engineer's Decision, Further Information, and DefinitionsNationwide Permits12. Oil or Natural Gas Pipeline Activities21. Surface Coal Mining Activities29. Residential Developments39. Commercial and Institutional Developments40. ***Agricultural*** Activities42. Recreational Facilities43. Stormwater Management Facilities44. Mining Activities48. Commercial Shellfish Mariculture Activities50. Underground Coal Mining Activities51. ***Land***-Based Renewable Energy Generation Facilities52. Water-Based Renewable Energy Generation Pilot Projects55. Seaweed Mariculture Activities56. Finfish Mariculture Activities57. Electric Utility Line and Telecommunications Activities58. Utility Line Activities for Water and Other SubstancesNationwide Permit General Conditions1. Navigation2. Aquatic Life Movements3. Spawning Areas4. Migratory Bird Breeding Areas5. Shellfish Beds6. Suitable Material7. Water Supply Intakes8. Adverse Effects from Impoundments9. Management of Water Flows10. Fills Within 100-Year Floodplains11. Equipment12. Soil Erosion and Sediment Controls13. ***Removal*** of Temporary Fills14. Proper Maintenance15. Single and Complete Project16. Wild and Scenic Rivers17. Tribal Rights18. Endangered Species19. Migratory Birds and Bald and Golden Eagles20. Historic Properties21. Discovery of Previously Unknown Remains and Artifacts22. Designated Critical Resource Waters23. Mitigation24. Safety of Impoundment Structures25. Water Quality26. Coastal Zone Management27. Regional and Case-by-Case Conditions28. Use of Multiple Nationwide Permits29. Transfer of Nationwide Permit Verifications30. Compliance Certification31. Activities Affecting Structures or Works Built by the United States32. Pre-Construction NotificationDistrict Engineer's DecisionFurther InformationDefinitionsBest management practices (BMPs)Compensatory mitigationCurrently serviceableDirect effectsDischargeEcological referenceEnhancementEstablishment (creation)[[Page 2860]]High Tide LineHistoric propertyIndependent utilityIndirect effectsLoss of waters of the United StatesNavigable watersNon-tidal wetlandOpen waterOrdinary high water markPerennial streamPracticablePre-construction notificationPreservationRe-establishmentRehabilitationRestorationRiffle and pool complexRiparian areasShellfish seedingSingle and complete linear projectSingle and complete non-linear projectStormwater managementStormwater management facilitiesStream bedStream channelizationStructureTidal wetlandTribal landsTribal rightsVegetated shallowsWaterbodyB. Nationwide Permits 12. Oil or Natural Gas Pipeline Activities. Activities required for the construction, maintenance, repair, and ***removal*** of oil and natural gas pipelines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than \1/2\-acre of waters of the United States for each single and complete project. Oil or natural gas pipelines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of oil and natural gas pipelines. There must be no change in pre-construction contours of waters of the United States. An ``oil or natural gas pipeline'' is defined as any pipe or pipeline for the transportation of any form of oil or natural gas, including products derived from oil or natural gas, such as gasoline, jet fuel, diesel fuel. heating oil, petrochemical feedstocks, waxes, lubricating oils, and asphalt. Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g , backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody. Oil or natural gas pipeline substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities (e.g , oil or natural gas or gaseous fuel custody transfer stations, boosting stations, compression stations, metering stations, pressure regulating stations) associated with an oil or natural gas pipeline in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than \1/2\-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities. Foundations for above-ground oil or natural gas pipelines: This NWP authorizes the construction or maintenance of foundations for above-ground oil or natural gas pipelines in all waters of the United States, provided the foundations are the minimum size necessary. Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of oil or natural gas pipelines, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g , at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows. This NWP may authorize oil or natural gas pipelines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Oil or natural gas pipelines routed in, over, or under section 10 waters without a discharge of dredged or fill material may require a section 10 permit. This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing oil or natural gas pipelines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing oil or natural gas pipelines. This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the oil or natural gas pipeline activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) A section 10 permit is required; (2) the discharge will result in the loss of greater than \1/10\-acre of waters of the United States; or (3) the proposed oil or natural gas pipeline activity is associated with an overall project that is greater than 250 miles in length and the project purpose is to install new pipeline (vs. conduct repair or maintenance activities) along the majority of the distance of the overall project length. If the proposed oil or gas pipeline is greater than 250 miles in length, the pre-construction[[Page 2861]]notification must include the locations and proposed impacts (in acres or other appropriate unit of measure) for all crossings of waters of the United States that require DA authorization, including those crossings authorized by an NWP would not otherwise require pre-construction notification. (See general condition 32.) (Authorities: Sections 10 and 404) Note 1: Where the oil or natural gas pipeline is constructed, installed, or maintained in navigable waters of the United States (i.e , section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the oil or natural gas pipeline to protect navigation. Note 2: For oil or natural gas pipeline activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Oil or natural gas pipeline activities must comply with 33 CFR 330.6(d). Note 3: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the oil or natural gas pipeline must be removed upon completion of the work, in accordance with the requirements for temporary fills. Note 4: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, and may require a permit from the U.S Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such oil or natural gas pipelines will require a section 404 permit (see NWP 15). Note 5: This NWP authorizes oil or natural gas pipeline maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures. Note 6: For NWP 12 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, ``District Engineer's Decision.'' The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23). 21. Surface Coal Mining Activities. Discharges of dredged or fill material into waters of the United States associated with surface coal mining and reclamation operations, provided the following criteria are met: (a) The activities are already authorized, or are currently being processed by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977 or by the Department of the Interior, Office of Surface Mining Reclamation and Enforcement; (b) The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into tidal waters or non-tidal wetlands adjacent to tidal waters; and (c) The discharge is not associated with the construction of valley fills. A ``valley fill'' is a fill structure that is typically constructed within valleys associated with steep, mountainous terrain, associated with surface coal mining activities. Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) (Authorities: Sections 10 and 404) 29. Residential Developments. Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of a single residence, a multiple unit residential development, or a residential subdivision. This NWP authorizes the construction of building foundations and building pads and attendant features that are necessary for the use of the residence or residential development. Attendant features may include but are not limited to roads, parking lots, garages, yards, utility lines, storm water management facilities, septic fields, and recreation facilities such as playgrounds, playing fields, and golf courses (provided the golf course is an integral part of the residential development). The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. Subdivisions: For residential subdivisions, the aggregate total loss of waters of United States authorized by this NWP cannot exceed \1/2\-acre. This includes any loss of waters of the United States associated with development of individual subdivision lots. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404) 39. Commercial and Institutional Developments. Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of commercial and institutional building foundations and building pads and attendant features that are necessary for the use and maintenance of the structures. Attendant features may include, but are not limited to, roads, parking lots, garages, yards, utility lines, storm water management facilities, wastewater treatment facilities, and recreation facilities such as playgrounds and playing fields. Examples of commercial developments include retail stores, industrial facilities, restaurants, business parks, and shopping centers. Examples of institutional developments include schools, fire stations, government office buildings, judicial buildings, public works buildings, libraries, hospitals, and places of worship. The construction of new golf courses and new ski areas is not authorized by this NWP. The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404) Note: For any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission line, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities. 40. ***Agricultural*** Activities. Discharges of dredged or fill material into non-tidal waters of the United States for ***agricultural*** activities, including the[[Page 2862]]construction of building pads for farm buildings. Authorized activities include the installation, placement, or construction of drainage tiles, ditches, or levees; mechanized ***land*** clearing; ***land*** leveling; the relocation of existing serviceable drainage ditches constructed in waters of the United States; and similar activities. This NWP also authorizes the construction of farm ponds in non-tidal waters of the United States, excluding perennial streams, provided the farm pond is used solely for ***agricultural*** purposes. This NWP does not authorize the construction of aquaculture ponds. This NWP also authorizes discharges of dredged or fill material into non-tidal jurisdictional waters of the United States to relocate existing serviceable drainage ditches constructed in non-tidal streams. The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404) Note: Some discharges of dredged or fill material into waters of the United States for ***agricultural*** activities may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4). This NWP authorizes the construction of farm ponds that do not qualify for the Clean Water Act section 404(f)(1)(C) exemption because of the recapture provision at section 404(f)(2). 42. Recreational Facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of recreational facilities. Examples of recreational facilities that may be authorized by this NWP include playing fields (e.g , football fields, baseball fields), basketball courts, tennis courts, hiking trails, bike paths, golf courses, ski areas, horse paths, nature centers, and campgrounds (excluding recreational vehicle parks). This NWP also authorizes the construction or expansion of small support facilities, such as maintenance and storage buildings and stables that are directly related to the recreational activity, but it does not authorize the construction of hotels, restaurants, racetracks, stadiums, arenas, or similar facilities. The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authority: Section 404) 43. Stormwater Management Facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction of stormwater management facilities, including stormwater detention basins and retention basins and other stormwater management facilities; the construction of water control structures, outfall structures and emergency spillways; the construction of low impact development integrated management features such as bioretention facilities (e.g , rain gardens), vegetated filter strips, grassed swales, and infiltration trenches; and the construction of pollutant reduction green infrastructure features designed to reduce inputs of sediments, nutrients, and other pollutants into waters, such as features needed to meet reduction ***targets*** established under Total Maximum Daily Loads set under the Clean Water Act. This NWP authorizes, to the extent that a section 404 permit is required, discharges of dredged or fill material into non-tidal waters of the United States for the maintenance of stormwater management facilities, low impact development integrated management features, and pollutant reduction green infrastructure features. The maintenance of stormwater management facilities, low impact development integrated management features, and pollutant reduction green infrastructure features that are not waters of the United States does not require a section 404 permit. The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. This NWP does not authorize discharges of dredged or fill material for the construction of new stormwater management facilities in perennial streams. Notification: For discharges of dredged or fill material into non-tidal waters of the United States for the construction of new stormwater management facilities or pollutant reduction green infrastructure features, or the expansion of existing stormwater management facilities or pollutant reduction green infrastructure features, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) Maintenance activities do not require pre-construction notification if they are limited to restoring the original design capacities of the stormwater management facility or pollutant reduction green infrastructure feature. (Authority: Section 404) 44. Mining Activities. Discharges of dredged or fill material into non-tidal waters of the United States for mining activities, except for coal mining activities, provided the activity meets all of the following criteria: (a) For mining activities involving discharges of dredged or fill material into non-tidal jurisdictional wetlands, the discharge must not cause the loss of greater than \1/2\-acre of non-tidal jurisdictional wetlands; (b) For mining activities involving discharges of dredged or fill material in non-tidal jurisdictional open waters (e.g , rivers, streams, lakes, and ponds) or work in non-tidal navigable waters of the United States (i.e , section 10 waters), the mined area, including permanent and temporary impacts due to discharges of dredged or fill material into jurisdictional waters, must not exceed \1/2\-acre; and (c) The acreage loss under paragraph (a) plus the acreage impact under paragraph (b) does not exceed \1/2\-acre. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) If reclamation is required by other statutes, then a copy of the final reclamation plan must be submitted with the pre-construction notification. (Authorities: Sections 10 and 404) 48. Commercial Shellfish Mariculture Activities. Structures or work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States necessary for new and continuing commercial shellfish mariculture operations (i.e , the cultivation of bivalve molluscs such as oysters, mussels, clams, and scallops) in authorized project areas. For the purposes of this NWP, the project area is the area in which the operator is authorized to conduct commercial shellfish mariculture activities, as identified through a lease or permit issued by an appropriate state or local government agency, a treaty, or any easement, lease, deed, contract, or other legally binding agreement that[[Page 2863]]establishes an enforceable property interest for the operator. This NWP authorizes the installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the United States. This NWP also authorizes discharges of dredged or fill material into waters of the United States necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities. Rafts and other floating structures must be securely anchored and clearly marked. This NWP does not authorize: (a) The cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody; (b) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990; or (c) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas, or the deposition of shell material back into waters of the United States as waste. Notification: The permittee must submit a pre-construction notification to the district engineer if the activity directly affects more than \1/2\-acre of submerged aquatic vegetation. If the operator will be conducting commercial shellfish mariculture activities in multiple contiguous project areas, he or she can either submit one PCN for those contiguous project areas or submit a separate PCN for each project area. (See general condition 32.) (Authorities: Sections 10 and 404) Note 1: The permittee should notify the applicable U.S Coast Guard office regarding the project. Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan. Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines ``aquatic nuisance species'' as ``a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, ***agricultural***, aquacultural, or recreational activities dependent on such waters.'' 50. Underground Coal Mining Activities. Discharges of dredged or fill material into non-tidal waters of the United States associated with underground coal mining and reclamation operations provided the activities are authorized, or are currently being processed by the Department of the Interior, Office of Surface Mining Reclamation and Enforcement, or by states with approved programs under Title V of the Surface Mining Control and Reclamation Act of 1977. The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. This NWP does not authorize coal preparation and processing activities outside of the mine site. Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) If reclamation is required by other statutes, then a copy of the reclamation plan must be submitted with the pre-construction notification. (Authorities: Sections 10 and 404) 51. ***Land***-Based Renewable Energy Generation Facilities. Discharges of dredged or fill material into non-tidal waters of the United States for the construction, expansion, or modification of ***land***-based renewable energy production facilities, including attendant features. Such facilities include infrastructure to collect solar (concentrating solar power and photovoltaic), wind, biomass, or geothermal energy. Attendant features may include, but are not limited to roads, parking lots, and stormwater management facilities within the ***land***-based renewable energy generation facility. The discharge must not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the discharge results in the loss of greater than \1/10\-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404) Note 1: Electric utility lines constructed to transfer the energy from the ***land***-based renewable energy generation facility to a distribution system, regional grid, or other facility are generally considered to be linear projects and each separate and distant crossing of a waterbody is eligible for treatment as a separate single and complete linear project. Those electric utility lines may be authorized by NWP 57 or another Department of the Army authorization. Note 2: If the only activities associated with the construction, expansion, or modification of a ***land***-based renewable energy generation facility that require Department of the Army authorization are discharges of dredged or fill material into waters of the United States to construct, maintain, repair, and/or ***remove*** electric utility lines and/or road crossings, then NWP 57 and/or NWP 14 shall be used if those activities meet the terms and conditions of NWPs 57 and 14, including any applicable regional conditions and any case-specific conditions imposed by the district engineer. Note 3: For any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission line, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities. 52. Water-Based Renewable Energy Generation Pilot Projects. Structures and work in navigable waters of the United States and discharges of dredged or fill material into waters of the United States for the construction, expansion, modification, or ***removal*** of water-based wind, water-based solar, wave energy, or hydrokinetic renewable energy generation pilot projects and their attendant features. Attendant features may include, but are not limited to, ***land***-based collection and distribution facilities, control facilities, roads, parking lots, and stormwater management facilities. For the purposes of this NWP, the term ``pilot project'' means an experimental project where the water-based renewable energy generation units will be monitored to collect information on their performance and environmental effects at the project site. The placement of a transmission line on the bed of a navigable water of the United States from the renewable energy generation unit(s) to a ***land***-based collection and distribution facility is considered a structure under Section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322.2(b)), and the placement of the transmission line on the bed of a navigable water of the United States is not a loss of waters of the United States for the purposes of applying the \1/2\-acre limit. For each single and complete project, no more than 10 generation units (e.g , wind turbines, wave energy devices, or hydrokinetic devices) are authorized. For floating solar panels in navigable waters of the United States, each single and complete project cannot exceed \1/2\-acre in water surface area covered by the floating solar panels.[[Page 2864]] This NWP does not authorize activities in coral reefs. Structures in an anchorage area established by the U.S Coast Guard must comply with the requirements in 33 CFR 322.5(l)(2). Structures may not be placed in established danger zones or restricted areas designated in 33 CFR part 334, Federal navigation channels, shipping safety fairways or traffic separation schemes established by the U.S Coast Guard (see 33 CFR 322.5(l)(1)), or EPA or Corps designated open water dredged material disposal areas. Upon completion of the pilot project, the generation units, transmission lines, and other structures or fills associated with the pilot project must be removed to the maximum extent practicable unless they are authorized by a separate Department of the Army authorization, such as another NWP, an individual permit, or a regional general permit. Completion of the pilot project will be identified as the date of expiration of the Federal Energy Regulatory Commission (FERC) license, or the expiration date of the NWP authorization if no FERC license is required. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404) Note 1: Electric utility lines constructed to transfer the energy from the ***land***-based collection facility to a distribution system, regional grid, or other facility are generally considered to be linear projects and each separate and distant crossing of a waterbody is eligible for treatment as a separate single and complete linear project. Those electric utility lines may be authorized by NWP 57 or another Department of the Army authorization. Note 2: An activity that is located on an existing locally or federally maintained U.S Army Corps of Engineers project requires separate review and/or approval from the Corps under 33 U.S.C 408. Note 3: If the pilot project generation units, including any transmission lines, are placed in navigable waters of the United States (i.e , section 10 waters) within the coastal United States, the Great Lakes, and United States territories, copies of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration, National Ocean Service, for charting the generation units and associated transmission line(s) to protect navigation. Note 4: Hydrokinetic renewable energy generation projects that require authorization by the Federal Energy Regulatory Commission under the Federal Power Act of 1920 do not require separate authorization from the Corps under section 10 of the Rivers and Harbors Act of 1899. Note 5: For any activity that involves the construction of a wind energy generating structure, solar tower, or overhead transmission line, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities. 55. Seaweed Mariculture Activities. Structures in marine and estuarine waters, including structures anchored to the seabed in waters overlying the outer continental shelf, for seaweed mariculture activities. This NWP also authorizes structures for bivalve shellfish mariculture if shellfish production is a component of an integrated multi-trophic mariculture system (e.g , the production of seaweed and bivalve shellfish on the same structure or a nearby mariculture structure that is part of the single and complete project). This NWP authorizes the installation of buoys, long-lines, floats, anchors, rafts, racks, and other similar structures into navigable waters of the United States. Rafts, racks and other floating structures must be securely anchored and clearly marked. To the maximum extent practicable, the permittee must ***remove*** these structures from navigable waters of the United States if they will no longer be used for seaweed mariculture activities or multi-trophic mariculture activities. Structures in an anchorage area established by the U.S Coast Guard must comply with the requirements in 33 CFR 322.5(l)(2). Structures may not be placed in established danger zones or restricted areas designated in 33 CFR part 334, Federal navigation channels, shipping safety fairways or traffic separation schemes established by the U.S Coast Guard (see 33 CFR 322.5(l)(1)), or EPA or Corps designated open water dredged material disposal areas. This NWP does not authorize: (a) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 or the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody; or (b) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas. Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) In addition to the information required by paragraph (b) of general condition 32, the preconstruction notification must also include the following information: (1) A map showing the locations and dimensions of the structure(s); (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; and (3) general water depths in the project area(s) (a detailed survey is not required). No more than one pre-construction notification per structure or group of structures should be submitted for the seaweed mariculture operation during the effective period of this NWP. The pre-construction notification should describe all species and culture activities the operator expects to undertake during the effective period of this NWP. (Authority: Section 10) Note 1: The permittee should notify the applicable U.S Coast Guard office regarding the project. Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan. Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines ``aquatic nuisance species'' as ``a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, ***agricultural***, aquacultural, or recreational activities dependent on such waters.'' 56. Finfish Mariculture Activities. Structures in marine and estuarine waters, including structures anchored to the seabed in waters overlying the outer continental shelf, for finfish mariculture activities. This NWP also authorizes structures for bivalve shellfish mariculture and/or seaweed mariculture if the structures for bivalve shellfish and/or seaweed production are a component of an integrated multi-trophic mariculture structure (e.g , the production of bivalve shellfish or seaweed on the structure used for finfish mariculture, or a nearby mariculture structure that is part of the single and complete project). This NWP authorizes the installation of cages, net pens, anchors, floats, buoys, and other similar structures into navigable waters of the United States. Net pens, cages, and other floating[[Page 2865]]structures must be securely anchored and clearly marked. To the maximum extent practicable, the permittee must ***remove*** these structures from navigable waters of the United States if they will no longer be used for finfish mariculture activities or multi-trophic mariculture activities. This NWP does not authorize the construction of ***land***-based fish hatcheries or other attendant features. Structures in an anchorage area established by the U.S Coast Guard must comply with the requirements in 33 CFR 322.5(l)(2). Structures may not be placed in established danger zones or restricted areas designated in 33 CFR part 334, Federal navigation channels, shipping safety fairways or traffic separation schemes established by the U.S Coast Guard (see 33 CFR 322.5(l)(1)), or EPA or Corps designated open water dredged material disposal areas. This NWP does not authorize: (a) The cultivation of an aquatic nuisance species as defined in the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 or the cultivation of a nonindigenous species unless that species has been previously cultivated in the waterbody; or (b) Attendant features such as docks, piers, boat ramps, stockpiles, or staging areas. Notification: The permittee must submit a pre-construction notification to the district engineer. (See general condition 32.) In addition to the information required by paragraph (b) of general condition 32, the pre-construction notification must also include the following information: (1) A map showing the locations and dimensions of the structure(s); (2) the name(s) of the species that will be cultivated during the period this NWP is in effect; and (3) general water depths in the project area(s) (a detailed survey is not required). No more than one pre-construction notification per structure or group of structures should be submitted for the finfish mariculture operation during the effective period of this NWP. The pre-construction notification should describe all species and culture activities the operator expects to undertake during the effective period of this NWP. (Authority: Section 10) Note 1: The permittee should notify the applicable U.S Coast Guard office regarding the finfish mariculture activity. Note 2: To prevent introduction of aquatic nuisance species, no material that has been taken from a different waterbody may be reused in the current project area, unless it has been treated in accordance with the applicable regional aquatic nuisance species management plan. Note 3: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines ``aquatic nuisance species'' as ``a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, ***agricultural***, aquacultural, or recreational activities dependent on such waters.'' 57. Electric Utility Line and Telecommunications Activities. Activities required for the construction, maintenance, repair, and ***removal*** of electric utility lines, telecommunication lines, and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than \1/2\-acre of waters of the United States for each single and complete project. Electric utility lines and telecommunication lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of electric utility lines and telecommunication lines. There must be no change in pre-construction contours of waters of the United States. An ``electric utility line and telecommunication line'' is defined as any cable, line, fiber optic line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and internet, radio, and television communication. Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g , backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the electric utility line or telecommunication line crossing of each waterbody. Electric utility line and telecommunications substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with an electric utility line or telecommunication line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than \1/2\-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities. Foundations for overhead electric utility line or telecommunication line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead electric utility line or telecommunication line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible. Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of electric utility lines or telecommunication lines, including overhead lines and substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g , at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows. This NWP may authorize electric utility lines or telecommunication lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Electric utility lines or telecommunication lines constructed over section 10 waters and electric utility lines or telecommunication lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.[[Page 2866]] This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing electric utility lines or telecommunication lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing electric utility lines or telecommunication lines. This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the electric utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) A section 10 permit is required; or (2) the discharge will result in the loss of greater than \1/10\-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404) Note 1: Where the electric utility line is constructed, installed, or maintained in navigable waters of the United States (i.e , section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the electric utility line to protect navigation. Note 2: For electric utility line or telecommunications activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Electric utility line and telecommunications activities must comply with 33 CFR 330.6(d). Note 3: Electric utility lines or telecommunication lines consisting of aerial electric power transmission lines crossing navigable waters of the United States (which are defined at 33 CFR part 329) must comply with the applicable minimum clearances specified in 33 CFR 322.5(i). Note 4: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the electric utility line or telecommunication line must be removed upon completion of the work, in accordance with the requirements for temporary fills. Note 5: This NWP authorizes electric utility line and telecommunication line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures. Note 6: For overhead electric utility lines and telecommunication lines authorized by this NWP, a copy of the PCN and NWP verification will be provided by the Corps to the Department of Defense Siting Clearinghouse, which will evaluate potential effects on military activities. Note 7: For activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, ``District Engineer's Decision.'' The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23). 58. Utility Line Activities for Water and Other Substances. Activities required for the construction, maintenance, repair, and ***removal*** of utility lines for water and other substances, excluding oil, natural gas, products derived from oil or natural gas, and electricity. Oil or natural gas pipeline activities or electric utility line and telecommunications activities may be authorized by NWPs 12 or 57, respectively. This NWP also authorizes associated utility line facilities in waters of the United States, provided the activity does not result in the loss of greater than \1/2\-acre of waters of the United States for each single and complete project. Utility lines: This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines for water and other substances, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A ``utility line'' is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. Examples of activities authorized by this NWP include utility lines that convey water, sewage, stormwater, wastewater, brine, irrigation water, and industrial products that are not petrochemicals. The term ``utility line'' does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area. Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g , backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody. Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than \1/2\-acre of waters of the United States. This[[Page 2867]]NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities. Foundations for above-ground utility lines: This NWP authorizes the construction or maintenance of foundations for above-ground utility lines in all waters of the United States, provided the foundations are the minimum size necessary. Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than \1/2\-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g , at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows. This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit. This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) A section 10 permit is required; or (2) the discharge will result in the loss of greater than \1/10\-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404) Note 1: Where the utility line is constructed, installed, or maintained in navigable waters of the United States (i.e , section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation. Note 2: For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d). Note 3: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, in accordance with the requirements for temporary fills. Note 4: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15). Note 5: This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures. Note 6: For activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, ``District Engineer's Decision.'' The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).C. Nationwide Permit General Conditions Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization. 1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S Coast Guard,[[Page 2868]]through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the ***removal***, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to ***remove***, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such ***removal*** or alteration. 2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements. 3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g , through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized. 4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable. 5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27. 6. Suitable Material. No activity may use unsuitable material (e.g , trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act). 7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization. 8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable. 9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g , stream restoration or relocation activities). 10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements. 11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance. 12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides. 13. ***Removal*** of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate. 14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization. 15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project. 16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ``study river'' for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. (b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ``study river'' for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status. (c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal ***land*** management agency responsible for the designated Wild and Scenic River or study river (e.g , National Park Service, U.S ***Forest*** Service, Bureau of ***Land*** Management, U.S Fish and Wildlife Service). Information on these rivers is also available at: [*http://www.rivers.gov/*](http://www.rivers.gov/). 17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights. 18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation,[[Page 2869]]as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which ``may affect'' a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of ``effects of the action'' for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding ``activities that are reasonably certain to occur'' and ``consequences caused by the proposed action.'' (b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity ``may affect'' or will have ``no effect'' to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have ``no effect'' on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs. (e) Authorization of an activity by an NWP does not authorize the ``take'' of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g , an ESA Section 10 Permit, a Biological Opinion with ``incidental take'' provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where ``take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word ``harm'' in the definition of ``take'' means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. (f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required. (g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at [*http://www.fws.gov*](http://www.fws.gov)/ or [*http://www.fws.gov/ipac*](http://www.fws.gov/ipac) and [*http://www.nmfs.noaa.gov/pr/species/esa/*](http://www.nmfs.noaa.gov/pr/species/esa/) respectively. 19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether ``incidental take'' permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity. 20. Historic Properties. (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied. (b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate[[Page 2870]]documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106. (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: No historic properties affected, no adverse effect, or adverse effect. (d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps. (e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal ***lands*** or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties. 21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places. 22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment. (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters. (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal. 23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal: (a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e , on site). (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal. (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed \1/10\-acre and require pre-construction notification, unless the[[Page 2871]]district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of \1/10\-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. (d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed \3/100\-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of \3/100\-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)). (e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g , conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g , riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses. (f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332. (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation. (2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).) (3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation. (4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on ***land*** in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement. (5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)). (6) Compensatory mitigation requirements (e.g , resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)). (g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of \1/2\-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than \1/2\-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs. (h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and[[Page 2872]]performance of the compensatory mitigation project, and, if required, its long-term management. (i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a ***forested*** or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level. 24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety. 25. Water Quality. (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP. (b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver. (c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality. 26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements. 27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination. 28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions: (a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed \1/3\-acre. (b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed \1/2\-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre. 29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: ``When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.''-----------------------------------------------------------------------(Transferee)-----------------------------------------------------------------------(Date) 30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include: (a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions; (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and (c) The signature of the permittee certifying the completion of the activity and mitigation.[[Page 2873]] The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later. 31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C 408 because it will alter or temporarily or permanently occupy or use a U.S Army Corps of Engineers (USACE) federally authorized Civil Works project (a ``USACE project''), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification. 32. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either: (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or (2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is ``no effect'' on listed species or ``no potential to cause effects'' on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2). (b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information: (1) Name, address and telephone numbers of the prospective permittee; (2) Location of the proposed activity; (3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity; (4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. (ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs. (iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g , a conceptual plan), but do not need to be detailed engineering plans); (5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate; (6) If the proposed activity will result in the loss of greater than \1/10\-acre of wetlands or \3/100\-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan. (7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such[[Page 2874]]designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act; (8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act; (9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a ``study river'' for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the ``study river'' (see general condition 16); and (10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C 408 because it will alter or temporarily or permanently occupy or use a U.S Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project. (c) Form of Pre-Construction Notification: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals. (d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal. (2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than \1/2\-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes. (3) When agency coordination is required, the district engineer will immediately provide (e.g , via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5 (4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act. (5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.D. District Engineer's Decision 1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. 2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse[[Page 2875]]environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g , partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g , watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns. 3. If the proposed activity requires a PCN and will result in a loss of greater than \1/10\-acre of wetlands or \3/100\-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer. 4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) That the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.E. Further Information 1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP. 2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law. 3. NWPs do not grant any property rights or exclusive privileges. 4. NWPs do not authorize any injury to the property or rights of others. 5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).F. Definitions Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural. Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction. Direct effects: Effects that are caused by the activity and occur at the same time and place. Discharge: The term ``discharge'' means any discharge of dredged or fill material into waters of the United States. Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region. Enhancement: The manipulation of the physical, chemical, or biological[[Page 2876]]characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area. Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area. High Tide Line: The line of intersection of the ***land*** with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm. Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60). Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility. Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable. Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry ***land***, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States. Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329. Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e , spring high tide line). Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of ``open waters'' include rivers, streams, lakes, and ponds. Ordinary High Water Mark: The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Perennial stream: A perennial stream has surface water flowing continuously year-round during a typical year. Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit. Preservation: The ***removal*** of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions. Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions. Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is[[Page 2877]]divided into two categories: Re-establishment and rehabilitation. Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools. Riparian areas: Riparian areas are ***lands*** next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.) Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e , spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat. Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term ``single and complete project'' is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e , a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately. Single and complete non-linear project: For non-linear projects, the term ``single and complete project'' is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of ``independent utility''). Single and complete non-linear projects may not be ``piecemealed'' to avoid the limits in an NWP authorization. Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in ***land*** use on the aquatic environment. Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e , by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff. Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed. Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States. Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction. Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line. Tribal ***lands***: Any ***lands*** title to which is either: (1) Held in trust by the United States for the benefit of any Indian tribe or individual; or (2) held by any Indian tribe or individual subject to restrictions by the United States against alienation. Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies. Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems. Waterbody: For purposes of the NWPs, a waterbody is a ``water of the United States.'' If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).[FR Doc. 2021-00102 Filed 1-12-21; 8:45 am]BILLING CODE 3720-58-P

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**End of Document**



[***Regional Conservation Partnership Program (ID: CCC\_FRDOC\_0001-0409)***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61SY-39Y1-F0YC-N218-00000-00&context=1516831)

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**Body**

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Action

Final rule.Summary

This final rule adopts, with minor changes, an interim rule published in the Federal Register on February 13, 2020. The interim rule implemented changes to RCPP that were either necessitated by the ***Agriculture*** Improvement Act of 2018 (the 2018 Farm Bill) and changes for administrative streamlining improvements and clarifications. CCC amended this interim rule with a technical correction on March 17, 2020. NRCS received input from 65 commenters who provided 335 comments in response to the interim rule. This final rule makes permanent the provisions of the interim rule, responds to comments received, and makes further adjustments in response to some of the comments received.Dates

Effective: January 15, 2021.For Further Information Contact

Kari Cohen; phone: (202) 720-6037; or email: [*kari.cohen@usda.gov*](mailto:kari.cohen@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).Supplementary InformationBackground

The 2018 Farm Bill reauthorized and amended RCPP. On February 13, 2020, an interim rule with request for comments was published in the Federal Register (85 FR 8131-8145) that added RCPP regulations in 7 CFR part 1464 to implement changes made by the 2018 Farm Bill. A technical correction was published in the Federal Register on March 17, 2020 (85 FR 15051-15052). This final rule adopts, with minor changes, the interim rule.Discussion of RCPP (7 CFR part 1464)

RCPP, implemented under the direction of the Chief of NRCS, promotes coordination of NRCS conservation activities with partners that offer value-added contributions to address on-farm, watershed, and regional natural resource concerns. Through RCPP, NRCS seeks to co-invest with partners to implement projects that demonstrate innovative solutions to conservation challenges and provide measurable improvements and outcomes.

RCPP projects may only be carried out on ***agricultural*** or nonindustrial private ***forest*** ***land*** or associated ***land*** on which NRCS determines an eligible activity would help achieve conservation benefits. Eligible conservation activities may be implemented on public ***lands*** when those activities will benefit eligible ***lands*** as determined by NRCS and are included in the scope of an approved RCPP project.

The interim rule:

Created a new part in the Code of Federal Regulations (CFR) to acknowledge that RCPP is now a stand-alone program, no longer subordinated to its covered programs. Identified three contract types for implementation of RCPP, including programmatic partnership agreements, program contracts, and supplemental agreements. Defined terms to address changes made by the 2018 Farm Bill, including—

○ Conservation benefits;

○ Eligible activity;

○ Eligible partner;

○ Lead partner;

○ Nonlead partner;

○ Participant;

○ Priority resource concern;

○ Project resource concern;

○ Proposal; and

○ RCPP plan of operations.

Identified that NRCS may award up to 15 Alternative Funding Arrangement (AFA) projects, which rely on partner capacity to implement conservation activities. Acknowledged the reduction from three funding pools to two and directed partners to apply to either the Critical Conservation Area (CCA) or State and Multistate funding pool. Added provisions requiring all RCPP project partners to develop and report on their environmental outcomes. Expanded the scope of RCPP by including the authorities of the Conservation Reserve Program (16 U.S.C 3831-3835) and the Watershed Protection and Flood Prevention Program (Pub. L. 83-566), excluding the Watershed Rehabilitation Program, in the definition of “covered programs. ” Expanded the purpose of RCPP to include protection of drinking water and ground water on eligible ***land***. Allowed partnership agreements to be longer than 5 years in certain situations, as determined by NRCS, to further purposes of RCPP. Allowed partnership agreement renewals for a period not to exceed 5 years that in certain situations may be funded through an expedited noncompetitive process. Allowed a partnership agreement, or a renewal partnership agreement, to be extended one time for up to 12 months. Required reporting publicly at the time of selection the amount of technical assistance (TA) that will be set aside for project implementation. Acknowledged an obligation to provide guidance for partners on how to quantify and report project outcomes, including achievement of conservation benefits.

Summary of Comments

The interim rule 60-day comment period ended May 12, 2020. NRCS received 335 comments from 65 commenters in response to the rule. NRCS reviewed these 335 comments and categorized and summarized them according to the topics identified below. NRCS received comments on a wide variety of topics, including several comments of a general nature, most of which expressed support, as well as a few comments that were not relevant to RCPP or to the RCPP interim rule. The topics that generated the greatest response were easements, funding pools, program administration, program contracts, and proposals.

In this rule, the comments have been organized alphabetically by topic. The topics include:

Adjusted gross income (AGI) waivers; Alternative funding arrangements (AFA); Availability of program funding (APF); Easements; Eligibility; Funding pools; Partner contributions; Program administration; Program contracts; Programmatic partnership agreements; Proposals; RCPP activity types; Renewals; and Supplemental agreements.

Adjusted Gross Income Waivers

Comment: NRCS received comment expressing concern about reporting requirements necessary to receive an AGI eligibility determination from the Farm Service Agency (FSA). Comment also expressed concern that the AGI waiver process may harm the ability of small farms to receive conservation assistance and suggested adding more detail on the process and criteria for granting AGI waivers.

Response: AGI eligibility determination processes are not within the purview of NRCS or this rulemaking. However, NRCS recently published a National Bulletin (NB 440-20-26) which indicated that an RCPP lead partner may request a waiver of the applicability of AGI at the RCPP project level during the initial Partnership Project Agreement (PPA) negotiation only. If granted, producers participating in RCPP through individual contracts or agreements will not be required to file AGI paperwork or have AGI determinations made by FSA. If the RCPP lead partner does not request or receive a project-level waiver of the applicability of AGI, a producer may seek a waiver of the AGI limitation upon receiving an AGI determination. No changes are made in the final rule in response to this issue.Alternative Funding Arrangements

Comment: NRCS received comment requesting clarification that NRCS retains administrative responsibility for conservation compliance, AGI, and payment limitation determinations, tenant rights, producer appeals, civil rights, and other similar responsibilities.

Additionally, comment requested that NRCS:

***Remove*** the parenthetical about roads, dams, and irrigation facilities used to describe the types of infrastructure upon which an AFA could focus; Provide guidance on AFA goals; Only use AFAs in limited circumstances and apply stringent criteria; Support AFA irrigation projects and provide incentives for projects that would benefit fish and other aquatic species, particularly in overallocated basins; Administer AFA projects through grant agreements; and Expand the indirect costs eligible for reimbursement under AFA projects.

Response: NRCS will define responsibilities in the APF announcements and AFA partnership agreements, while still maintaining flexibility. NRCS will identify which responsibilities must remain with NRCS.

This final rule ***removes*** the parenthetical from § 1464.25 RCPP infrastructure projects relate to conservation activities that significantly address resource concerns but require greater investment than a single producer can make. NRCS's goal for AFA projects is to fund proposals that are consistent with RCPP purposes but are more effectively and efficiently carried out through lead partner efforts than through NRCS's conservation delivery system. AFA criteria are published as part of funding announcements when AFA funding is made available. AFAs are “programmatic instruments” that provide NRCS with the ability to balance the flexibility of grants or other agreement mechanisms with statutorily mandated responsibilities regarding NRCS roles. For all RCPP projects, including AFAs, the statutory limitation on administrative costs prohibits use of RCPP funding for a partner's indirect costs. Other than ***removing*** the parenthetical noted above, there are no other changes made in the final rule in response to this issue.Availability of Program Funding (APF)

Comment: NRCS received comment expressing support for the existing APF and requesting that NRCS:

Clarify its intent to cover project management costs; Provide written feedback for projects that are not selected; and Follow procedures of lead public entities when possible to promote efficiency.

Comment also included request for additional funding and flexibility for TA, including TA-only projects or projects focused on conservation planning.

Response: RCPP projects are collaborative, and NRCS works with each partner to develop procedural flexibility to help deliver conservation assistance effectively in the project area. While partners provide significant contribution to project costs, NRCS focuses on the technical and financial resources necessary to implement conservation activities and covers much of the project costs. For projects that are not selected, NRCS provides feedback to partners to help them develop more competitive proposals for future submission. NRCS strongly supports conservation planning and technical assistance delivery in its program implementation efforts, including RCPP, and selects proposals that most effectively delivery conservation outcomes. No changes are made in the final rule in response to these issues. With respect to TA-only type projects, the Farm Bill makes clear that all RCPP projects are intended to generate conservation benefits and report on conservation outcomes, therefore, RCPP should prioritize on-the-ground conservation activities plus the TA required to get that conservation on the ground. NRCS has an extensive Conservation Technical Assistance program that provides such support to its partners.EasementsBuy-Protect-Sell (BPS) Transactions

Comment: NRCS received comment related to BPS easement transactions, including support for the availability of BPS transactions under RCPP and requesting the extension of such flexibility to U.S -held easements. Comment also:

(a) Recommended that NRCS consider as eligible BPS projects that encompass ***land*** purchased on an interim basis by State or county governments to improve ***land*** access by Historically Underserved (HU) producers;

(b) Addressed easement deed terms, recommending that NRCS make the minimum deed terms available as soon as possible and provide full flexibility in the use of entity-written deed terms; and

(c) Recommended that the entity match follow ACEP-ALE flexibility, which allows a landowner's donation of easement value to constitute all of the nonfederal match requirements.

Response: Based on the ACEP definition, BPS transactions are unique transactions that require the transfer of an easement to an eligible entity and do not include the United States as the ultimate easement holder. ACEP ***land*** eligibility is limited to private and Tribal ***lands***. In contrast, RCPP ***land*** eligibility includes certain public ***lands***, and NRCS may allow States and local government agencies to enter into a BPS transaction under RCPP. NRCS will announce any authorizations for such transactions through an APF.

NRCS has posted the minimum deed terms to provide a full range of options for US-held and entity-held easements. The minimum deed terms provide eligible entities with maximum flexibility to use their own terms while NRCS ensures that RCPP purposes and requirements are met. NRCS will also maintain easement compensation flexibility under the final rule. Future APFs will provide information on the best approach for leveraging Federal funding and partner efforts.

No changes are made in the final rule in response to these issues.U.S -Held Easement Compensation

Comment: NRCS received comment about the range of easement types available under RCPP, expressing support for the flexibility and requesting that NRCS avoid competition between RCPP U.S -held ***agricultural*** ***land*** easements and other farm protection programs. Comment also addressed the easement valuation structure identified in the APF, opposing the use of tiered easement compensation based upon level of U.S -held RCPP easement protection. Comment also recommended that NRCS consider landowner charitable donation of easement value and landowner management activities on an easement as part of the partner's contribution.

Response: The three tiers of compensation paid to landowners enrolling in a U.S -held RCPP easement were established to emphasize the partnership nature of RCPP and to ensure that RCPP would not compete with other NRCS easement programs. While partner contributions are encouraged to compensate landowners fully for enrollment of less restrictive easement types, landowner donations of easement value or associated management costs cannot be counted as partner contribution. Doing so would reduce the incentive for partners to provide assistance to producers. For example, when RCPP reimburses a producer for up to 75 percent of the cost of implementing a conservation practice, the remaining 25 percent is the producer's responsibility. If the producer solely pays for the 25 percent share, it is not considered a partner contribution. A partner contribution only occurs if the partner assists the producer with the cost of the practice. NRCS will continue to encourage greater partner investment in project success through the competitive tiering of easement compensation. No changes are made in the final rule in response to these issues.Eligibility

Comment: NRCS received comment about ***land*** eligibility in general, including support for the eligibility of certain public ***agricultural*** ***lands*** and some suggesting expansion of such eligibility to all public ***land***. Comment also supported the eligibility of ***lands*** owned by non-governmental organizations, while other comment recommended that eligibility be expanded to include ***forest*** ***land*** under threat from grazing by ungulates. (1) Commenters also expressed appreciation for the consistency of ***land*** eligibility between the CSP and RCPP interim rules and urged NRCS to be flexible in determining whether such ***land*** is under the “effective control” of the producer.

Response: NRCS appreciates comments regarding ***land*** eligibility with respect to ***lands*** owned by public and non-governmental entities. The RCPP activity type informs whether or not public ***land*** or ***land*** owned by a non-governmental entity is eligible given existing public trust protections and related restrictions and the relationship of those protections and restrictions to addressing resource concerns. As a result, NRCS believes that the current parameters best reflect the scope of ***land*** eligibility. No changes are made in the final rule in response to these issues.Funding PoolsCritical Conservation Areas

Comment: NRCS received comments related to Critical Conservation Areas (CCAs), including recommending that NRCS:

(a) Add excess water as a concern for the Mississippi River basin;

(b) Consolidate the Columbia River basin and the California Bay Delta into a single CCA;

(c) Add water source protection to all eight CCAs;

(d) Add soil health or soil quality as a priority resource concern for all eight CCAs;

(e) Allow CCA projects to include areas outside of a CCA;

(f) Continue Conservation Assessment and Ranking Tool (CART) use;

(g) Expand CCAs to include New England;

(h) Identify a new CCA focusing on coral reefs in the Pacific Islands Areas and the Caribbean Area;

(i) Identify a new CCA focusing on the Puget Sound;

(j) Continue the CCA in the Chesapeake Bay Watershed;

(k) Update CCAs to cover all 50 states; and

(l) Clarify that if a proposal is within a CCA it will only receive priority if it both achieves conservation benefits and addresses the CCA's primary resource concern.

Response: While ***lands*** outside a CCA can influence resource concerns within a critical conservation area, NRCS identified CCA boundaries to provide clear demarcation. This final rule clarifies that ***lands*** outside of a CCA are not eligible for proposals or applications in a CCA. The regulation is also amended to reflect that NRCS will give priority to proposals in CCAs that both (1) achieve conservation benefits and (2) address at least one of a CCA's priority resource concerns.

NRCS appreciates the comments related to CART and suggestions regarding RCPP and water resource, soil health, and soil quality. Regarding proposed changes to the eight designated CCAs, the Secretary identifies CCAs, including whether an existing CCA will be re-designated. NRCS is working with the Office of the Secretary to determine whether the current designation status of CCAs, including the re-designation of current CCAs or new CCAs, should be undertaken. No changes are made in the final rule in response to these issues.Other

Comment: NRCS received comment related to funding pools that did not address CCAs. Comment expressed concern that the National funding pool was eliminated and suggested that State Conservationists should be the selecting official for the State and Multi-State funding pool.

Response: The 2018 Farm Bill mandated ***removal*** of the National funding pool. NRCS provides State Conservationists with advisory allocations to guide the State's ranking process. However, the Chief makes all final selections. No changes are made in the final rule in response to these issues.Renewals

Comment: NRCS received support for the renewal process though some comment critiqued its competitive nature due to limited funds. Comment recommended that a renewal demonstrate the continued need for the project and requested that NRCS post renewal criteria prior to requesting renewal applications. Comment alternatively recommended funding all renewal requests that qualify, even if it must be done at a reduced rate.

Response: Renewals of partnership agreements do not compete with new proposals, but criteria are needed so that NRCS only renews those partnership agreements that represent the best investment of additional RCPP resources. To do so, NRCS uses screening questions to determine if a project has met or exceeded the original objectives, alongside other factors—including available funding and project diversity (geographic and type)—to determine which projects will be offered renewal.Partner Contributions

Comment: NRCS received comment recommending:

(a) Increased practice payments to encourage producer participation in RCPP projects;

(b) Clarification that RCPP funding can be stacked with any other source of funding;

(c) Clarification that partners may reduce their contributions if NRCS provides an award amount less than the partner's proposal request;

(d) Landowner donations (for example, related to practice implementation) be allowed as partner contributions if they are based on verifiable expenses; and

(e) A flexible structure for partner contributions that match overall objectives of individual projects.

Comment also supported NRCS setting partner contribution goals (for example, at least 1:1), allowing partner contribution expenditures after award announcement, and the explicit addition of in-kind contributions as allowable partner contributions. Comment also expressed misplaced concerns that RCPP requires the partner contribution match to be made in cash.

Response: NRCS proportionally reduces expected partner contributions when the NRCS award is less than the amount requested, unless negotiated differently by the parties. NRCS will not consider landowner expenses to be partner contributions because the purpose is to stimulate assistance to producers. NRCS will continue to clarify contribution requirements in APFs. No changes are made in the final rule in response to these issues.Program AdministrationEvaluation Criteria

Comment: NRCS received comment recommending use of the following criteria when evaluating proposals for their conservation impact or outcomes, including suggestions that metrics should be used for partnership renewals; use of honeybees and other pollinators; use of practices to support native vegetation; and implementation of a drought contingency plan. Comment also recommended that NRCS:

(a) Identify selection criteria for partnership agreements, including whether there is the availability of alternative funding arrangements, in each APF;

(b) Use a simplified evaluation process;

(c) Consult with partners on all aspects of distributing RCPP financial assistance;

(d) Utilize fully AFAs;

(e) Work with local working groups as part of the proposal ranking criteria;

(f) Provide more certainty on reimbursement of real costs of both project implementation and proposal development;

(g) Work with the lead partner to rank and select priority projects;

(h) Involve the lead partner in program contract selection and development;

(i) Provide equal treatment for small, midsize, and large farms;

(j) Provide an option to forego a public and open enrollment process;

(k) Amend the “priority resource concern” definition in § 1464.3 to highlight soil health as critical to water quality, aquifer recharge, carbon sequestration and water retention; and

(l) Use caution applying “innovation” criteria since it is difficult to apply to flood damage reduction projects.

Response: RCPP encourages flexible and streamlined delivery of conservation assistance to producers. To maximize its flexibility and set it apart from other NRCS programs, evaluation criteria used to assess proposals are developed at the APF level. Moving forward, NRCS will consider the evaluation criteria proposed by commenters in developing APFs and, in doing so, will involve partners, stakeholders, and local working groups. Of note, NRCS believes that including scientific conclusions about the role of soil health in the definition of priority resource concern is not congruent with the concept that identifying priority resource concerns depends on the needs of the CCA, rather than a broad, national objective. No changes are made in the final rule in response to these issues.General

Comment: NRCS received comment requesting that NRCS:

(a) Clarify roles and responsibilities of conservation partners and Technical Service Providers (TSPs) from the time of application through the implementation phases;

(b) Simplify the proposal application, ranking, and implementation processes (for example, maintain the adjustment of terms option);

(c) Require in regulation that there be a communication plan between NRCS and the lead partner to facilitate the entire RCPP project;

(d) Specify the reporting requirements for both NRCS and RCPP partners;

(e) Clarify when contract type will be determined in the application process;

(f) Provide detail on the documentation and planning of technical assistance and contributions;

(g) Acknowledge source water protection as a goal, and;

(h) Publish a “plan for comment” that outlines how NRCS will track and report expenditures towards source water protection.

Response: NRCS appreciates feedback intended to improve processes and delivery. Proposal application questions are specific to each funding announcement and are created as part of the funding announcement development process. To ensure that projects are feasible and meet program goals and objectives, technical experts provide input into question development and are involved throughout the evaluation and ranking process.

Programmatic partnership agreements specify the responsibilities and expectations of both NRCS and the lead partner from project implementation to close. In addition, per § 1464.2, NRCS has designated an RCPP coordinator for each State, whose role is to guide and assist partners through program implementation. Because the existing process provides ample opportunity for communication between NRCS and the lead partner, no change is made to the regulation to require a communication plan.

NRCS tracks and documents technical assistance internally. NRCS will provide partners a semiannual report that contains the status of each pending and obligated contract under each project and an annual report describing how NRCS used that fiscal year's TA.

RCPP funds associated with RCPP producer contracts in a source water protection (SWP) area as modeled by the Environmental Protection Agency are counted towards the 10 percent of funds that statute requires to be utilized for source water protection. This final rule adjusted the rule language to incorporate SWP as a priority.Historically Underrepresented (HU) Groups

Comment: NRCS received comment recommending that NRCS incorporate into the final rule benchmarks related to participation by HU groups to reflect the importance and increasing engagement of women who participate in RCPP, and to ensure that RCPP does not inadvertently favor large landowners. Comment also recommended adding language to identify HU groups as a priority in the proposal procedures (§ 1464.20), ranking and proposal selection (§ 1464.21), and partnership agreement (§ 1464.22) sections of the final rule.

Response: Consistent with the 2018 Farm Bill, NRCS gives priority consideration to RCPP proposals that provide outreach to, and engagement of, HU groups. (HU groups, as specified in the RCPP authorizing legislation, include beginning farmers or ranchers, socially disadvantaged farmers or ranchers, limited resource farmers or ranchers, and veteran farmers and ranchers. NRCS has and will continue to provide program-specific outreach to HU groups at the national, State, and local levels. These efforts are often tailored to the needs of the service area, with ***targeted*** efforts for HU producers. Gender is not a covered HU group, which is specified in the authorizing legislation; however, NRCS encourages the participation of all producers who are eligible.

This final rule encourages further HU producer and landowner enrollment, including requiring partnership agreements to denote any authorizations for higher payment rates, advance payment options, or other methods for encouraging HU participation. Changes are made in the final rule in response to these issues.Outcomes Measuring and Reporting

Comment: NRCS received comment requesting that the rule be updated to require partners to assess the conservation progress of their RCPP projects “in a quantified form to the extent practicable. ” Comment further recommended the use of existing metrics for outcomes measurement, and also suggested that NRCS provide partners with geospatial data on new and existing practices to help facilitate outcomes measurement and reporting. Additionally, comment expressed concern that outcomes activities will further burden already strained NRCS staff capacity. Lastly, comment requested dedicated NRCS funding for monitoring conservation practices implemented as part of RCPP projects.

Response: The 2018 Farm Bill requires NRCS to gather quantitative data regarding conservation benefits, as set forth in the requirements of APFs. RCPP lead partners are required, to the extent practicable, to report on the conservation environmental outcomes of their projects. Reporting on economic, financial, and social outcomes is optional but encouraged. NRCS is committed to collaborating with lead partners to ensure that their reporting of outcomes help NRCS evaluate the value of RCPP investments. No changes are made in the final rule in response to these issues.Payment

Comment: NRCS received comment suggesting a per-producer payment limit of $450,000 under RCPP, consistent with payment limitations under EQIP. Comment also suggested that NRCS base payment rates on real, local costs using prevailing wages or the regional Consumer Price Index.

Response: Payment limitations, such as those set forth in 7 CFR parts 1466 (EQIP) and 1470 (CSP) are established by statute. RCPP does not have a statutory payment limitation. NRCS plans to have activity-level limitations on producer contracts to ensure wider availability of funding. These limitations will be identified in partnership agreements and posted on NRCS State websites. No changes are made in the final rule in response to these issues.Staff Support

Comment: NRCS received comment supporting increased NRCS staffing to focus on RCPP projects and communicate with partners, including strong support for the 2018 Farm Bill's requirement, as reflected in the interim rule, that each State identify an RCPP Coordinator.

Comment emphasized the need for designated program staff (including increasing staff where program workload was high) and urged that NRCS further support the RCPP State Coordinators by developing job descriptions for the new role and providing adequate time needed to fulfill the responsibilities. Comment also requested that states provide additional local, technical contacts for RCPP projects to ensure program goals are achieved and urged process efficiencies that allow NRCS technical partners, such as conservation districts, to implement projects without incurring NRCS staff time.

Additionally, NRCS received comment expressing concern about NRCS' dependence on partners and TSP, citing insufficient NRCS staffing at the state and local levels. Comment also requested that NRCS delegate authority to State and regional entities to carry out contract deliverables.

Response: NRCS has designated State RCPP coordinators. NRCS appreciates comments expressing concern about NRCS staffing capacity and NRCS' ability to meet and customer service needs in States with heavy workloads. No changes are made in the final rule in response to these issues.Technical and Software Upgrades

Comment: NRCS received comment recommending that NRCS involve partners in implementing tools such as CART, ensure that all technology be in operation prior to accepting applications so that the process does not change midstream, and clarify how applicants will be selected for different program contract types. Comment additionally recommended including a standardized set of application questions and consistent reporting requirements, and that these be communicated to potential partners earlier in the process. Comment also expressed an interest in ensuring CART remain size-neutral.

Response: NRCS has and will continue to develop and improve our business tools, such as CART, including evaluating how to remain size-neutral. NRCS does not intend to change application procedures over the course of an application period, though it will continue to refine the process for future application periods. The process for matching an applicant with an RCPP contract depends on the nature of the specific programmatic agreement. No changes are made in this final rule in response to these issues.Technical Service Providers

Comment: NRCS received comment about RCPP's use of TSPs, including that NRCS do more to encourage the use of TSPs and allow technical assistance to be provided by entities other than NRCS-certified TSPs.

Response: Requirements about delivery of technical services through TSPs is covered in 7 CFR part 652. The TSP regulation identifies the requirements for a producer to be reimbursed for the cost of hiring a TSP to obtain technical services related to an NRCS conservation program, including RCPP, and such a TSP must be certified by NRCS. The TSP regulation also identifies that NRCS may obtain additional assistance in its delivery of technical assistance through a procurement contract or cooperative agreements. Since the solicitation methods used for those contract or agreement types ensure that NRCS obtains assistance from qualified TSPs, the TSP regulations specify that such TSPs do not also need to be certified under 7 CFR part 652. For more information, visit the NRCS TSP website at [*https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/*](https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/). No changes are made in the final rule in response to these issues.Program Contracts

Comment: NRCS received comment requesting clarification as to whether RCPP contracts can serve to meet existing compliance and enforcement requirements. Comment also encouraged separate contracts for easements on ***agricultural*** ***land***, a focus on co-operators' needs and resources rather than program requirements, and that NRCS provide a visual depiction as to how the new contracting method will be efficient and independent. Comment also expressed support for skipping an eligible application on a ranking list if the remaining funding is insufficient to fund that application or for other limited circumstances that would warrant not selecting applications strictly according to rank order.

Response: Conservation activities funded under RCPP, as with other NRCS voluntary conservation programs, can address resource concerns that meet a producer's compliance requirements, provided that the producer is not under an administrative order or other compulsory enforcement process related to the producer's failure to meet those requirements. NRCS will provide informational materials to partners about the new contracting methods as requested. No changes to the rule were needed to address these issues.Programmatic Partnership Agreements

Comment: Comment praised approval of salary expenses in PPAs and the ability to make selections out of rank order for critical projects. Comment also suggested that more clarification is needed in the rule on expenses incurred prior to PPA completion, how and when funding will become available, how funds for project management can be requested, who measures success in TA and FA activities, and how partnerships can be terminated.

Respondents suggested that NRCS should:

(a) Publicly report on its TA expenditures under PPAs;

(b) Require lead partners to periodically assess conservation benefits;

(c) Increase PPA length beyond 5 years if needed; and

(d) Establish that lead partners will be required to follow all applicable laws, rules, and guidelines expected of NRCS when awarding contracts.

Response: The RCPP statute specifies the terms for PPAs and no change is needed to address agreement duration in this rule. The AFAs provide detail as to the ability to receive payment for pre-PPA expenses. The terms and conditions associated with terminating a PPA are specified in the PPA itself. The regulation addresses the consequences should NRCS determine that PPA termination is necessary. No changes are made in the final rule in response to these issues.Proposals

Comment: NRCS received comment about several aspects of APFs, recommending that the RCPP regulation include similar detail as APFs regarding proposal requirements and the evaluation process beyond the four overarching pillars. Comment also requested language:

(a) Addressing circumstances under which “associated” non-***agricultural*** ***lands*** would be eligible for RCPP;

(b) Defining “eligible activities” more clearly;

(c) Providing information about the percentages of project funding that will be available for FA versus TA; and

(d) Providing clear guidance on what can and cannot count as direct or in-kind partner contribution.

Further, NRCS received comment:

(a) Requesting clarity regarding “innovation” and “flexibility”;

(b) Identifying that limiting the percentage of funding that can be allocated using discretionary prioritization factors would increase transparency;

(c) Requesting that the RCPP Portal be active at the beginning of the application process; and

(d) Recommending language for the regulation to reflect conservation benefits as a proposal requirement.

Response: The funding announcement process and timeline, including the application questions and criteria, are published as part of each funding announcement. This process provides the greatest program flexibility regarding the diversity of partner capabilities, resource concerns, and other program goals. The criteria are made public and provide transparency about how NRCS is focusing its RCPP implementation. The circumstances about eligible activities, associated non-***agricultural*** ***lands***, and TA and FA percentages will be addressed in upcoming APFs.

Similarly, APFs include more information about “innovation,” selection criteria, and weightings as these terms relate to program priorities. Establishing funding percentages or limitations in the regulation would reduce NRCS's ability to tailor APFs to critical resource concerns. In response to comment, this rule revises § 1464.20(b) to focus proposal priorities on conservation benefits. No other changes are made in the final rule in response to these issues.RCPP Activity TypesRental Contract Duration

Comment: NRCS received comment recommending that RCPP rental contracts should be for 10 years, as that is the duration authorized under the Conservation Reserve Program (CRP).

Response: NRCS uses RCPP ***land*** rental contracts to focus on short-term, ***targeted*** rental needs in the context of a larger RCPP project, unlike the longer-term purpose of CRP rental contracts. RCPP rental contracts are focused on actions such as incentivizing adoption of an innovative cropping system or to transition to an organic production system and thus are short term (3 years). No change was made in response to this comment.Other

Comment: NRCS received comment covering a variety of RCPP activity types. For practice innovation related to ***land*** management contracts, comment recommended:

(a) Simplifying the process for adding interim conservation practice standards;

(b) Including practices focused on water recycling, the recycling of liquid waste, and the adoption of advanced nutrient recovery technology;

(c) Allowing a flexible fallow program to be eligible; and

(d) Allowing different practices and approaches to be used in the same RCPP project and not limit practices in RCPP project awards.

For rental contracts, comment recommended:

(a) Clarifying the availability and eligibility of ***land***-rental practices (from CRP), especially for longer contracts and practices;

(b) Concern about not applying the Conservation Reserve Enhancement Program (CREP) authority for riparian buffers;

(c) Having project partners add a farmer mentor component to projects utilizing the short-term ***land*** rental option; and

(d) Clarifying whether the use of CRP authorities (16 U.S.C 3831-3835) includes CREP.

For easement agreements, comment recommended:

(a) Expanding the reach of entity-held easements by allowing other ***land***, including ***forested*** ***land***, wetlands, and riparian areas, as it appeared to the commenter that the interim rule decoupled requirements specific to NRCS's Healthy ***Forests*** Reserve Program (HFRP); and

(b) Authorizing payments to producers participating in a project that addresses water quantity concerns and that would encourage conversion from irrigated to dryland farming.

Comment expressed support for the interim rule's inclusion of expanding Public Law 83-566 activities nationwide within RCPP. Finally, comment recommended that NRCS continue to allow for greater flexibility in RCPP activity types.

Response: NRCS will maintain the integrity of its RCPP practices to ensure wise use of Federal funds while supporting innovation. CREP is a component of CRP (administered by FSA), and CREP agreements are partnership agreements with state governments. NRCS believes that CREP-style agreements would be redundant to the RCPP partnership agreement and would not aid in meeting RCPP goals efficiently.

NRCS expanded the availability of both U.S -held and entity-held easements to the full extent of the RCPP ***land*** eligibility criteria, and therefore the types of easements identified by the comment are already available. In addition, the 2018 Farm Bill expanded the availability of Public Law 83-566 authority nationwide, and NRCS has entered into PPAs that utilize the Public Law 83-566 authority beyond CCAs.

HFRP ***land*** eligibility criteria differs from RCPP criteria. RCPP ***forest*** ***land*** eligibility is limited to non-industrial private ***forest*** ***land***, while HFRP eligibility encompasses commercial ***forest*** ***land*** as well.

No changes are made in the final rule in response to these issues.Supplemental Agreements

Comment: Comment expressed support for the addition of supplemental agreements to the interim rule and recommended clarifying that NRCS consult with the lead partner when entering into a supplemental agreement with a non-lead partner and provide fuller discussion and clarification of the use of supplemental agreements.

Response: A supplemental agreement is a flexible vehicle for obligating RCPP funding to an eligible partner or third party to carry out authorized RCPP activities. Supplemental agreements are used generally to award TA funding, to implement watershed or public works projects, or to implement an entity-held easement agreement. As a condition of supplemental agreement(s), NRCS and a partner may negotiate documentation requirements for payment, based on agreement deliverables and activities. Supplemental agreements will require additional reporting beyond that required of the overall project's lead partner. No changes are made in the final rule in response to this issue.Notice and Comment, Paperwork Reduction Act, and Effective Date

In general, the Administrative Procedure Act (APA, 5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This final rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are:

To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review and any potential delay in the effective date.

For major rules, the Congressional Review Act requires a delay in the effective date of 60 days after publication to allow for Congressional Review. This rule is a major rule under the Congressional Review Act, as defined by 5 U.S.C 804(2). The authority in 5 U.S.C 808 provides that when an agency finds for good cause that notice and public procedure are impracticable, unnecessary, or contrary to the public interest, that the rule may take effect at such time as the agency determines. Due to the nature of the rule, the mandatory requirements of the 2018 Farm Bill, and the need to implement the regulations expeditiously to provide RCPP assistance to producers, NRCS and CCC find that full notice and public procedure are contrary to the public interest. Therefore, even though this rule is a major rule for purposes of the Congressional Review Act of 1996, NRCS and CCC are not required to delay the effective date for 60 days from the date of publication to allow for Congressional review. Therefore, this rule is effective on the date of publication in the Federal Register. At the same time, NRCS and CCC note that this final rule reflects consideration of the comments that were provided in response to the interim rule.Executive Orders 12866, 13563, 13771, and 13777

Executive Order 12866, “Regulatory Planning and Review,” and Executive Order 13563, “Improving Regulation and Regulatory Review,” direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. Executive Order 13777, “Enforcing the Regulatory Reform Agenda,” established a federal policy to alleviate unnecessary regulatory burdens on the American people.

The Office of Management and Budget (OMB) designated this rule as economically significant under Executive Order 12866, and, therefore, OMB has reviewed this rule. The costs and benefits of this rule are summarized below. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/).

Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs,” requires that in order to manage the private costs required to comply with federal regulations for every new significant or economically significant regulation issued, the new costs must be offset by the elimination of at least two prior regulations. This rule involves transfer payments and does not rise to the level required to comply with Executive Order 13771.

OMB guidance in M-17-21, dated April 5, 2017, specifies that “transfer rules” are not covered by Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs. ” Transfer rules are Federal spending regulatory actions that cause only income transfers between taxpayers and program beneficiaries. Therefore, this is considered a transfer rule and is not covered by Executive Order 13771.Cost Benefit Analysis

RCPP is a voluntary collaborative program that provides financial and technical assistance to partner organizations to help ***agricultural*** producers plan and implement conservation activities to address natural resource concerns on private or Tribal ***agricultural***, nonindustrial private ***forest*** and certain associated ***lands***. RCPP was first authorized by Congress in the 2014 Farm Bill. To date, 375 projects have been selected across the U.S and Puerto Rico leveraging $1 billion in NRCS technical and financial assistance with approximately $1.3 billion in partner contributions.

Under the 2014 Farm Bill, conservation activities were undertaken through partnership agreements (between NRCS and a lead partner) and contracts or agreements with eligible landowners, entities, and individuals under one or more covered programs (EQIP, CSP, ACEP, HFRP, and Pub. L. 83-566). EQIP, CSP, and ACEP each contributed seven percent of their annual funding toward RCPP partnership projects. In addition, the 2014 Farm Bill provided $100 million annually in direct RCPP mandatory funding.

The 2018 Farm Bill reauthorized RCPP with significant changes to how RCPP is funded. Specifically, the contributions from “covered programs” are eliminated as a funding source and “covered program contracts” are replaced with RCPP contracts and programmatic partnership agreements.

The 2018 Farm Bill repeals the seven percent reserved resources from the covered programs, provides $300 million in annual mandatory CCC funding, and establishes RCPP standalone contracts. Federal transfers under the 2014 Farm Bill totaled slightly more than $1 billion for FY2014 through 2018, or $200 million on an annual basis. The $300 million in mandatory annual funding increases RCPP funding by approximately $100 million annually, taking into account the past contribution of the “covered programs” for fiscal years 2014 through 2018.

The 2018 Farm Bill also changed the “funding pool” structure by streamlining from three pools to two pools and providing 50 percent of funds to a CCA pool and 50 percent of funds to a state and multi-state pool. It also allows project renewals and creates new programmatic authorities and expectations for the administration of agreements with partners. In addition, application and renewal processes are simplified to encourage participation by both producers and project partners. To ensure that only the most successful of projects qualify for renewal on a non-competitive basis, NRCS has identified in this rule that a partner has met or exceeded the objectives of the original project in order to be considered for renewal.

Estimates of costs, benefits, and transfers of RCPP on an annual basis are reported in Table 1. Given a 3 percent discount rate, the projected annualized real cost to producers of accessing RCPP is $204,258 and the projected annualized real transfers are $289 million. Conservation benefits from RCPP are difficult to quantify at a national scale but have been described by studies at an individual project or watershed or local scale as it relates the different types of conservation practices implemented.Table 1—RCPP Annual Estimated Costs, Benefits and Transfers a Category Annual estimateCosts b $204,258.Benefits Qualitative.Transfers $289,000,000.

Most of this rule's impact consists of transfer payments from the Federal Government to producers or to partners for the benefit of producers. The conservation benefits of RCPP financial and technical assistance funding delivered to date have been directly comparable to that provided by covered programs (EQIP, CSP, ACEP, etc.), and similar benefits are expected from RCPP funding under the 2018 Farm Bill.

Additionally, conservation benefits of partner contributions and collaboration in RCPP projects are expected to magnify the benefits of RCPP funding over each project's life, offsetting initial delays in obligation and implementation. NRCS will discuss methods to quantify the incremental benefits obtained from RCPP with lead partners, but due to the 5-year life of a typical RCPP project, only limited data are available at this time to support this conclusion. Therefore, NRCS and partners may use various mechanisms such as modeling to predict long-term outcomes. Despite these data limitations, RCPP is expected to positively affect natural resource concerns—through both the $300 million in funding provided annually by Congress and by the leverage of partner contributions.Clarity of the Regulation

Executive Order 12866, as supplemented by Executive Order 13563, requires each agency to write all rules in plain language. In addition to the substantive comments NRCS received on the interim rule, NRCS invited public comments on how to make the rule easier to understand. NRCS has incorporated these recommendations for improvement where appropriate. NRCS responses to public comment are described in more detail above.Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because no law requires that a proposed rule be published for this rulemaking initiative.Environmental Review

The environmental impacts of this rule have been considered in a manner consistent with the provisions of the National Environmental Policy Act (NEPA, 42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR parts 1500-1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). The 2018 Farm Bill requires minor changes to NRCS conservation programs, and there are no changes to the basic structure of the programs. The analysis has determined that there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR1501.5 and 1501.6). While OMB has designated this rule as “economically significant” under Executive Order 12866, “. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement” (40 CFR 1502.16(b)), when not interrelated to natural or physical environmental effects. The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were available for review and comment for 30 days from the date of publication of this interim rule in the Federal Register. NRCS considered this input and determined that there was not any new information provided that was relevant to environmental concerns or bore on the proposed action or its impacts that warranted an environmental impact statement or revising the current available RCPP EA and FONSI.Executive Order 12372

Executive Order 12372, “Intergovernmental Review of Federal Programs,” requires consultation with State and local officials that would be directly affected by proposed federal financial assistance. The objectives of the Executive order are to foster an intergovernmental partnership and a strengthened Federalism, by relying on State and local processes for State and local government coordination and review of proposed federal financial assistance and direct federal development. For reasons specified in the final rule related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the programs and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988

This rule has been reviewed under Executive Order 12988, “Civil Justice Reform. ” This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted, consistent with 7 U.S.C 6912(e).Executive Order 13132

This rule has been reviewed under Executive Order 13132, “Federalism. ” The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175

This rule has been reviewed in accordance with the requirements of Executive Order 13175, “Consultation and Coordination with Indian Tribal Governments. ” Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a government-to-government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes or on the distribution of power and responsibilities between the Federal Government and Indian Tribes.

The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not have significant Tribal implications that require Tribal consultations. Moreover, OTR states that NRCS has adhered to the spirit and intent of Executive Order 13175. Tribal consultation for this rule was included in the two 2018 Farm Bill Tribal consultation held on May 1, 2019, at the National Museum of the American Indian, in Washington, DC, and on June 26-28, 2019, in Sparks, NV. For the May 1, 2019, Tribal consultation, the portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title II session. There were no specific comments from Tribes on the RCPP rule during the Tribal consultation. If a tribe requests additional consultation, NRCS will work with OTR to ensure that meaningful consultation is provided where changes, additions, and modifications identified in this rule are not expressly mandated by legislation.

Separate from Tribal consultation, communication and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests. Additionally, NRCS held discussions subsequent to the interim rule publication with Indian Tribes and Tribal entities to continue discussions about the 2018 Farm Bill conservation programs implementation, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access.Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA, Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal Governments or the private sector. Agencies generally must prepare a written statement, including cost benefits analysis, for proposed and final rules with federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local or Tribal Governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no federal mandates, as defined under Title II of UMRA, for State, local, and Tribal Governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs

The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies:

10.932—Regional Conservation Partnership Program.E-Government Act Compliance

NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to Government information and services, and for other purposes.List of Subjects in 7 CFR Part 1464

***Agricultural*** operations, Conservation payments, Conservation practices, Eligible activities, Environmental credits, Forestry management, Natural resources, Resource concern, Soil and water conservation, Wildlife.

Accordingly, the interim rule amending 7 CFR part 1464, which was published at 85 FR 8131 on February 13, 2020, including the technical correction published at 85 FR 15051 on March 17, 2020, is adopted as a final rule with the following changes:Part 1464 Regional Conservation Partnership ProgramRegulatory Text

1. The authority citation for part 1464 continues to read as follows:Authority:

15 U.S.C 714b and 714c; 16 U.S.C 3871 et seq.

2. In § 1464.3, amend the definition of “Priority resource concern” by revising paragraphs (1) and (2) to read as follows:§ 1464.3 Definitions.

\* \* \* \* \*

Priority resource concern \* \* \*

(1) Water quality improvement, including source water protection, through measures such as reducing erosion, promoting sediment control, or addressing nutrient management activities affecting large bodies of water of regional, national, or international significance;

(2) Water quantity improvement, including protection or improvement relating to:

\* \* \* \* \*

3. In § 1464.20 revise paragraphs (b)(1) and (2) as follows:§ 1464.20 Proposal procedures.

\* \* \* \* \*

(b) \* \* \*

(1) The scope of the proposed project, including one or more conservation benefits that the project must achieve;

(2) A plan for monitoring, evaluating, and reporting on progress made toward achieving the project's conservation objectives;

\* \* \* \* \*

4. Amend § 1464.21 by:

a. In paragraph (b)(5), ***removing*** the word “or” and add the word “and” in its place;

b. In paragraph (b)(7), ***removing*** the word “or”;

c. Redesignating paragraph (b)(8) as paragraph (b)(9);

d. Adding new paragraph (b)(8); and

e. Adding paragraph (c)(4).

The additions read as follows.§ 1464.21 Ranking consideration and proposal selection.

\* \* \* \* \*

(b) \* \* \*

(8) To a significant extent involve—

(i) Historically underserved producers;

(ii) A community-based organization comprising, representing, or exclusively working with historically underserved producers;

(iii) Developing an innovative conservation approach or technology specifically ***targeting*** historically underserved producers' unique needs and limitations; or

(iv) An 1890 or 1994 ***land*** grant institution (7 U.S.C 3222 et seq.), Hispanic-serving institution (20 U.S.C 1101a), or other minority-serving institution, such as an historically Black college or university (20 U.S.C 1061), a tribally controlled college or university (25 U.S.C 1801), or Asian American and Pacific Islander-serving institution (20 U.S.C 1059g); or

\* \* \* \* \*

(c) \* \* \*

(4) ***Lands*** outside of a CCA are not eligible for consideration under the CCA funding pool, even where such ***land*** may influence resource concerns within the CCA.

5. Amend § 1464.22 by:

a. Redesignating paragraphs (d)(11) and (12) as paragraphs (d)(12) and (13);

d. Adding new paragraph (d)(11).

The addition reads as set forth below.§ 1464.22 Partnership agreements.

\* \* \* \* \*

(d) \* \* \*

(11) Provide a detailed description of how the lead partner will facilitate participation of historically underserved producers (including through advance payment options, increased payment rates, outreach activities, or other methods for increasing participation by historically underserved producers) if the proposal received increased ranking priority as described in § 1464.21(b)(8);

\* \* \* \* \*§ 1464.25[Amended]Regulatory Text

6. In § 1466.25 amend paragraph (b)(2) by ***removing*** the parenthetical phrase “(such as roads, dams, and irrigation facilities)”.

7. In § 1464.30, add paragraph (d)(4) to read as follows:§ 1464.30 Application for program contracts and selecting applications for funding.

\* \* \* \* \*

(d) \* \* \*

(4) ***Lands*** outside of a CCA are not eligible for applications in the CCA, even where conservation efforts on such ***land*** may influence resource concerns within the CCA.Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2021-00300 Filed 1-12-21; 4:15 pm]BILLING CODE 3410-16-P

**Load-Date:** January 18, 2021

**End of Document**



[***Federal Register: Regional Conservation Partnership Program Pages 3735 - 3744 [FR DOC #2021-00300]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61SY-21B1-JDG9-Y0TX-00000-00&context=1516831)

Impact News Service

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF AGRICULTURECommodity Credit Corporation7 CFR Part 1464[Docket ID NRCS-2019-0012]RIN 0578-AA70Regional Conservation Partnership ProgramAGENCY: Natural Resources Conservation Service (NRCS) and the Commodity Credit Corporation (CCC), United States Department of ***Agriculture***.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: This final rule adopts, with minor changes, an interim rule published in the Federal Register on February 13, 2020. The interim rule implemented changes to RCPP that were either necessitated by the ***Agriculture*** Improvement Act of 2018 (the 2018 Farm Bill) and changes for administrative streamlining improvements and clarifications. CCC amended this interim rule with a technical correction on March 17, 2020. NRCS received input from 65 commenters who provided 335 comments in response to the interim rule. This final rule makes permanent the provisions of the interim rule, responds to comments received, and makes further adjustments in response to some of the comments received.DATES: Effective: January 15, 2021.FOR FURTHER INFORMATION CONTACT: Kari Cohen; phone: (202) 720-6037; or email: [*kari.cohen@usda.gov*](mailto:kari.cohen@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).SUPPLEMENTARY INFORMATION:Background The 2018 Farm Bill reauthorized and amended RCPP. On February 13, 2020, an interim rule with request for comments was published in the Federal Register (85 FR 8131-8145) that added RCPP regulations in 7 CFR part 1464 to implement changes made by the 2018 Farm Bill. A technical correction was published in the Federal Register on March 17, 2020 (85 FR 15051-15052). This final rule adopts, with minor changes, the interim rule.Discussion of RCPP (7 CFR part 1464) RCPP, implemented under the direction of the Chief of NRCS, promotes coordination of NRCS conservation activities with partners that offer value-added contributions to address on-farm, watershed, and regional natural resource concerns. Through RCPP, NRCS seeks to co-invest with partners to implement projects that demonstrate innovative solutions to conservation challenges and provide measurable improvements and outcomes. RCPP projects may only be carried out on ***agricultural*** or nonindustrial private ***forest*** ***land*** or associated ***land*** on which NRCS determines an eligible activity would help achieve conservation benefits. Eligible conservation activities may be implemented on public ***lands*** when those activities will benefit eligible ***lands*** as determined by NRCS and are included in the scope of an approved RCPP project. The interim rule: Created a new part in the Code of Federal Regulations (CFR) to acknowledge that RCPP is now a stand-alone program, no longer subordinated to its covered programs. Identified three contract types for implementation of RCPP, including programmatic partnership agreements, program contracts, and supplemental agreements. Defined terms to address changes made by the 2018 Farm Bill, including-- [cir] Conservation benefits; [cir] Eligible activity; [cir] Eligible partner; [cir] Lead partner; [cir] Nonlead partner; [cir] Participant; [cir] Priority resource concern; [cir] Project resource concern; [cir] Proposal; and [cir] RCPP plan of operations. Identified that NRCS may award up to 15 Alternative Funding Arrangement (AFA) projects, which rely on partner capacity to implement conservation activities. Acknowledged the reduction from three funding pools to two and directed partners to apply to either the Critical Conservation Area (CCA) or State and Multistate funding pool. Added provisions requiring all RCPP project partners to develop and report on their environmental outcomes. Expanded the scope of RCPP by including the authorities of the Conservation Reserve Program (16 U.S.C 3831-3835) and the Watershed Protection and Flood Prevention Program (Pub. L. 83-566), excluding the Watershed Rehabilitation Program, in the definition of ``covered programs.'' Expanded the purpose of RCPP to include protection of drinking water and ground water on eligible ***land***. Allowed partnership agreements to be longer than 5 years in certain situations, as determined by NRCS, to further purposes of RCPP. Allowed partnership agreement renewals for a period not to exceed 5 years that in certain situations may be funded through an expedited noncompetitive process. Allowed a partnership agreement, or a renewal partnership agreement, to be extended one time for up to 12 months. Required reporting publicly at the time of selection the amount of technical assistance (TA) that will be set aside for project implementation. Acknowledged an obligation to provide guidance for partners on how to quantify and report project outcomes, including achievement of conservation benefits.Summary of Comments The interim rule 60-day comment period ended May 12, 2020. NRCS received 335 comments from 65 commenters in response to the rule. NRCS reviewed these 335 comments and categorized and summarized them according to the topics identified below. NRCS received comments on a wide variety of topics, including several comments of a general nature, most of which expressed support, as well as a few comments that were not relevant to RCPP or to the RCPP interim rule. The topics that generated the greatest response were easements, funding pools, program administration, program contracts, and proposals.[[Page 3736]] In this rule, the comments have been organized alphabetically by topic. The topics include: Adjusted gross income (AGI) waivers; Alternative funding arrangements (AFA); Availability of program funding (APF); Easements; Eligibility; Funding pools; Partner contributions; Program administration; Program contracts; Programmatic partnership agreements; Proposals; RCPP activity types; Renewals; and Supplemental agreements.Adjusted Gross Income Waivers Comment: NRCS received comment expressing concern about reporting requirements necessary to receive an AGI eligibility determination from the Farm Service Agency (FSA). Comment also expressed concern that the AGI waiver process may harm the ability of small farms to receive conservation assistance and suggested adding more detail on the process and criteria for granting AGI waivers. Response: AGI eligibility determination processes are not within the purview of NRCS or this rulemaking. However, NRCS recently published a National Bulletin (NB 440-20-26) which indicated that an RCPP lead partner may request a waiver of the applicability of AGI at the RCPP project level during the initial Partnership Project Agreement (PPA) negotiation only. If granted, producers participating in RCPP through individual contracts or agreements will not be required to file AGI paperwork or have AGI determinations made by FSA. If the RCPP lead partner does not request or receive a project-level waiver of the applicability of AGI, a producer may seek a waiver of the AGI limitation upon receiving an AGI determination. No changes are made in the final rule in response to this issue.Alternative Funding Arrangements Comment: NRCS received comment requesting clarification that NRCS retains administrative responsibility for conservation compliance, AGI, and payment limitation determinations, tenant rights, producer appeals, civil rights, and other similar responsibilities. Additionally, comment requested that NRCS: ***Remove*** the parenthetical about roads, dams, and irrigation facilities used to describe the types of infrastructure upon which an AFA could focus; Provide guidance on AFA goals; Only use AFAs in limited circumstances and apply stringent criteria; Support AFA irrigation projects and provide incentives for projects that would benefit fish and other aquatic species, particularly in overallocated basins; Administer AFA projects through grant agreements; and Expand the indirect costs eligible for reimbursement under AFA projects. Response: NRCS will define responsibilities in the APF announcements and AFA partnership agreements, while still maintaining flexibility. NRCS will identify which responsibilities must remain with NRCS. This final rule ***removes*** the parenthetical from Sec. 1464.25 RCPP infrastructure projects relate to conservation activities that significantly address resource concerns but require greater investment than a single producer can make. NRCS's goal for AFA projects is to fund proposals that are consistent with RCPP purposes but are more effectively and efficiently carried out through lead partner efforts than through NRCS's conservation delivery system. AFA criteria are published as part of funding announcements when AFA funding is made available. AFAs are ``programmatic instruments'' that provide NRCS with the ability to balance the flexibility of grants or other agreement mechanisms with statutorily mandated responsibilities regarding NRCS roles. For all RCPP projects, including AFAs, the statutory limitation on administrative costs prohibits use of RCPP funding for a partner's indirect costs. Other than ***removing*** the parenthetical noted above, there are no other changes made in the final rule in response to this issue.Availability of Program Funding (APF) Comment: NRCS received comment expressing support for the existing APF and requesting that NRCS: Clarify its intent to cover project management costs; Provide written feedback for projects that are not selected; and Follow procedures of lead public entities when possible to promote efficiency. Comment also included request for additional funding and flexibility for TA, including TA-only projects or projects focused on conservation planning. Response: RCPP projects are collaborative, and NRCS works with each partner to develop procedural flexibility to help deliver conservation assistance effectively in the project area. While partners provide significant contribution to project costs, NRCS focuses on the technical and financial resources necessary to implement conservation activities and covers much of the project costs. For projects that are not selected, NRCS provides feedback to partners to help them develop more competitive proposals for future submission. NRCS strongly supports conservation planning and technical assistance delivery in its program implementation efforts, including RCPP, and selects proposals that most effectively delivery conservation outcomes. No changes are made in the final rule in response to these issues. With respect to TA-only type projects, the Farm Bill makes clear that all RCPP projects are intended to generate conservation benefits and report on conservation outcomes, therefore, RCPP should prioritize on-the-ground conservation activities plus the TA required to get that conservation on the ground. NRCS has an extensive Conservation Technical Assistance program that provides such support to its partners.EasementsBuy-Protect-Sell (BPS) Transactions Comment: NRCS received comment related to BPS easement transactions, including support for the availability of BPS transactions under RCPP and requesting the extension of such flexibility to U.S -held easements. Comment also: (a) Recommended that NRCS consider as eligible BPS projects that encompass ***land*** purchased on an interim basis by State or county governments to improve ***land*** access by Historically Underserved (HU) producers; (b) Addressed easement deed terms, recommending that NRCS make the minimum deed terms available as soon as possible and provide full flexibility in the use of entity-written deed terms; and (c) Recommended that the entity match follow ACEP-ALE flexibility, which allows a landowner's donation of easement value to constitute all of the nonfederal match requirements. Response: Based on the ACEP definition, BPS transactions are unique transactions that require the transfer of an easement to an eligible entity and do not include the United States as the ultimate easement holder. ACEP ***land*** eligibility is limited to private and[[Page 3737]]Tribal ***lands***. In contrast, RCPP ***land*** eligibility includes certain public ***lands***, and NRCS may allow States and local government agencies to enter into a BPS transaction under RCPP. NRCS will announce any authorizations for such transactions through an APF. NRCS has posted the minimum deed terms to provide a full range of options for US-held and entity-held easements. The minimum deed terms provide eligible entities with maximum flexibility to use their own terms while NRCS ensures that RCPP purposes and requirements are met. NRCS will also maintain easement compensation flexibility under the final rule. Future APFs will provide information on the best approach for leveraging Federal funding and partner efforts. No changes are made in the final rule in response to these issues.U.S -Held Easement Compensation Comment: NRCS received comment about the range of easement types available under RCPP, expressing support for the flexibility and requesting that NRCS avoid competition between RCPP U.S -held ***agricultural*** ***land*** easements and other farm protection programs. Comment also addressed the easement valuation structure identified in the APF, opposing the use of tiered easement compensation based upon level of U.S -held RCPP easement protection. Comment also recommended that NRCS consider landowner charitable donation of easement value and landowner management activities on an easement as part of the partner's contribution. Response: The three tiers of compensation paid to landowners enrolling in a U.S -held RCPP easement were established to emphasize the partnership nature of RCPP and to ensure that RCPP would not compete with other NRCS easement programs. While partner contributions are encouraged to compensate landowners fully for enrollment of less restrictive easement types, landowner donations of easement value or associated management costs cannot be counted as partner contribution. Doing so would reduce the incentive for partners to provide assistance to producers. For example, when RCPP reimburses a producer for up to 75 percent of the cost of implementing a conservation practice, the remaining 25 percent is the producer's responsibility. If the producer solely pays for the 25 percent share, it is not considered a partner contribution. A partner contribution only occurs if the partner assists the producer with the cost of the practice. NRCS will continue to encourage greater partner investment in project success through the competitive tiering of easement compensation. No changes are made in the final rule in response to these issues.Eligibility Comment: NRCS received comment about ***land*** eligibility in general, including support for the eligibility of certain public ***agricultural*** ***lands*** and some suggesting expansion of such eligibility to all public ***land***. Comment also supported the eligibility of ***lands*** owned by non-governmental organizations, while other comment recommended that eligibility be expanded to include ***forest*** ***land*** under threat from grazing by ungulates.\1\ Commenters also expressed appreciation for the consistency of ***land*** eligibility between the CSP and RCPP interim rules and urged NRCS to be flexible in determining whether such ***land*** is under the ``effective control'' of the producer.--------------------------------------------------------------------------- \1\ Ungulates are hooved mammals.--------------------------------------------------------------------------- Response: NRCS appreciates comments regarding ***land*** eligibility with respect to ***lands*** owned by public and non-governmental entities. The RCPP activity type informs whether or not public ***land*** or ***land*** owned by a non-governmental entity is eligible given existing public trust protections and related restrictions and the relationship of those protections and restrictions to addressing resource concerns. As a result, NRCS believes that the current parameters best reflect the scope of ***land*** eligibility. No changes are made in the final rule in response to these issues.Funding PoolsCritical Conservation Areas Comment: NRCS received comments related to Critical Conservation Areas (CCAs), including recommending that NRCS: (a) Add excess water as a concern for the Mississippi River basin; (b) Consolidate the Columbia River basin and the California Bay Delta into a single CCA; (c) Add water source protection to all eight CCAs; (d) Add soil health or soil quality as a priority resource concern for all eight CCAs; (e) Allow CCA projects to include areas outside of a CCA; (f) Continue Conservation Assessment and Ranking Tool (CART) use; (g) Expand CCAs to include New England; (h) Identify a new CCA focusing on coral reefs in the Pacific Islands Areas and the Caribbean Area; (i) Identify a new CCA focusing on the Puget Sound; (j) Continue the CCA in the Chesapeake Bay Watershed; (k) Update CCAs to cover all 50 states; and (l) Clarify that if a proposal is within a CCA it will only receive priority if it both achieves conservation benefits and addresses the CCA's primary resource concern. Response: While ***lands*** outside a CCA can influence resource concerns within a critical conservation area, NRCS identified CCA boundaries to provide clear demarcation. This final rule clarifies that ***lands*** outside of a CCA are not eligible for proposals or applications in a CCA. The regulation is also amended to reflect that NRCS will give priority to proposals in CCAs that both (1) achieve conservation benefits and (2) address at least one of a CCA's priority resource concerns. NRCS appreciates the comments related to CART and suggestions regarding RCPP and water resource, soil health, and soil quality. Regarding proposed changes to the eight designated CCAs, the Secretary identifies CCAs, including whether an existing CCA will be re-designated. NRCS is working with the Office of the Secretary to determine whether the current designation status of CCAs, including the re-designation of current CCAs or new CCAs, should be undertaken. No changes are made in the final rule in response to these issues.Other Comment: NRCS received comment related to funding pools that did not address CCAs. Comment expressed concern that the National funding pool was eliminated and suggested that State Conservationists should be the selecting official for the State and Multi-State funding pool. Response: The 2018 Farm Bill mandated ***removal*** of the National funding pool. NRCS provides State Conservationists with advisory allocations to guide the State's ranking process. However, the Chief makes all final selections. No changes are made in the final rule in response to these issues.Renewals Comment: NRCS received support for the renewal process though some comment critiqued its competitive nature due to limited funds. Comment recommended that a renewal demonstrate the continued need for the project and requested that NRCS post renewal criteria prior to requesting renewal applications. Comment alternatively recommended funding all[[Page 3738]]renewal requests that qualify, even if it must be done at a reduced rate. Response: Renewals of partnership agreements do not compete with new proposals, but criteria are needed so that NRCS only renews those partnership agreements that represent the best investment of additional RCPP resources. To do so, NRCS uses screening questions to determine if a project has met or exceeded the original objectives, alongside other factors--including available funding and project diversity (geographic and type)--to determine which projects will be offered renewal.Partner Contributions Comment: NRCS received comment recommending: (a) Increased practice payments to encourage producer participation in RCPP projects; (b) Clarification that RCPP funding can be stacked with any other source of funding; (c) Clarification that partners may reduce their contributions if NRCS provides an award amount less than the partner's proposal request; (d) Landowner donations (for example, related to practice implementation) be allowed as partner contributions if they are based on verifiable expenses; and (e) A flexible structure for partner contributions that match overall objectives of individual projects. Comment also supported NRCS setting partner contribution goals (for example, at least 1:1), allowing partner contribution expenditures after award announcement, and the explicit addition of in-kind contributions as allowable partner contributions. Comment also expressed misplaced concerns that RCPP requires the partner contribution match to be made in cash. Response: NRCS proportionally reduces expected partner contributions when the NRCS award is less than the amount requested, unless negotiated differently by the parties. NRCS will not consider landowner expenses to be partner contributions because the purpose is to stimulate assistance to producers. NRCS will continue to clarify contribution requirements in APFs. No changes are made in the final rule in response to these issues.Program AdministrationEvaluation Criteria Comment: NRCS received comment recommending use of the following criteria when evaluating proposals for their conservation impact or outcomes, including suggestions that metrics should be used for partnership renewals; use of honeybees and other pollinators; use of practices to support native vegetation; and implementation of a drought contingency plan. Comment also recommended that NRCS: (a) Identify selection criteria for partnership agreements, including whether there is the availability of alternative funding arrangements, in each APF; (b) Use a simplified evaluation process; (c) Consult with partners on all aspects of distributing RCPP financial assistance; (d) Utilize fully AFAs; (e) Work with local working groups as part of the proposal ranking criteria; (f) Provide more certainty on reimbursement of real costs of both project implementation and proposal development; (g) Work with the lead partner to rank and select priority projects; (h) Involve the lead partner in program contract selection and development; (i) Provide equal treatment for small, midsize, and large farms; (j) Provide an option to forego a public and open enrollment process; (k) Amend the ``priority resource concern'' definition in Sec. 1464.3 to highlight soil health as critical to water quality, aquifer recharge, carbon sequestration and water retention; and (l) Use caution applying ``innovation'' criteria since it is difficult to apply to flood damage reduction projects. Response: RCPP encourages flexible and streamlined delivery of conservation assistance to producers. To maximize its flexibility and set it apart from other NRCS programs, evaluation criteria used to assess proposals are developed at the APF level. Moving forward, NRCS will consider the evaluation criteria proposed by commenters in developing APFs and, in doing so, will involve partners, stakeholders, and local working groups. Of note, NRCS believes that including scientific conclusions about the role of soil health in the definition of priority resource concern is not congruent with the concept that identifying priority resource concerns depends on the needs of the CCA, rather than a broad, national objective. No changes are made in the final rule in response to these issues.General Comment: NRCS received comment requesting that NRCS: (a) Clarify roles and responsibilities of conservation partners and Technical Service Providers (TSPs) from the time of application through the implementation phases; (b) Simplify the proposal application, ranking, and implementation processes (for example, maintain the adjustment of terms option); (c) Require in regulation that there be a communication plan between NRCS and the lead partner to facilitate the entire RCPP project; (d) Specify the reporting requirements for both NRCS and RCPP partners; (e) Clarify when contract type will be determined in the application process; (f) Provide detail on the documentation and planning of technical assistance and contributions; (g) Acknowledge source water protection as a goal, and; (h) Publish a ``plan for comment'' that outlines how NRCS will track and report expenditures towards source water protection. Response: NRCS appreciates feedback intended to improve processes and delivery. Proposal application questions are specific to each funding announcement and are created as part of the funding announcement development process. To ensure that projects are feasible and meet program goals and objectives, technical experts provide input into question development and are involved throughout the evaluation and ranking process. Programmatic partnership agreements specify the responsibilities and expectations of both NRCS and the lead partner from project implementation to close. In addition, per Sec. 1464.2, NRCS has designated an RCPP coordinator for each State, whose role is to guide and assist partners through program implementation. Because the existing process provides ample opportunity for communication between NRCS and the lead partner, no change is made to the regulation to require a communication plan. NRCS tracks and documents technical assistance internally. NRCS will provide partners a semiannual report that contains the status of each pending and obligated contract under each project and an annual report describing how NRCS used that fiscal year's TA. RCPP funds associated with RCPP producer contracts in a source water protection (SWP) area as modeled by the Environmental Protection Agency are counted towards the 10 percent of funds that statute requires to be utilized for source water protection. This final rule adjusted the rule language to incorporate SWP as a priority.[[Page 3739]]Historically Underrepresented (HU) Groups Comment: NRCS received comment recommending that NRCS incorporate into the final rule benchmarks related to participation by HU groups to reflect the importance and increasing engagement of women who participate in RCPP, and to ensure that RCPP does not inadvertently favor large landowners. Comment also recommended adding language to identify HU groups as a priority in the proposal procedures (Sec. 1464.20), ranking and proposal selection (Sec. 1464.21), and partnership agreement (Sec. 1464.22) sections of the final rule. Response: Consistent with the 2018 Farm Bill, NRCS gives priority consideration to RCPP proposals that provide outreach to, and engagement of, HU groups. (HU groups, as specified in the RCPP authorizing legislation, include beginning farmers or ranchers, socially disadvantaged farmers or ranchers, limited resource farmers or ranchers, and veteran farmers and ranchers. NRCS has and will continue to provide program-specific outreach to HU groups at the national, State, and local levels. These efforts are often tailored to the needs of the service area, with ***targeted*** efforts for HU producers. Gender is not a covered HU group, which is specified in the authorizing legislation; however, NRCS encourages the participation of all producers who are eligible. This final rule encourages further HU producer and landowner enrollment, including requiring partnership agreements to denote any authorizations for higher payment rates, advance payment options, or other methods for encouraging HU participation. Changes are made in the final rule in response to these issues.Outcomes Measuring and Reporting Comment: NRCS received comment requesting that the rule be updated to require partners to assess the conservation progress of their RCPP projects ``in a quantified form to the extent practicable.'' Comment further recommended the use of existing metrics for outcomes measurement, and also suggested that NRCS provide partners with geospatial data on new and existing practices to help facilitate outcomes measurement and reporting. Additionally, comment expressed concern that outcomes activities will further burden already strained NRCS staff capacity. Lastly, comment requested dedicated NRCS funding for monitoring conservation practices implemented as part of RCPP projects. Response: The 2018 Farm Bill requires NRCS to gather quantitative data regarding conservation benefits, as set forth in the requirements of APFs. RCPP lead partners are required, to the extent practicable, to report on the conservation environmental outcomes of their projects. Reporting on economic, financial, and social outcomes is optional but encouraged. NRCS is committed to collaborating with lead partners to ensure that their reporting of outcomes help NRCS evaluate the value of RCPP investments. No changes are made in the final rule in response to these issues.Payment Comment: NRCS received comment suggesting a per-producer payment limit of $450,000 under RCPP, consistent with payment limitations under EQIP. Comment also suggested that NRCS base payment rates on real, local costs using prevailing wages or the regional Consumer Price Index. Response: Payment limitations, such as those set forth in 7 CFR parts 1466 (EQIP) and 1470 (CSP) are established by statute. RCPP does not have a statutory payment limitation. NRCS plans to have activity-level limitations on producer contracts to ensure wider availability of funding. These limitations will be identified in partnership agreements and posted on NRCS State websites. No changes are made in the final rule in response to these issues.Staff Support Comment: NRCS received comment supporting increased NRCS staffing to focus on RCPP projects and communicate with partners, including strong support for the 2018 Farm Bill's requirement, as reflected in the interim rule, that each State identify an RCPP Coordinator. Comment emphasized the need for designated program staff (including increasing staff where program workload was high) and urged that NRCS further support the RCPP State Coordinators by developing job descriptions for the new role and providing adequate time needed to fulfill the responsibilities. Comment also requested that states provide additional local, technical contacts for RCPP projects to ensure program goals are achieved and urged process efficiencies that allow NRCS technical partners, such as conservation districts, to implement projects without incurring NRCS staff time. Additionally, NRCS received comment expressing concern about NRCS' dependence on partners and TSP, citing insufficient NRCS staffing at the state and local levels. Comment also requested that NRCS delegate authority to State and regional entities to carry out contract deliverables. Response: NRCS has designated State RCPP coordinators. NRCS appreciates comments expressing concern about NRCS staffing capacity and NRCS' ability to meet and customer service needs in States with heavy workloads. No changes are made in the final rule in response to these issues.Technical and Software Upgrades Comment: NRCS received comment recommending that NRCS involve partners in implementing tools such as CART, ensure that all technology be in operation prior to accepting applications so that the process does not change midstream, and clarify how applicants will be selected for different program contract types. Comment additionally recommended including a standardized set of application questions and consistent reporting requirements, and that these be communicated to potential partners earlier in the process. Comment also expressed an interest in ensuring CART remain size-neutral. Response: NRCS has and will continue to develop and improve our business tools, such as CART, including evaluating how to remain size-neutral. NRCS does not intend to change application procedures over the course of an application period, though it will continue to refine the process for future application periods. The process for matching an applicant with an RCPP contract depends on the nature of the specific programmatic agreement. No changes are made in this final rule in response to these issues.Technical Service Providers Comment: NRCS received comment about RCPP's use of TSPs, including that NRCS do more to encourage the use of TSPs and allow technical assistance to be provided by entities other than NRCS-certified TSPs. Response: Requirements about delivery of technical services through TSPs is covered in 7 CFR part 652. The TSP regulation identifies the requirements for a producer to be reimbursed for the cost of hiring a TSP to obtain technical services related to an NRCS conservation program, including RCPP, and such a TSP must be certified by NRCS. The TSP regulation also identifies that NRCS may obtain additional assistance in its delivery of technical assistance through a procurement contract or cooperative agreements. Since the solicitation[[Page 3740]]methods used for those contract or agreement types ensure that NRCS obtains assistance from qualified TSPs, the TSP regulations specify that such TSPs do not also need to be certified under 7 CFR part 652. For more information, visit the NRCS TSP website at [*https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/*](https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/). No changes are made in the final rule in response to these issues.Program Contracts Comment: NRCS received comment requesting clarification as to whether RCPP contracts can serve to meet existing compliance and enforcement requirements. Comment also encouraged separate contracts for easements on ***agricultural*** ***land***, a focus on co-operators' needs and resources rather than program requirements, and that NRCS provide a visual depiction as to how the new contracting method will be efficient and independent. Comment also expressed support for skipping an eligible application on a ranking list if the remaining funding is insufficient to fund that application or for other limited circumstances that would warrant not selecting applications strictly according to rank order. Response: Conservation activities funded under RCPP, as with other NRCS voluntary conservation programs, can address resource concerns that meet a producer's compliance requirements, provided that the producer is not under an administrative order or other compulsory enforcement process related to the producer's failure to meet those requirements. NRCS will provide informational materials to partners about the new contracting methods as requested. No changes to the rule were needed to address these issues.Programmatic Partnership Agreements Comment: Comment praised approval of salary expenses in PPAs and the ability to make selections out of rank order for critical projects. Comment also suggested that more clarification is needed in the rule on expenses incurred prior to PPA completion, how and when funding will become available, how funds for project management can be requested, who measures success in TA and FA activities, and how partnerships can be terminated. Respondents suggested that NRCS should: (a) Publicly report on its TA expenditures under PPAs; (b) Require lead partners to periodically assess conservation benefits; (c) Increase PPA length beyond 5 years if needed; and (d) Establish that lead partners will be required to follow all applicable laws, rules, and guidelines expected of NRCS when awarding contracts. Response: The RCPP statute specifies the terms for PPAs and no change is needed to address agreement duration in this rule. The AFAs provide detail as to the ability to receive payment for pre-PPA expenses. The terms and conditions associated with terminating a PPA are specified in the PPA itself. The regulation addresses the consequences should NRCS determine that PPA termination is necessary. No changes are made in the final rule in response to these issues.Proposals Comment: NRCS received comment about several aspects of APFs, recommending that the RCPP regulation include similar detail as APFs regarding proposal requirements and the evaluation process beyond the four overarching pillars. Comment also requested language: (a) Addressing circumstances under which ``associated'' non-***agricultural*** ***lands*** would be eligible for RCPP; (b) Defining ``eligible activities'' more clearly; (c) Providing information about the percentages of project funding that will be available for FA versus TA; and (d) Providing clear guidance on what can and cannot count as direct or in-kind partner contribution. Further, NRCS received comment: (a) Requesting clarity regarding ``innovation'' and ``flexibility''; (b) Identifying that limiting the percentage of funding that can be allocated using discretionary prioritization factors would increase transparency; (c) Requesting that the RCPP Portal be active at the beginning of the application process; and (d) Recommending language for the regulation to reflect conservation benefits as a proposal requirement. Response: The funding announcement process and timeline, including the application questions and criteria, are published as part of each funding announcement. This process provides the greatest program flexibility regarding the diversity of partner capabilities, resource concerns, and other program goals. The criteria are made public and provide transparency about how NRCS is focusing its RCPP implementation. The circumstances about eligible activities, associated non-***agricultural*** ***lands***, and TA and FA percentages will be addressed in upcoming APFs. Similarly, APFs include more information about ``innovation,'' selection criteria, and weightings as these terms relate to program priorities. Establishing funding percentages or limitations in the regulation would reduce NRCS's ability to tailor APFs to critical resource concerns. In response to comment, this rule revises Sec. 1464.20(b) to focus proposal priorities on conservation benefits. No other changes are made in the final rule in response to these issues.RCPP Activity TypesRental Contract Duration Comment: NRCS received comment recommending that RCPP rental contracts should be for 10 years, as that is the duration authorized under the Conservation Reserve Program (CRP). Response: NRCS uses RCPP ***land*** rental contracts to focus on short-term, ***targeted*** rental needs in the context of a larger RCPP project, unlike the longer-term purpose of CRP rental contracts. RCPP rental contracts are focused on actions such as incentivizing adoption of an innovative cropping system or to transition to an organic production system and thus are short term (3 years). No change was made in response to this comment.Other Comment: NRCS received comment covering a variety of RCPP activity types. For practice innovation related to ***land*** management contracts, comment recommended: (a) Simplifying the process for adding interim conservation practice standards; (b) Including practices focused on water recycling, the recycling of liquid waste, and the adoption of advanced nutrient recovery technology; (c) Allowing a flexible fallow program to be eligible; and (d) Allowing different practices and approaches to be used in the same RCPP project and not limit practices in RCPP project awards. For rental contracts, comment recommended: (a) Clarifying the availability and eligibility of ***land***-rental practices (from CRP), especially for longer contracts and practices; (b) Concern about not applying the Conservation Reserve Enhancement Program (CREP) authority for riparian buffers; (c) Having project partners add a farmer mentor component to projects utilizing the short-term ***land*** rental option; and (d) Clarifying whether the use of CRP authorities (16 U.S.C 3831-3835) includes CREP.[[Page 3741]] For easement agreements, comment recommended: (a) Expanding the reach of entity-held easements by allowing other ***land***, including ***forested*** ***land***, wetlands, and riparian areas, as it appeared to the commenter that the interim rule decoupled requirements specific to NRCS's Healthy ***Forests*** Reserve Program (HFRP); and (b) Authorizing payments to producers participating in a project that addresses water quantity concerns and that would encourage conversion from irrigated to dryland farming. Comment expressed support for the interim rule's inclusion of expanding Public Law 83-566 activities nationwide within RCPP. Finally, comment recommended that NRCS continue to allow for greater flexibility in RCPP activity types. Response: NRCS will maintain the integrity of its RCPP practices to ensure wise use of Federal funds while supporting innovation. CREP is a component of CRP (administered by FSA), and CREP agreements are partnership agreements with state governments. NRCS believes that CREP-style agreements would be redundant to the RCPP partnership agreement and would not aid in meeting RCPP goals efficiently. NRCS expanded the availability of both U.S -held and entity-held easements to the full extent of the RCPP ***land*** eligibility criteria, and therefore the types of easements identified by the comment are already available. In addition, the 2018 Farm Bill expanded the availability of Public Law 83-566 authority nationwide, and NRCS has entered into PPAs that utilize the Public Law 83-566 authority beyond CCAs. HFRP ***land*** eligibility criteria differs from RCPP criteria. RCPP ***forest*** ***land*** eligibility is limited to non-industrial private ***forest*** ***land***, while HFRP eligibility encompasses commercial ***forest*** ***land*** as well. No changes are made in the final rule in response to these issues.Supplemental Agreements Comment: Comment expressed support for the addition of supplemental agreements to the interim rule and recommended clarifying that NRCS consult with the lead partner when entering into a supplemental agreement with a non-lead partner and provide fuller discussion and clarification of the use of supplemental agreements. Response: A supplemental agreement is a flexible vehicle for obligating RCPP funding to an eligible partner or third party to carry out authorized RCPP activities. Supplemental agreements are used generally to award TA funding, to implement watershed or public works projects, or to implement an entity-held easement agreement. As a condition of supplemental agreement(s), NRCS and a partner may negotiate documentation requirements for payment, based on agreement deliverables and activities. Supplemental agreements will require additional reporting beyond that required of the overall project's lead partner. No changes are made in the final rule in response to this issue.Notice and Comment, Paperwork Reduction Act, and Effective Date In general, the Administrative Procedure Act (APA, 5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This final rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are: To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review and any potential delay in the effective date. For major rules, the Congressional Review Act requires a delay in the effective date of 60 days after publication to allow for Congressional Review. This rule is a major rule under the Congressional Review Act, as defined by 5 U.S.C 804(2). The authority in 5 U.S.C 808 provides that when an agency finds for good cause that notice and public procedure are impracticable, unnecessary, or contrary to the public interest, that the rule may take effect at such time as the agency determines. Due to the nature of the rule, the mandatory requirements of the 2018 Farm Bill, and the need to implement the regulations expeditiously to provide RCPP assistance to producers, NRCS and CCC find that full notice and public procedure are contrary to the public interest. Therefore, even though this rule is a major rule for purposes of the Congressional Review Act of 1996, NRCS and CCC are not required to delay the effective date for 60 days from the date of publication to allow for Congressional review. Therefore, this rule is effective on the date of publication in the Federal Register. At the same time, NRCS and CCC note that this final rule reflects consideration of the comments that were provided in response to the interim rule.Executive Orders 12866, 13563, 13771, and 13777 Executive Order 12866, ``Regulatory Planning and Review,'' and Executive Order 13563, ``Improving Regulation and Regulatory Review,'' direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. Executive Order 13777, ``Enforcing the Regulatory Reform Agenda,'' established a federal policy to alleviate unnecessary regulatory burdens on the American people. The Office of Management and Budget (OMB) designated this rule as economically significant under Executive Order 12866, and, therefore, OMB has reviewed this rule. The costs and benefits of this rule are summarized below. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/). Executive Order 13771, ``Reducing Regulation and Controlling Regulatory Costs,'' requires that in order to manage the private costs required to comply with federal regulations for every new significant or economically significant regulation issued, the new costs must be offset by the elimination of at least two prior regulations. This rule involves transfer payments and does not rise to the level required to comply with Executive Order 13771. OMB guidance in M-17-21, dated April 5, 2017, specifies that ``transfer rules'' are not covered by Executive Order 13771, ``Reducing Regulation and Controlling Regulatory Costs.'' Transfer rules are Federal spending regulatory actions that cause only income transfers between taxpayers and program beneficiaries. Therefore, this is considered a transfer rule and is not covered by Executive Order 13771.[[Page 3742]]Cost Benefit Analysis RCPP is a voluntary collaborative program that provides financial and technical assistance to partner organizations to help ***agricultural*** producers plan and implement conservation activities to address natural resource concerns on private or Tribal ***agricultural***, nonindustrial private ***forest*** and certain associated ***lands***. RCPP was first authorized by Congress in the 2014 Farm Bill. To date, 375 projects have been selected across the U.S and Puerto Rico leveraging $1 billion in NRCS technical and financial assistance with approximately $1.3 billion in partner contributions. Under the 2014 Farm Bill, conservation activities were undertaken through partnership agreements (between NRCS and a lead partner) and contracts or agreements with eligible landowners, entities, and individuals under one or more covered programs (EQIP, CSP, ACEP, HFRP, and Pub. L. 83-566). EQIP, CSP, and ACEP each contributed seven percent of their annual funding toward RCPP partnership projects. In addition, the 2014 Farm Bill provided $100 million annually in direct RCPP mandatory funding. The 2018 Farm Bill reauthorized RCPP with significant changes to how RCPP is funded. Specifically, the contributions from ``covered programs'' are eliminated as a funding source and ``covered program contracts'' are replaced with RCPP contracts and programmatic partnership agreements. The 2018 Farm Bill repeals the seven percent reserved resources from the covered programs, provides $300 million in annual mandatory CCC funding, and establishes RCPP standalone contracts. Federal transfers under the 2014 Farm Bill totaled slightly more than $1 billion for FY2014 through 2018, or $200 million on an annual basis. The $300 million in mandatory annual funding increases RCPP funding by approximately $100 million annually, taking into account the past contribution of the ``covered programs'' for fiscal years 2014 through 2018. The 2018 Farm Bill also changed the ``funding pool'' structure by streamlining from three pools to two pools and providing 50 percent of funds to a CCA pool and 50 percent of funds to a state and multi-state pool. It also allows project renewals and creates new programmatic authorities and expectations for the administration of agreements with partners. In addition, application and renewal processes are simplified to encourage participation by both producers and project partners. To ensure that only the most successful of projects qualify for renewal on a non-competitive basis, NRCS has identified in this rule that a partner has met or exceeded the objectives of the original project in order to be considered for renewal. Estimates of costs, benefits, and transfers of RCPP on an annual basis are reported in Table 1. Given a 3 percent discount rate, the projected annualized real cost to producers of accessing RCPP is $204,258 and the projected annualized real transfers are $289 million. Conservation benefits from RCPP are difficult to quantify at a national scale but have been described by studies at an individual project or watershed or local scale as it relates the different types of conservation practices implemented. Table 1--RCPP Annual Estimated Costs, Benefits and Transfers a------------------------------------------------------------------------ Category Annual estimate------------------------------------------------------------------------Costs \b\............................. $204,258.Benefits.............................. Qualitative.Transfers............................. $289,000,000.------------------------------------------------------------------------\a\ All estimates are discounted at 3 percent to 2019 $ except for the participant access cost, which is nominal.\b\ Imputed cos[t] of applicant time to gain access to RCPP. Most of this rule's impact consists of transfer payments from the Federal Government to producers or to partners for the benefit of producers. The conservation benefits of RCPP financial and technical assistance funding delivered to date have been directly comparable to that provided by covered programs (EQIP, CSP, ACEP, etc.), and similar benefits are expected from RCPP funding under the 2018 Farm Bill. Additionally, conservation benefits of partner contributions and collaboration in RCPP projects are expected to magnify the benefits of RCPP funding over each project's life, offsetting initial delays in obligation and implementation. NRCS will discuss methods to quantify the incremental benefits obtained from RCPP with lead partners, but due to the 5-year life of a typical RCPP project, only limited data are available at this time to support this conclusion. Therefore, NRCS and partners may use various mechanisms such as modeling to predict long-term outcomes. Despite these data limitations, RCPP is expected to positively affect natural resource concerns--through both the $300 million in funding provided annually by Congress and by the leverage of partner contributions.Clarity of the Regulation Executive Order 12866, as supplemented by Executive Order 13563, requires each agency to write all rules in plain language. In addition to the substantive comments NRCS received on the interim rule, NRCS invited public comments on how to make the rule easier to understand. NRCS has incorporated these recommendations for improvement where appropriate. NRCS responses to public comment are described in more detail above.Regulatory Flexibility Act The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because no law requires that a proposed rule be published for this rulemaking initiative.Environmental Review The environmental impacts of this rule have been considered in a manner consistent with the provisions of the National Environmental Policy Act (NEPA, 42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR parts 1500-1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). The 2018 Farm Bill requires minor changes to NRCS conservation programs, and there are no changes to the basic structure of the programs. The analysis has determined that there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR1501.5 and 1501.6). While OMB has designated this rule as ``economically significant'' under Executive Order 12866, ``. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement'' (40 CFR 1502.16(b)), when not interrelated to natural or physical environmental effects. The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were available for review and comment for 30 days from the date of publication of this interim rule in the Federal Register. NRCS considered this input and determined that there was not[[Page 3743]]any new information provided that was relevant to environmental concerns or bore on the proposed action or its impacts that warranted an environmental impact statement or revising the current available RCPP EA and FONSI.Executive Order 12372 Executive Order 12372, ``Intergovernmental Review of Federal Programs,'' requires consultation with State and local officials that would be directly affected by proposed federal financial assistance. The objectives of the Executive order are to foster an intergovernmental partnership and a strengthened Federalism, by relying on State and local processes for State and local government coordination and review of proposed federal financial assistance and direct federal development. For reasons specified in the final rule related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the programs and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988 This rule has been reviewed under Executive Order 12988, ``Civil Justice Reform.'' This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted, consistent with 7 U.S.C 6912(e).Executive Order 13132 This rule has been reviewed under Executive Order 13132, ``Federalism.'' The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175 This rule has been reviewed in accordance with the requirements of Executive Order 13175, ``Consultation and Coordination with Indian Tribal Governments.'' Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a government-to-government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not have significant Tribal implications that require Tribal consultations. Moreover, OTR states that NRCS has adhered to the spirit and intent of Executive Order 13175. Tribal consultation for this rule was included in the two 2018 Farm Bill Tribal consultation held on May 1, 2019, at the National Museum of the American Indian, in Washington, DC, and on June 26-28, 2019, in Sparks, NV. For the May 1, 2019, Tribal consultation, the portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title II session. There were no specific comments from Tribes on the RCPP rule during the Tribal consultation. If a tribe requests additional consultation, NRCS will work with OTR to ensure that meaningful consultation is provided where changes, additions, and modifications identified in this rule are not expressly mandated by legislation. Separate from Tribal consultation, communication and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests. Additionally, NRCS held discussions subsequent to the interim rule publication with Indian Tribes and Tribal entities to continue discussions about the 2018 Farm Bill conservation programs implementation, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access.Unfunded Mandates Title II of the Unfunded Mandates Reform Act of 1995 (UMRA, Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal Governments or the private sector. Agencies generally must prepare a written statement, including cost benefits analysis, for proposed and final rules with federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local or Tribal Governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no federal mandates, as defined under Title II of UMRA, for State, local, and Tribal Governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies: 10.932--Regional Conservation Partnership Program.E-Government Act Compliance NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to Government information and services, and for other purposes.List of Subjects in 7 CFR Part 1464 ***Agricultural*** operations, Conservation payments, Conservation practices, Eligible activities, Environmental credits, Forestry management, Natural resources, Resource concern, Soil and water conservation, Wildlife. Accordingly, the interim rule amending 7 CFR part 1464, which was published at 85 FR 8131 on February 13, 2020, including the technical correction published at 85 FR 15051 on March 17, 2020, is adopted as a final rule with the following changes:PART 1464--REGIONAL CONSERVATION PARTNERSHIP PROGRAM01. The authority citation for part 1464 continues to read as follows: Authority: 15 U.S.C 714b and 714c; 16 U.S.C 3871 et seq.[[Page 3744]]02. In Sec. 1464.3, amend the definition of ``Priority resource concern'' by revising paragraphs (1) and (2) to read as follows:Sec. 1464.3 Definitions.\* \* \* \* \* Priority resource concern \* \* \* (1) Water quality improvement, including source water protection, through measures such as reducing erosion, promoting sediment control, or addressing nutrient management activities affecting large bodies of water of regional, national, or international significance; (2) Water quantity improvement, including protection or improvement relating to:\* \* \* \* \*03. In Sec. 1464.20 revise paragraphs (b)(1) and (2) as follows:Sec. 1464.20 Proposal procedures.\* \* \* \* \* (b) \* \* \* (1) The scope of the proposed project, including one or more conservation benefits that the project must achieve; (2) A plan for monitoring, evaluating, and reporting on progress made toward achieving the project's conservation objectives;\* \* \* \* \*04. Amend Sec. 1464.21 by:0a. In paragraph (b)(5), ***removing*** the word ``or'' and add the word ``and'' in its place;0b. In paragraph (b)(7), ***removing*** the word ``or'';0c. Redesignating paragraph (b)(8) as paragraph (b)(9);0d. Adding new paragraph (b)(8); and0e. Adding paragraph (c)(4). The additions read as follows.Sec. 1464.21 Ranking consideration and proposal selection.\* \* \* \* \* (b) \* \* \* (8) To a significant extent involve-- (i) Historically underserved producers; (ii) A community-based organization comprising, representing, or exclusively working with historically underserved producers; (iii) Developing an innovative conservation approach or technology specifically ***targeting*** historically underserved producers' unique needs and limitations; or (iv) An 1890 or 1994 ***land*** grant institution (7 U.S.C 3222 et seq.), Hispanic-serving institution (20 U.S.C 1101a), or other minority-serving institution, such as an historically Black college or university (20 U.S.C 1061), a tribally controlled college or university (25 U.S.C 1801), or Asian American and Pacific Islander-serving institution (20 U.S.C 1059g); or\* \* \* \* \* (c) \* \* \* (4) ***Lands*** outside of a CCA are not eligible for consideration under the CCA funding pool, even where such ***land*** may influence resource concerns within the CCA.05. Amend Sec. 1464.22 by:0a. Redesignating paragraphs (d)(11) and (12) as paragraphs (d)(12) and (13);0d. Adding new paragraph (d)(11). The addition reads as set forth below.Sec. 1464.22 Partnership agreements.\* \* \* \* \* (d) \* \* \* (11) Provide a detailed description of how the lead partner will facilitate participation of historically underserved producers (including through advance payment options, increased payment rates, outreach activities, or other methods for increasing participation by historically underserved producers) if the proposal received increased ranking priority as described in Sec. 1464.21(b)(8);\* \* \* \* \*Sec. 1464.25 [Amended]06. In Sec. 1466.25 amend paragraph (b)(2) by ***removing*** the parenthetical phrase ``(such as roads, dams, and irrigation facilities)''.07. In Sec. 1464.30, add paragraph (d)(4) to read as follows:Sec. 1464.30 Application for program contracts and selecting applications for funding.\* \* \* \* \* (d) \* \* \* (4) ***Lands*** outside of a CCA are not eligible for applications in the CCA, even where conservation efforts on such ***land*** may influence resource concerns within the CCA.Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2021-00300 Filed 1-12-21; 4:15 pm]BILLING CODE 3410-16-P

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[***The need to secure an outcome that delivers for each and every country and that delivers for our planet as a whole***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61YG-7N91-JD3Y-Y43S-00000-00&context=1516831)

FinancialWire

February 8, 2021 Monday

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**Length:** 1401 words

**Body**

\* At virtual briefing on COP26 preparations, UK urges need to focus on reducing ***emissions***, adaptation, finance flow and international cooperation

\* UK stresses need for adaptive, creative planning in order to turn COP negotiations into climate action

Remarks by Rt. Hon. Alok Sharma, COP26 President-Designate, at the virtual briefing on updates to preparations for COP26

Thank you Ambassador, Excellencies, Secretary-General, friends. It is a real pleasure to speak to you all again to provide this regular update.

As you know, I'm now devoting all of my time and energies to the role of COP President-designate whilst continuing as a full member of the UK government cabinet. And I hope what this tells you is the seriousness with which Prime Minister Boris Johnson and indeed the whole of the UK government are taking our role as the incoming COP presidency.

And it recognises the stark facts in front of us - the facts, as the Secretary-General has just outlined, and the urgent need to use our collective ambition across all elements of the Paris Agreement.

2020 saw record temperatures. We saw fires raging across the world. We saw storms intensify. In short, my friends, the climate crisis is closing in.

But as the Secretary-General noted, we are seeing some acceleration in climate action despite the pandemic. And of course, at the Climate Ambition Summit that the UK held together with the United Nations and France in December, we heard from 75 world leaders who announced between them 45 nationally determined contributions, 24 net zero pledges and 20 adaptation commitments, with many of the countries most vulnerable to climate change leading the way. So I want to thank you, every one of you, who took part.

By the end of 2020 net zero was firmly established as the law. And if you take into account President Biden's recent announcements, over half of G20 countries and around 70 percent of global ***emissions*** are now covered by net zero ***targets***. And I hope I speak for all of us when I say welcome back to the USA in our shared fight against climate change.

As I said at the Climate Ambition Summit, all this commitment is welcome, but it is not enough to meet the ambitions of the Paris Agreement - ambitions which we have collectively agreed. So let's be frank with ourselves. We still have some way to go. We are, as the Secretary-General said, way off ***target***. And we need to do more and we need to do it urgently.

So in my speech at the close of the summit, I outlined four goals that I want us to work towards to get the world on track to make Paris a reality. Today I want to say a little bit more about how we can do this.

First, we need to secure that step change in ***emissions*** reductions. We all know what we need to do here. This isn't new. This is about net zero ***targets*** with aligned NDCs that keep us 1.5 degrees within reach, and policies like phasing out coal power, as the Secretary-General said, to show that we are serious.

Secondly, we must strengthen adaptation. I really welcome the Secretary-General's leadership here. And, of course, the Climate Adaptation Summit, which was held by the Netherlands last month, where Prime Minister Boris Johnson also launched the new Adaptation Action Coalition. And as you will know, this has been developed by the UK and our friends in Egypt and Bangladesh and Malawi, the Netherlands, St Lucia and the UN, together with our Group of Friends on Adaptation and Resilience in New York.

The aim is to convert the political commitment generated through the call to action, which I was part of launching in 2019 at UNCAS, into practical reality. And I urge all countries to join this coalition. Please sign the call to action if you have not already done so, and as well as to focus on effective adaptation planning and setting out progress in adaptation communications.

Our third goal, an absolutely vital one, is to get finance flowing - both public and private - particularly to developing countries and especially to adaptation.

My message could not be clearer. Progress on public finance has sadly been too slow - woefully slow, say our friends in countries on the front line of having to deal with climate change. My fellow donor countries need to step up and deliver the $ 100 billion a year in international climate finance that we have promised. As I've said before, this is a matter of trust and we must deliver.

Last month, the UK COP presidency published our public finance priorities, and we want to work with all of you to make progress on these vital issues. And I'm also working to get both public and private finance moving.

To make further progress in this area, the UK's COP presidency will hold a Climate and Development Ministerial at the end of March, and we will bring together ministers representing donor countries and countries vulnerable to climate change to establish how we can ***remove*** barriers to climate action and development. Together, we will look at four vital issues: access to finance; quantity and predictability of finance; the response to impacts; and fiscal space and debt.

And we will plan to make progress on each of these areas through events like the G7, the IFI spring meetings and, of course, the UN General Assembly. And discussions will be informed by experts and civil society groups, and we will be working with regional chairs to make sure all regions are represented. The event will also be open to observers from countries who are not directly participating.

The fourth and final goal is to enhance international collaboration around critical challenges in sectors to make progress faster. Our COP26 campaigns have established new forums like the Energy Transition Council and the Zero ***Emission*** Vehicle Transition Council, which met for the first time last year. We also have the ***Forest*** ***Agriculture*** and Commodity Trade Dialogues, which were launched publicly last week. And I have to say we have seen a real appetite for cooperation, so thank you to all of your countries and governments for taking part. And on all four of these goals, major economies must show leadership. And let me confirm to you that the UK will use its G7 presidency to urge them to do so, as, of course, will our Italian partners with their G20 presidency.

Of course, the multilateral negotiations are at the heart of our plans. They underpin each of the four goals that I've outlined and are absolutely key to fulfilling the Paris agreement.

So we must test solutions and prepare the ground ahead of COP26 so that we arrive in Glasgow ready to close a deal. Last year we did make progress virtually despite the pandemic. We had events like the UN Climate Change Dialogues and others.

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And so we need to see creative ways of conducting our discussions that have inclusivity at their very heart. And I am therefore consulting with the chairs of all the UNFCCC negotiating groups and meeting international partners to understand their positions.

As Ambassador Woodward pointed out, I recently visited Ethiopia and Gabon, and I will continue to travel where possible.

With our friends in Chile, we have initiated new monthly meetings, bringing together heads of delegation from every country to chart the course to Glasgow together and to find possible solutions to negotiating issues.

Friends, I have to say this: this is a joint endeavour, an endeavour between all of us together. So we are working with the UNFCCC to support parties' connectivity. We are holding meetings that respect different time zones and we are discussing how technology can help us move forward together.

We must continue to work creatively and flexibly, guided by the principles of transparency, inclusivity and common purpose to make progress, which is so vital. So that when we do meet in person in November we secure an outcome that delivers for each and every country and that delivers for our planet as a whole. And I look forward to working with all of you throughout 2021 to achieve this.

We all know what is at stake if we do not work now to secure the right outcomes at Glasgow. Let me remind you, we have 266 days to go to COP26. Please, let's work together. Let's make sure that every one of those days count.

Thank you.

(Distributed by M2 Communications ([*www.m2.com*](http://www.m2.com)))

**Load-Date:** February 8, 2021

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[***The need to secure an outcome that delivers for every country and for our planet: COP26 President-Designate's speech***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61YV-JRN1-JDG9-Y3JJ-00000-00&context=1516831)

Impact News Service

February 9, 2021 Tuesday

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**Length:** 1375 words

**Body**

London: UK Government has issued the following news release:

Alok Sharma spoke on reducing ***emissions***, adaptation, finance flow and international cooperation, and highlighted the need for adaptive, creative planning, to turn COP negotiations into climate action.

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**Load-Date:** February 10, 2021

**End of Document**



[***The need to secure an outcome that delivers for each and every country and that delivers for our planet as a whole***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61YG-7N91-JD3Y-Y44V-00000-00&context=1516831)

M2 PressWIRE

February 8, 2021 Monday

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**Length:** 1397 words

**Body**

February 8, 2021

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But as the Secretary-General noted, we are seeing some acceleration in climate action despite the pandemic. And of course, at the Climate Ambition Summit that the UK held together with the United Nations and France in December, we heard from 75 world leaders who announced between them 45 nationally determined contributions, 24 net zero pledges and 20 adaptation commitments, with many of the countries most vulnerable to climate change leading the way. So I want to thank you, every one of you, who took part.

By the end of 2020 net zero was firmly established as the law. And if you take into account President Biden's recent announcements, over half of G20 countries and around 70 percent of global ***emissions*** are now covered by net zero ***targets***. And I hope I speak for all of us when I say welcome back to the USA in our shared fight against climate change.

As I said at the Climate Ambition Summit, all this commitment is welcome, but it is not enough to meet the ambitions of the Paris Agreement - ambitions which we have collectively agreed. So let's be frank with ourselves. We still have some way to go. We are, as the Secretary-General said, way off ***target***. And we need to do more and we need to do it urgently.

So in my speech at the close of the summit, I outlined four goals that I want us to work towards to get the world on track to make Paris a reality. Today I want to say a little bit more about how we can do this.

First, we need to secure that step change in ***emissions*** reductions. We all know what we need to do here. This isn't new. This is about net zero ***targets*** with aligned NDCs that keep us 1.5 degrees within reach, and policies like phasing out coal power, as the Secretary-General said, to show that we are serious.

Secondly, we must strengthen adaptation. I really welcome the Secretary-General's leadership here. And, of course, the Climate Adaptation Summit, which was held by the Netherlands last month, where Prime Minister Boris Johnson also launched the new Adaptation Action Coalition. And as you will know, this has been developed by the UK and our friends in Egypt and Bangladesh and Malawi, the Netherlands, St Lucia and the UN, together with our Group of Friends on Adaptation and Resilience in New York.

The aim is to convert the political commitment generated through the call to action, which I was part of launching in 2019 at UNCAS, into practical reality. And I urge all countries to join this coalition. Please sign the call to action if you have not already done so, and as well as to focus on effective adaptation planning and setting out progress in adaptation communications.

Our third goal, an absolutely vital one, is to get finance flowing - both public and private - particularly to developing countries and especially to adaptation.

My message could not be clearer. Progress on public finance has sadly been too slow - woefully slow, say our friends in countries on the front line of having to deal with climate change. My fellow donor countries need to step up and deliver the $ 100 billion a year in international climate finance that we have promised. As I've said before, this is a matter of trust and we must deliver.

Last month, the UK COP presidency published our public finance priorities, and we want to work with all of you to make progress on these vital issues. And I'm also working to get both public and private finance moving.

To make further progress in this area, the UK's COP presidency will hold a Climate and Development Ministerial at the end of March, and we will bring together ministers representing donor countries and countries vulnerable to climate change to establish how we can ***remove*** barriers to climate action and development. Together, we will look at four vital issues: access to finance; quantity and predictability of finance; the response to impacts; and fiscal space and debt.

And we will plan to make progress on each of these areas through events like the G7, the IFI spring meetings and, of course, the UN General Assembly. And discussions will be informed by experts and civil society groups, and we will be working with regional chairs to make sure all regions are represented. The event will also be open to observers from countries who are not directly participating.

The fourth and final goal is to enhance international collaboration around critical challenges in sectors to make progress faster. Our COP26 campaigns have established new forums like the Energy Transition Council and the Zero ***Emission*** Vehicle Transition Council, which met for the first time last year. We also have the ***Forest*** ***Agriculture*** and Commodity Trade Dialogues, which were launched publicly last week. And I have to say we have seen a real appetite for cooperation, so thank you to all of your countries and governments for taking part. And on all four of these goals, major economies must show leadership. And let me confirm to you that the UK will use its G7 presidency to urge them to do so, as, of course, will our Italian partners with their G20 presidency.

Of course, the multilateral negotiations are at the heart of our plans. They underpin each of the four goals that I've outlined and are absolutely key to fulfilling the Paris agreement.

So we must test solutions and prepare the ground ahead of COP26 so that we arrive in Glasgow ready to close a deal. Last year we did make progress virtually despite the pandemic. We had events like the UN Climate Change Dialogues and others.

This year cannot simply be a repeat of the last, as the Secretary-General has outlined. We may not be able to meet in person for some months, but we know that we need to make progress faster.

And so we need to see creative ways of conducting our discussions that have inclusivity at their very heart. And I am therefore consulting with the chairs of all the UNFCCC negotiating groups and meeting international partners to understand their positions.

As Ambassador Woodward pointed out, I recently visited Ethiopia and Gabon, and I will continue to travel where possible.

With our friends in Chile, we have initiated new monthly meetings, bringing together heads of delegation from every country to chart the course to Glasgow together and to find possible solutions to negotiating issues.

Friends, I have to say this: this is a joint endeavour, an endeavour between all of us together. So we are working with the UNFCCC to support parties' connectivity. We are holding meetings that respect different time zones and we are discussing how technology can help us move forward together.

We must continue to work creatively and flexibly, guided by the principles of transparency, inclusivity and common purpose to make progress, which is so vital. So that when we do meet in person in November we secure an outcome that delivers for each and every country and that delivers for our planet as a whole. And I look forward to working with all of you throughout 2021 to achieve this.

We all know what is at stake if we do not work now to secure the right outcomes at Glasgow. Let me remind you, we have 266 days to go to COP26. Please, let's work together. Let's make sure that every one of those days count.

Thank you.

**Load-Date:** February 8, 2021

**End of Document**



[***Freshwater Conservationists Worldwide Implore Federation of Bosnia and Herzegovina to Permanently Protect Europe’s Last Wild Rivers***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60XG-GB61-F0YC-N1G0-00000-00&context=1516831)

Impact News Service

September 25, 2020 Friday

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**Length:** 2314 words

**Body**

Switzerland: International Union for Conservation of Nature has issued the following press release:

Leading conservation organizations around the world are urgently calling on the Federation of Bosnia and Herzegovina to turn a breakthrough resolution banning new small hydropower plants into law. The resolution, which holds no legal power yet, was initially passed June 23, but the deadline to implement the resolution and permanently ban new small hydropower plants is Wednesday, Sept. 23. If the government fails to turn the resolution into law in the near future, they will again be putting at grave risk thousands of kilometers of Bosnia and Herzegovina’s wild rivers and the people and wildlife that depend on the waterways.

“This is an opportunity for Bosnia and Herzegovina to set a powerful example and become Europe’s leader in protecting some of the most intact and biodiverse rivers on the continent,” said Barney Long, senior director of species conservation at Global Wildlife Conservation. “We were encouraged by the recent resolution to protect the rivers, but for this to make any real difference, it must now be signed into law. Otherwise these small hydropower plants are going to continue to cause irreversible damage to the freshwater-dependent wildlife and people that live there, altering the balance of these ecosystems that contribute to the overall health of our planet.”

The rivers between Slovenia and Albania, including those in Bosnia and Herzegovina, are considered the most important hotspot for threatened freshwater biodiversity in Europe. Sixty-nine fish species in these rivers live nowhere else in the world. The Balkan Rivers—known as Europe’s “blue heart”—are home to marble, softmouth and prespa trout; the Endangered huchen (or Danube) salmon; the Endangered Balkan lynx; and the Endangered white-clawed crayfish. They provide critical spawning habitat for many of the 113 endangered freshwater fish species in the Balkans.

The Balkans’ rivers continue to face an onslaught of small hydropower plant construction, including in protected areas, with plans for 3,000 dams to be constructed in the region. The dams bring with them the construction of access roads, tunnels, bridges, and transmission lines, with an influx of other human activities that require tearing down the ***forests*** around the rivers and that threaten the animals that live there. According to freshwater experts, if this is allowed to continue, at least 10 percent of all European freshwater fish species will go extinct or will be pushed to the brink of extinction.

The International Union for Conservation of Nature Freshwater Biodiversity Unit is currently reviewing proposals for 11 freshwater Key Biodiversity Areas in Bosnia and Herzegovina, with the potential for more, underscoring that these sites are globally important for the health of the planet and for the persistence of biodiversity. Yet in Bosnia and Herzegovina, 436 small hydropower plants have either recently been built, are under construction, or are planned.

The projects are driven by local and foreign investors, with diverse financial support, including subsidies for renewables. Some investors use the argument that hydropower can help Bosnia and Herzegovina meet its goal of 40 percent renewable energy (one of the highest ***targets*** in Europe) to get the country a step closer to joining the European Union. Although current small hydro plants in Bosnia and Herzegovina only produce around 3 percent of the country’s annual energy and come at a huge environmental cost, the government has continued to grant permits and subsidies for these new small and medium hydro projects that have a negligible “renewable energy” contribution at a huge environmental cost.

“Bosnia and Herzegovina politicians see firsthand that small hydro evokes a visceral reaction across the country,” said Marsela Pecanac, founder of Atelier for Community Transformation – ACT. “Broad public support for rivers has swelled, energized by the local communities ready to defend their rivers with their lives. The politicians now have a unique opportunity to set a powerful example for the Balkans and Europe and ban all new hydro permanently with one swift action, creating a legacy for generations to come.”

Not only do the hydropower dams destroy the rivers and landscape around them, but they also divert and pollute water, and restrict access to clean drinking water for local communities and for use in ***agricultural*** practices and other livelihoods. The rivers also offer an opportunity for sustainable income through ecotourism, an industry that depends on healthy, intact rivers. And many Bosnia and Herzegovina residents consider the rivers a part of their identity. Across the country, local communities, such as those around Neretvica and Kruščica rivers, have been rising up and holding protests, often forming human walls at construction sites to prevent bulldozers from starting the work.

“Whenever I visit the Balkan rivers, I am overwhelmed by the beauty and its richness,” said Ulrich Eichelmann, coordinator of the Blue Heart campaign from Riverwatch. “But what strikes me even more, is that people stand up for their rivers and streams—they don’t fight for money or fame, they fight for their rivers, their homeland and their future. This also is unique in today’s world. But these people need the help from all over the world. We must unite to save the Blue Heart of Europe.”

In addition to calling on the government of the Federation of Bosnia and Herzegovina to formally ban the construction of small hydropower plants, the group of conservation organizations urges the other government entity in Bosnia and Herzegovina, Republika Srpska, to pass a similar law. After the Federation of Bosnia and Herzegovina initiative, Republika Srpska had also proposed a similar resolution earlier this year for a temporary ban of all small hydropower projects in Bosnia and Herzegovina, but eventually the National Assembly voted against it, despite significant local community pressure.

The organizations putting out the call are from a broad coalition including: 2020 Action, American Rivers, Arnika, Atelier for Community Transformation – ACT, CEE Bankwatch Network, the Coalition for the Protection of Rivers of Bosnia and Herzegovina, David Brower Center, EarthAction, Earth Law Center, EuroNatur Foundation, Freshwater Life, Global Wildlife Conservation, International Rivers, the International Union for Conservation of Nature Species Survival Commission Freshwater Fish Specialist Group, the IUCN SSC Freshwater Conservation Committee, Institute for Environmental Security, Rainforest Action Network, The Redford Center, Riverwatch, Save the Blue Heart of Europe, Shoal, the World Fish Migration Foundation, World Future Council, and WWF.Additional Quotes

Brent Blackwelder, president emeritus, Friends of the Earth U.S 'The United States is abandoning building big dams and instead is ***removing*** dams in order to restore fisheries. Over 1,500 dams in the U.S have been removed to save remarkable rivers and wildlife habitat.'

Darryl Knudsen, executive director, International Rivers“Our earth is under assault, and we need to protect our wild rivers. The first time I saw the turquoise waters of the Soca river, my heart nearly stopped at its beauty. I hope someday also to visit the storied rivers of Bosnia...if they are still there. I am heartened by the popular and courageous resistance the Bosnian people continue to display to preserve their heritage rivers. And the Bosnian government has shown foresight with its resolution. Now is the time to codify the foreseen protections into law. Let’s remember: hydro is NOT green power. Through methane ***emissions***, dam reservoirs emit 2-3% of global greenhouse gas ***emissions***, the equivalent of the climate impact of the entire global airline industry. Meanwhile, rivers provide the most biodiversity-rich habitat on the planet. If you want to protect the systems of life on earth for generations to come, there isn’t much you can do that’s better than stopping a dam. Wind and solar are much more sustainable. We must act; the time is now.”

Jörg Freyhof, IUCN Freshwater Fish Specialist Group Steering Committee and regional chair for Europe“The massive development of micro hydropower plants through the Balkan region will significantly affect many of the smaller tributaries that are valuable spawning and feeding habits for many species of fishes. The FFSG has worked with the Save the Blue Heart of Europe initiative for many years in looking for solutions to address this issue, and fully support this initiative.”

Pippa Gallop, southeast Europe energy advisor, CEE Bankwatch Network“The hydropower boom in the Balkans is truly “death by a thousand cuts” for the region’s stunning rivers. Cutting the region’s vast energy wastage and unlocking its rooftop solar potential alone would contribute much more than small hydropower has.”

Ian Harrison, co-chair, IUCN SSC Freshwater Conservation Committee“This call for a ban on small hydropower plants is an opportunity to make a truly positive impact on the way we manage and conserve our rivers in Europe. It represents a critically needed, forward thinking, investment not just in conservation, but an investment in the full range of ecosystem services that these rivers supply in support of nature and the people who rely on them and their associated habitats.”

Lejla Kusturica, activist and director of Foundation Atelier for Community Transformation – ACT“One of the hardest and most painful injustices currently happening in Bosnia and Herzegovina is what’s happening to our environment. These rivers are the heart of our communities. In the past few years, our country has become a true hub of resistance, inspiring not just the region, but the rest of the world.”

Eduardo Noboa, senior programme manager climate energy, World Future Council“Hydroelectric plants have intertwined and complex impacts which could generate more costs than benefits. There are many cases and examples from other regions in the world where there are innumerable water infrastructure projects that have caused significant impacts on ecosystems, people, livelihoods and culture. Instead of investing more trillions on high-risk hydropower projects, ambitious programmes for deployment of decentralised and distributed non-conventional renewable energy should be promoted where needed.”

Annette Spangenberg, head of project unit, EuroNatur Foundation“The rivers of the Balkans are a European treasure, one we cannot afford to lose. We support the local communities in their fight for their rivers and will make sure that their voices will be heard all over Europe.”

Bernie Tershy, Freshwater Life“Dam construction has peaked in the world’s wealthy countries and more old dams are being removed than new ones constructed. Bosnia and Herzegovina shouldn’t be pursuing an energy development strategy that the EU and North America have largely rejected.”

Jill Tidman, executive director, The Redford Center“This is a critically important moment in which we all must stand take to protect what remains of our intact ecosystems and waterways, and the lives that depend on them. We are proud to stand with these distinguished organizations in this effort.”

Wouter Veening, president, Institute for Environmental Security“By enshrining its forward-looking resolution into law, the Federation of Bosnia and Herzegovina will give its wild rivers the long-term protection they deserve and thus contribute to the ecological well-being of the Balkans, the wider European region and the world as a whole.”

Lois Barber, executive director, EarthAction“Rivers are the lifeblood of our planet. We need to keep them healthy and free-flowing!”

Dragana Skenderija, coordinator, the Coalition for the Protection of Rivers of Bosnia and Herzegovina'Private investors invest money in small hydropower plants and make a profit, while the people do not benefit from their construction. Ultimately, only great damage is created for the environment, and financial losses through taxes and subsidies on renewable energy sources turn into profit for private companies.' The ban on the construction of SHPPs in Bosnia and Herzegovina and the abolition of incentives for SHPPs are the most important demands that the Coalition for the Protection of Rivers of BiH demands from decision makers.”

Zuzana Vachůnová, activist and coordination of activities in Bosnia and Herzegovina, Arnika“The people of Bosnia and Herzegovina are not only protecting the last European wild rivers, but also the rule of law in their country. Local communities must have a say about the projects that affect them, but this is not happening; the small hydropower plants are mostly permitted without proper involvement of the locals and thus violate the basic principles of environmental democracy. We stand with people of Bosnia and Herzegovina and call on the governments to finally protect the valuable nature and the basic rights of the local communities.”

Herman Wanningen, founder and managing director of the World Fish Migration Foundation“Across Europe we are starting to see more in-stream barrier ***removals*** to reduce river fragmentation and degradation. Still, 60% of Europe’s freshwater ecosystems are not healthy according to the Water Framework Directive. Therefore, it is illogical to build new dams in the very few healthy rivers left in Europe.”

Grant Wilson, executive director and directing attorney, Earth Law Center'Hydropower is not truly 'renewable' energy because it permanently devastates aquatic ecosystems and species, and therefore should not be part of Europe's renewable energy future. We urge the Federation of Bosnia and Herzegovina to follow through with its ban of small hydropower plants in order to create a future in which rivers and local communities thrive together in harmony.'

**Load-Date:** September 25, 2020

**End of Document**



[***Federal Register: Endangered and Threatened Wildlife and Plants; Endangered Status for the Beardless Chinchweed and Designation of Critical Habitat Pages 31830 - 31868 [FR DOC #2021-12005]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62XR-M051-F0YC-N020-00000-00&context=1516831)

Impact News Service

June 15, 2021 Tuesday

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**Length:** 35771 words

**Body**

Washington: Office of the Federal Register has issued the following notice:Department of the Interior-----------------------------------------------------------------------Fish and Wildlife Service-----------------------------------------------------------------------50 CFR Part 17Endangered and Threatened Wildlife and Plants; Endangered Status for the Beardless Chinchweed and Designation of Critical Habitat; Final RuleFederal Register / Vol. 86, No. 113 / Tuesday, June 15, 2021 / Rules and Regulations[[Page 31830]]-----------------------------------------------------------------------DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R2-ES-2018-0104; FF09E21000 FXES11110900000 212]RIN 1018-BD35Endangered and Threatened Wildlife and Plants; Endangered Status for the Beardless Chinchweed and Designation of Critical HabitatAGENCY: Fish and Wildlife Service, Interior.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service), determine that the beardless chinchweed (Pectis imberbis) is an endangered species under the Endangered Species Act of 1973 (Act), as amended, and designate critical habitat. In total, approximately 10,604 acres (4,291 hectares) in Pima, Cochise, and Santa Cruz Counties, Arizona, fall within the boundaries of the critical habitat designation.DATES: This rule is effective July 15, 2021.ADDRESSES: This final rule is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R2-ES-2018-0104 and at [*https://www.fws.gov/southwest/*](https://www.fws.gov/southwest/). Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R2-ES-2018-0104. The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R2-ES-2018-0104, at [*https://www.fws.gov/southwest/*](https://www.fws.gov/southwest/), and at the Arizona Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT). Any additional tools or supporting information that we developed for this critical habitat designation will also be available at the Service website and Field Office set out above, and may also be included in the preamble and/or at [*http://www.regulations.gov*](http://www.regulations.gov) FOR FURTHER INFORMATION CONTACT: Jeff Humphrey, U.S Fish and Wildlife Service, Arizona Ecological Services Field Office, 9828 North 31st Avenue, #C3, Phoenix, AZ 85051-2517. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.SUPPLEMENTARY INFORMATION:Executive Summary Why we need to publish a rule. Under the Act, a species may be listed as endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species can only be completed by issuing a rule. Further, under the Act, any species that is determined to be an endangered or threatened species requires critical habitat to be designated, to the maximum extent prudent and determinable. Designations and revisions of critical habitat can only be completed by issuing a rule. What this document does. This rule lists the beardless chinchweed (Pectis imberbis) as an endangered species and designates critical habitat for this species under the Act. The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that the beardless chinchweed faces the following threats: Competition from a nonnative grass species (Factors A and E); altered fire regime exacerbated by nonnative grass invasion (Factors A and E); altered precipitation, drought, and temperature (Factors A and E); erosion, sedimentation and burial from road and trail maintenance, mining, livestock trampling and soil disturbance, and post-wildfire runoff (Factors A and E); summer and fall grazing from wildlife and livestock (Factor C); and small population size exacerbating all other stressors (Factor E). The existing regulatory mechanisms are not adequate to address these threats such that the species does not meet the Act's definition of an endangered or a threatened species (Factor D). Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. The critical habitat we are designating in this rule, in eight units comprising 10,604 acres (4,291 hectares), constitutes our current best assessment of the areas that meet the definition of critical habitat for the beardless chinchweed. Economic analysis. In accordance with section 4(b)(2) of the Act, we prepared an economic analysis of the impacts of designating critical habitat. We made the draft economic analysis available for public comments on December 6, 2019 (84 FR 67060). Peer review and public comment. We sought the expert opinions of four independent and knowledgeable specialists regarding the species status assessment (SSA) report and received responses from two reviewers. These peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA. We also considered all comments and information we received from the public during the comment period for the proposed listing of, and the proposed designation of critical habitat for, the beardless chinchweed.Previous Federal ActionsSupporting Documents A species status assessment (SSA) team prepared an SSA report for the beardless chinchweed. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future[[Page 31831]]factors (both negative and beneficial) affecting the species. On December 6, 2019, we published in the Federal Register a proposed rule (84 FR 67060) to list the beardless chinchweed as an endangered species and to designate critical habitat for the species under the Act (16 U.S.C 1531 et seq.). The December 6, 2019, rule also proposed to list Bartram's stonecrop (Graptopetalum bartramii) as a threatened species with a rule under section 4(d) of the Act. We will address our proposal to list Bartram's stonecrop (Graptopetalum bartramii) as a threatened species with a rule issued under section 4(d) of the Act in a separate, future Federal Register document. Please refer to that proposed rule for a detailed description of previous Federal actions concerning the beardless chinchweed that occurred prior to the proposal's publication.Summary of Changes From the Proposed Rule In preparing this final rule, we reviewed and fully considered comments from the public on our December 6, 2019, proposed rule regarding beardless chinchweed. We updated the beardless chinchweed SSA report (to version 2.0) based on comments and additional information provided during the comment period, and those updates are reflected in this final rule, as follows: (1) We included updated survey information provided to the Service including the 2019 Coronado National Memorial indicating an increase in the Visitor Center population, and other reports of additional occurrences received. (2) We included additional information regarding critical habitat designation along the United States/Mexico border and coordination with Customs and Border Protection. (3) We included additional information we received regarding the date of discovery of a population. (4) We made many small, nonsubstantive clarifications and corrections throughout the SSA report and this rule, including under Summary of Biological Status and Threats, in order to ensure better consistency, clarify some information, and update or add new references. However, the information we received during the comment period for the proposed rule did not change our determination that the beardless chinchweed is an endangered species.Summary of Comments and Recommendations In our December 6, 2019, proposed rule (84 FR 67060), we requested that all interested parties submit written comments on the proposal by February 4, 2020. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposed determination, proposed designation of critical habitat, and draft economic analysis. Newspaper notices inviting general public comment were published in the Arizona Daily Star on December 9, 2019, and the Sierra Vista Herald on December 13, 2019. We did not receive any requests for a public hearing. All substantive information provided during the comment period either has been incorporated directly into the final rule or is addressed below.Peer Reviewer Comments In accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of four appropriate specialists regarding the SSA report. We received responses from two specialists, which informed the SSA report and this final rule. The purpose of peer review is to ensure that our listing determinations and critical habitat designations are based on scientifically sound data, conclusions, and analyses. The peer reviewers have expertise in the biology of, habitat of, and threats to the species. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the beardless chinchweed and its critical habitat. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA report and final rule. Peer reviewer comments are incorporated into the SSA report and this final rule as appropriate.Public Comments We received 17 public comments in response to the proposed rule. We reviewed all comments we received during the public comment period for substantive issues and new information regarding the proposed rule. Nine comments provided substantive comments or new information concerning the proposed listing and designation of critical habitat for the beardless chinchweed. Below, we provide a summary of public comments we received; however, comments that we incorporated as changes into the final rule, comments outside the scope of the proposed rule, and those without supporting information did not warrant an explicit response and, thus, are not presented here. Identical or similar comments have been consolidated and a single response provided. (1) Comment: A commenter claimed that we did not notify the public of the imminent listing of the beardless chinchweed and the public needs more time to respond. Response: On August 8, 2012, we announced our 90-day finding that a petition to list beardless chinchweed as endangered or threatened under the Act presented substantial information indicating that listing of the species may be warranted (77 FR 47352). At that time, we requested data and information from the public regarding the species to inform our status review and determination if listing is warranted. In response to publication of the 90-day finding, increased interest in beardless chinchweed and its status led to additional surveys and research beginning in 2013. On October 23, 2017, we sent a letter to interested parties, landowners, and Tribes indicating that a species status assessment would be conducted for beardless chinchweed to inform our listing determination, and we again requested scientific and commercial data or other information on the species. In addition, the species has been included on our National Listing Workplan, which is publicly available on our website, since 2016. We updated the workplan in May 2019 and listed the 12-month finding for beardless chinchweed as a FY 2018 carryover action. The court-ordered settlement agreement of October 11, 2019, that stipulates delivery of a 12-month finding to the Federal Register by November 29, 2019, is also publicly available. Finally, the December 6, 2019, proposed rule (84 FR 67060) opened a 60-day public comment period on the proposed listing and critical habitat designation for the beardless chinchweed. As such, we complied with all requirements of the Act and conclude that the public was afforded adequate notice of the proposed listing of the beardless chinchweed. (2) Comment: Three commenters stated that relying on the conservation biology concepts of resiliency, redundancy, and representation to make the proposed listing determination is improper as they are not found in the[[Page 31832]]Act or the Service's implementing regulations and their meanings are uncertain, creating confusion if criteria for listing are being followed. Response: The SSA framework is an analytical approach developed by the Service to deliver foundational science for informing decisions under the Act (Smith et al. 2018, entire). The SSA characterizes species viability (defined as the ability to sustain populations in the wild over time) based on the best scientific understanding of current and future abundance and distribution within the species' ecological settings using the conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 308-311). To sustain populations over time, a species must have the capacity to withstand: (1) Environmental and demographic stochasticity and disturbances (resiliency), (2) catastrophes (redundancy), and (3) novel changes in its biological and physical environment (representation). A species with a high degree of resiliency, representation, and redundancy is better able to adapt to novel changes and to tolerate environmental stochasticity and catastrophes. In general, species viability will increase and the risk of extinction will decrease with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). The SSA provides decision-makers with a scientifically rigorous characterization of a species' status and the likelihood that the species will sustain populations over time, along with key uncertainties in that characterization. The beardless chinchweed SSA provides the best available scientific information to guide a determination of whether or not the beardless chinchweed is in danger of extinction now or in the foreseeable future. Notwithstanding our use of resiliency, redundancy, and representation as scientific concepts helpful in assessing and describing a species' viability and extinction risk, we adhere to all requirements of the Act in making our listing determinations. This includes applying the Act's definitions of an endangered species and a threatened species, as well as an assessment of the 5 listing factors (see Regulatory Framework, below). (3) Comment: A commenter noted that, in general, attempts to locate beardless chinchweed since 1983 have been uncommon and that more surveys are needed before a listing decision is made. The commenter suggested that more surveys for beardless chinchweed would result in occurrences discovered, as beardless chinchweed is often difficult to detect. Response: As required by the Act (16 U.S.C 1533(b)(1)), we based the listing decision on the best available scientific and commercial information. We have worked in partnership with numerous agencies and organizations to visit most of the known U.S locations of beardless chinchweed at least once (with some long-term monitoring initiated), as well as a portion of the Mexico populations. Although information from 1983-2010 is limited, we used the best available information regarding the status of the species to assess the species' current and future conditions. The U.S ***Forest*** Service (USFS), National Park Service (NPS), Service, industry surveyors, and other researchers gathering information on beardless chinchweed have increased survey efforts since 2010 in suitable habitat in Arizona and Mexico. At a minimum, recent surveys and research on beardless chinchweed have occurred each year from 2010 to 2017, in 2019, and in 2020. Despite the difficulty of detecting beardless chinchweed, trained botanists are conducting surveys during the bloom period, enhancing the probability of detection. (4) Comment: A commenter stated that the available data are insufficient to show a true decline in the species and that no statistically valid historical population data and minimal recent data were used in the analysis; therefore, there is no credible scientific way to compare beardless chinchweed population health over time. Response: When making a listing decision for a species, the Service must determine if the best available information indicates that a species is in danger of extinction throughout all or a significant portion of its range (an endangered species) or likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (a threatened species). Although species petitioned for listing or under assessment by the Service often show a decline in population abundance or distribution, such a decline is not required for the determination of endangered or threatened status for the species. The best available information for beardless chinchweed indicates 21 separate historical populations across the range of the species. Of these, nine populations have been extirpated, and six populations are extant in southern Arizona. Of the remaining populations in southern Arizona, several populations with historical counts are now reduced in number. For example, 89 individuals occurred along Ruby Road in 1985, and after four separate surveys, 10 individuals were found along this road in 2015. Similarly, the Scotia Canyon population contained 122 individuals in 1993, 35 in 2017, and 40 in 2020. Other populations could not be relocated at all, despite numerous species-specific surveys, and they are presumed extirpated. The condition of six additional populations in Mexico is unknown, but we have concluded the populations in Mexico are extant for the purposes of our analyses. Because of the current low numbers of the species, its limited distribution, and the past, current, and ongoing threats to its existence, we determine that the species is in danger of extinction. (5) Comment: A commenter claimed the Service suppresses location information to bolster the appearance of larger than actual numbers of extirpations and predicts additional populations occur on the west flank of the Huachuca Mountains. The commenter also identified Coronado Cave Trail, Joe's Canyon Trail, and an area west of the State of Texas Mine populations as extant patches. The commenter noted observations of beardless chinchweed in Box Canyon (Westland Resources 2010) and near Washington Camp by NPS in 2015 and recommended we describe the two populations as extant. Response: The Service has incorporated the best available information regarding beardless chinchweed distribution and abundance, including all historical and current populations. Explicit and precise location information is not included in the SSA in order to reduce or avoid potential risk to the species from plant collection or trampling due to additional foot traffic. The examples mentioned (Coronado Cave Trail, Joe's Canyon Trail, State of Texas Mine, Washington Camp, and Box Canyon Road) are addressed in the SSA and December 6, 2019, proposed rule (84 FR 67060), and the number of extirpated populations remains the same. We have incorporated the additional occurrence information for Joe's Canyon Trail, State of Texas Mine, and Washington Camp into the SSA report. The occurrence information for the Coronado Cave Trail was included in two other reports cited in the SSA (Westland 2016, p. 4; Sebesta per. comm. 2017). The Joe's Canyon Trail subpopulation was noted in 1992 but was not observed on three surveys since 2014 (USFWS 2014a, p. 4; Westland 2016, p.4). The commenter notes he observed 30 vigorous plants (at least 53 individuals) at the site in 2012. However, there is no[[Page 31833]]official report, note, photograph, or herbarium documentation of this 2012 sighting. Based on the species' lack of occurrence during three surveys since 2014, we continue to categorize the Joe's Canyon Trail subpopulation as extirpated. We note the Joe's Canyon area is included in the critical habitat designation and look forward to conservation efforts and additional surveys of the site. The commenter notes he has information regarding a 2015 beardless chinchweed observation by NPS staff near the Washington Camp population. We are aware of, and include in the SSA, a notification of beardless chinchweed possibly being located in 2014 along a road near the historical location of the Washington Camp population (Buckley 2020, pers. comm.). However, there is no written report, communication to a natural resource agency or database, field notes, photograph, or herbarium documentation of the possible 2015 sighting referenced by the commenter. Other surveys at the Washington Camp site in the Patagonia Mountains were unsuccessful in locating beardless chinchweed (Service 2014a, pp. 1-2; Haskins and Murray 2017, pp. 2-3). Therefore, the additional information does not alter our conclusion, that the Washington Camp population is extirpated. We have visited the Box Canyon site on numerous occasions, and no beardless chinchweed plants have been relocated. The Westland 2010 Box Canyon survey report noted in the comment refers to 20 individuals of another species, Graptopetalum bartramii (Bartram's stonecrop), but does not note beardless chinchweed occurrence. A 2012 report by Westland notes that in 49 person-days of survey for beardless chinchweed in suitable habitat, no plants were located except within the McCleary Canyon area. (6) Comment: A commenter claimed the granite substrate is incorrectly identified habitat for beardless chinchweed but additional substrates, such as mudstones and rhyolite, likely play a role in the species' habitat. The commenter predicted there might be more beardless chinchweed on the west flank of the Huachuca Mountains. Response: Beardless chinchweed's known occurrences have been found on sunny to partly shaded southern exposures, on eroding limestone or granite soils and rock outcrops. The NPS is currently working on a beardless chinchweed and associated geology map, including additional substrates of mudstones and rhyolite. We expect this map, and the commenter's observations, will be very useful in determining where to conduct future surveys. Between 1990 and 1994, Bowers and McLaughlin took 41 botanical trips into the Huachuca Mountains, including the west flank, adding to the long history of botanical collection there (Bowers and McLaughlin 1996, p. 70). Beardless chinchweed has not been reported from this area at any time historically. (7) Comment: A commenter mentioned that the assumptions regarding the beardless chinchweed's population size and habitat degradation in Mexico might be inaccurate as the areas are remote and relatively undisturbed. Response: We relied on the best available data regarding population size and habitat conditions in Mexico. The last report of beardless chinchweed in Mexico was from 1940. There are numerous botanical collection trips in Mexico annually, and no beardless chinchweed occurrences have been reported. We sent inquiries regarding this species to 11 researchers familiar with the flora of Chihuahua and Sonora in 2017 and received no information on the status of the species in Mexico. Surveys in the 1990s and in 2017 and 2018 at historical and potential beardless chinchweed locations in Sonora, Mexico, revealed no beardless chinchweed. The lack of beardless chinchweed in Sonora may be associated with severe overgrazing (Sanchez-Escalante 2019, p. 17). Five of the six populations in Arizona contain fewer than 50 individuals. Therefore, we concluded that the populations in Mexico, if extant, contain fewer than 50 individuals. In Mexico, rapid expansion of nonnative, invasive plant species and degradation of native plant communities have potential to invade large areas of northern Mexico, including beardless chinchweed sites. We made these conclusions based on the best available science and welcome additional information to inform future Service actions regarding the beardless chinchweed. (8) Comment: A commenter stated that much is unknown about beardless chinchweed and near-future additional surveys in Arizona and Mexico are required to ensure the need for listing and possible resultant economic loss. Response: We are required by the Act to make our determination solely on the basis of the best commercial and scientific information available at the time, but we do conduct an economic analysis of the impacts of critical habitat designation. The screening memo outlining the results of that analysis is available as a supporting document (IEc 2018, entire). We used the best available information on the range of beardless chinchweed in the SSA report, the December 6, 2019, proposed rule (84 FR 67060), and this final rule. Species-specific surveys have been conducted in the mountain ranges in the U.S portion of the beardless chinchweed's range. We conclude it is unlikely that large populations remain unaccounted for therein. If we receive new information in the future as a result of additional surveys, we will analyze such information in the course of developing a recovery plan for the species or in 5-year reviews of its status. If we determine that the new information indicates that the species no longer meets the definition of an endangered species, we will promptly begin rulemaking to assign the correct status. (9) Comment: A commenter noted that hundreds of plants and animals are at the northern fringe of their range in southern Arizona and are common and safe in Mexico. Response: Historical distributions of beardless chinchweed are focused in southern Arizona, with some disjunct populations in northern Mexico. There have been surveys for this species in Mexico, and numerous biologists from Mexico have been consulted regarding its presence in the country. Habitat has been altered extensively in Mexico, and no populations of the beardless chinchweed have been located there; therefore, we do not find the species to be common or safe in Mexico. (10) Comment: A commenter claimed that surveys by Sanchez-Escalante in Mexico were rushed and occurred in the wrong habitat and at the wrong time of year. Response: The researcher Sanchez-Escalante spent 35 days exploring 55 sites in Sonora and Chihuahua and covered 6,900 kilometers with a team of trained botanists with the specific aim of locating populations of six identified rare plant species in appropriate habitats. No beardless chinchweed plants were located in 10 separate suitable habitats searched, including all historical locations in Sonora. These surveys were conducted during the flowering season in late September when the plants are most visible. Therefore, we conclude the Sanchez-Escalante surveys were conducted using appropriate methods. Thus, we base our current understanding of the beardless chinchweed occurrences in Sonora and Chihuahua on the best available scientific information. (11) Comment: A commenter mentioned regular visitation is necessary to attain information on bloom period, seed production,[[Page 31834]]reproduction method, pollinators, precipitation and growth relationships, and genetic diversity. Response: We are aware of limited information regarding the life history and species characteristics the commenter mentioned. We are supporting current research into the pollination, breeding systems, demographics, responses to fire and nonnative grass ***removal*** and we are in regular contact with the researchers working with beardless chinchweed. Further studies will inform conservation and recovery efforts for the species. (12) Comment: A commenter indicated that beardless chinchweed colonization of unoccupied habitat patches from known subpopulations has been documented repeatedly since 1993. The commenter opined that population losses are caused by metapopulation dynamics, and the species readily occupies newly disturbed habitat. Response: The beardless chinchweed has been located in plains, great basin, semi-desert grasslands, oak savanna, and Madrean evergreen woodland, and along disturbed roads, trails, and mining sites within these vegetation communities. Beardless chinchweed groups occurring in these habitats have collectively been counted as single subpopulations or populations since their discoveries, and fluctuations of the number of individuals found have been noted. We have no information on the detection of colonization of unoccupied habitat; we welcome these data from the commenter to inform subsequent Service actions. (13) Comment: A commenter claimed the Service lacks basic knowledge about the biology and habitat requirements of the beardless chinchweed and is not following the mandate to base listing decisions on the best scientific and commercial data available. Response: We based this final listing determination on the best available scientific and commercial information, and the commenter did not provide any new information for us to consider. The best available information on beardless chinchweed habitat indicates the species does best on eroding soils in native-dominated grasslands. Additional beardless chinchweed biology and habitat research is ongoing, and results will inform future Service actions. In assessing the viability of the beardless chinchweed, the best available scientific and commercial data provide information about some aspects of species' biology and habitat requirements, but may not represent a full and complete knowledge of the species. We drew reasonable conclusions about other aspects of the species' biology and requirements based on similar species, similar habitats, and best available information. (14) Comment: A commenter stated that the Service provides a misleading discussion of the current status of the beardless chinchweed and fails to recognize its life history as a disturbance-dependent and extremely difficult species to detect. Response: As described in the SSA report, beardless chinchweeed is, and has historically been, found in open, native-dominated desert grasslands, oak savannas, and oak woodlands. This species is also often associated with active disturbances from frequent, low severity wildfire; grazing and browsing of native animals during seed production; and natural erosion of unstable substrates, thus reducing competition. Many historical locations are now dominated by nonnative grasses, have an altered wildfire regime, and no longer support the species. Native-dominated habitats have diverse assemblages of vegetation, each with a different-shaped and -sized canopy and root system, which creates heterogeneity of form, height, and patchiness, and provides openness. This is in contrast to nonnative-dominated habitats, which are unnaturally dense, are evenly spaced, and have an even understory height; burn with regularity; and contain species that compete with beardless chinchweed for space, water, light, and nutrients. The documented invasion of nonnative grasses throughout most of the beardless chinchweed's range has greatly increased competition and altered fire regimes in these areas. Historical populations currently with nonnative grass dominance no longer support beardless chinchweed due to this alteration of habitat. There are currently no extant populations of beardless chinchweed without at least some level of nonnative grass invasion. We acknowledge that the species is difficult to detect. Despite the difficulty of detection, trained botanists are conducting surveys during the bloom period, enhancing the probability of detection. (15) Comment: A commenter claimed the Service did not do due diligence to list threats or make determinations but used the petitioner's list of threats. The commenter also suggested the Service's analysis of stressors is speculative and not based on hard data. Response: The Service's determination to list the species is based on a thorough review of the best available scientific and commercial information and was subject to appropriate peer review. The petition identifies livestock grazing as the primary threat to the beardless chinchweed. Our analysis determined nonnative invasion and high-severity fire are the primary threats to the species, with livestock disturbance potentially benefitting the plants at certain times of the year and potentially harming it at other times (summer and fall). We used the best available scientific and commercial information in our analyses. (16) Comment: Three commenters claimed the Service's assumption that nonnative grasses decrease habitat suitability and alter the fire regime is not supported by the data and the method of assessment for the effect of competition with nonnative grasses is unclear. The species persists in nonnative grasslands and has positive population growth following the Monument Fire. Response: Beardless chinchweed typically occurs on steep, south-facing, sunny to partially shaded hillslopes, with eroding bedrock and open areas with little competition from other plants. Since 2012, many surveys of historically documented beardless chinchweed population areas detected no beardless chinchweed plants. The change in habitat in these areas, with drastic increases in nonnative, invasive grasses that provide limited bare soil needed by beardless chinchweed, indicates that the areas are no longer suitable habitat for this species. Even in areas that support the beardless chinchweed, such as at Coronado National Memorial, biologists report that the beardless chinchweed has not been found in any location dominated by nonnative grasses. In all but a small number of historical populations, nonnative grasses have increased to an extent that they exclude most native species, including beardless chinchweed. Numerous surveys and studies indicate that the beardless chinchweed does not occur in sites heavily impacted by nonnative plants. Surveys for the beardless chinchweed note habitat conditions, including the extent of nonnative grasses. Historical frequent, low-severity fires in southern Arizona grasslands have been replaced with more frequent and more severe fires due, in part, to the invasion of nonnative plants. Beardless chinchweed grassland habitats have been altered to include nonnative grasses and hotter fires. The area where the beardless chinchweed occurs at Coronado National Memorial experienced low to moderate severity fire in the Monument Fire in 2011, and in 2019, low severity prescription fire[[Page 31835]]was used as a tool to benefit the beardless chinchweed (BAER 2017, entire; Fitting 2020, pers. comm). We assessed the effects of competition with nonnative grasses based on habitat conditions reported in surveys of beardless chinchweed populations. The extent of nonnative grasses in the area is negatively associated with beardless chinchweed occurrence. Beardless chinchweed occurs in areas with little natural competition and nonnative grasses are strong competitors for required resources of sunlight, water, and space. Several instances have been reported where surveys of more densely vegetated habitat resulted in no beardless chinchweed found, supporting this species' requirement for little competition (USFWS 2014a, p. 4; USFWS 2014b, p. 1; USFWS 2014c, p. 4; USFWS 2014d, p. 2; Haskins and Murray 2017, p. 2). In addition, beardless chinchweed has not been found in any location dominated by nonnative grasses on National Park Service ***lands*** (National Park Service 2014, p. 4; Janway 2017, pers. comm.). (17) Comment: A commenter indicated that managed livestock and wild ungulate grazing are proven to reduce fuels for fires and requested all language relating to domestic livestock threatening beardless chinchweed be removed from the SSA report and the rule. Response: Livestock grazing is not noted in the SSA report or the rule as a major threat to the beardless chinchweed. While grazing is not a major threat to the species, the activity does act as a stressor to the beardless chinchweed in some circumstances, and the effect of grazing is analyzed in the SSA report. Wild ungulate grazing is noted in beardless chinchweed populations. Coues white tail deer (Odocoileus virginianus ssp. couesi) and javelina (Pecari tajacu) were observed in the vicinity of browsed beardless chinchweed plants (USFWS 2015, pp. 1-2). In a 2019 study, researchers reported 75 percent of 785 individuals studied in the population at Coronado National Memorial showed signs of deer browse (Souther, 2020, p. 1). The loss of flowers in any year equates to a loss of seed production and seed bank storage, and reduction in genetic diversity. Livestock grazing is expected to have a similar impact. Beardless chinchweed does not flower until it reaches a height of over 1.6 ft tall. Without time and resources to regrow, browsed plants may be unable to attain adequate size for reproduction and are susceptible to impacts from grazing (Phillips et al. 1982, p. 8; Falk and Warren 1994, p. 157). Grazing pressure may have contributed to species' rareness due to reduced reproduction and alteration in habitat (Keil 1982, pers. comm.). Overgrazing is considered a stronger influence on beardless chinchweed habitat in Mexico (Fishbein and Warren 1984, p. 20; Sanchez-Escalante 2019, p. 17). The beardless chinchweed SSA report concludes that grazing in winter or spring when the plant is dormant would increase disturbance and open habitat needed by the beardless chinchweed, while grazing in summer or fall when the plant is growing and flowering could damage plants or reduce seed production. (18) Comment: A commenter recommended using past climate data at a local level rather than modelling projections when discussing climate as a threat. Response: In the beardless chinchweed SSA report, figure 4.8a-c shows both the past and projected mean daily maximum temperatures in Cochise, Pima, and Santa Cruz Counties, Arizona. The data for past mean daily maximum temperatures also indicate increases in temperature in all three counties. Modeling projections based on the Intergovernmental Panel on Climate Change Fifth Assessment report (IPCC 2014, entire) and future climate projections from the National Climate Explorer Tool (USGS 2017a, entire) downscaled to county level were used to discuss climate change and the effects of current and future changes on beardless chinchweed. Section 4.2 of the SSA (USFWS 2020, pp. 29-42) describes these modelling projections in greater detail. (19) Comment: A commenter noted the degree of disturbance that is harmful versus helpful to the beardless chinchweed needs to be determined through research. Response: Additional research into the amounts and types of disturbance compatible with the beardless chinchweed would assist with further actions related to the species. Three extant populations occur along roadcuts, and another occurs along a maintained trail. Routine vegetation maintenance along the roads and trails reduces competition from other plants for sunlight and nutrients. However, roadside maintenance could also damage or ***remove*** plants. In addition, nonnative plant introduction and spread often occur in areas of disturbance, such as along roadways, along trails, in mining sites, and in areas of recreational use (Gelbard and Belnap 2003, p. 421; Brooks 2007, pp. 153-154; Anderson et al. 2015, p. 1). Nonnative grasses compete with beardless chinchweed for space, water, light, and nutrients, and alter wildfire regimes. Many of these historical locations no longer support the beardless chinchweed due to alteration of habitat by nonnative grasses (NPS 2014, pp. 3-4; Service 2014a, pp. 1-2; Service 2014b, entire; Service 2014c, pp. 1-2). Therefore, for the purposes of our analysis, we conclude that the presence of nonnatives following a disturbance is not helpful to the beardless chinchweed. (20) Comment: A commenter stated that demographic and environmental stochasticity are naturally occurring phenomena for which beardless chinchweed plants are very well-adapted. Response: Demographic and environmental stochasticity are naturally occurring phenomena (Shaffer 1981, p. 131). However, beardless chinchweed populations adapted to naturally occurring phenomena now experience the additional stressors of nonnative grass (competition and altered fire regime) and the effects of a changing climate beyond the scope of normal occurrence. For example, effects due to a changing climate, coupled with other stressors, can have a cumulative impact resulting in greater than anticipated decline in rare species (Souther and McGraw 2014, pp. 1471-1472). In addition, populations that experience variability in abundance must maintain a minimum viable population to be able to repopulate after a demographic or environmental stochastic event or catastrophe (Holsinger and Falk 1991, p. 45). Rangewide (including Mexico), 11 of the 12 beardless chinchweed populations (83 percent) are small (fewer than 50 individuals). When the effect of small population size exacerbates other stressors beyond those naturally occurring phenomena that beardless chinchweed has adapted to, population abundance may be reduced to the extent that repopulation does not occur. (21) Comment: A commenter stated disturbance (including high intensity grazing, post-wildfire runoff, trail and road maintenance, and mining activities) are not threats to the beardless chinchweed. In addition, one commenter stated that road graders will be banned, yet they create habitat for the species. Response: The beardless chinchweed likely requires low to moderate intensity disturbance to maintain open habitat. This disturbance includes localized natural erosion of unstable substrates following precipitation events. Grazing could impact beardless chinchweed in[[Page 31836]]small populations with fewer than 50 individuals as flowers removed equate to reduction in genetic diversity and seed production. Many beardless chinchweed plants are precarious in their steep, sunny, erodible habitat, and heavy post-fire flooding and erosion could easily ***remove*** or bury plants. The beardless chinchweed is a species negatively affected by competition from other plants, particularly nonnative grasses. Activities that ***remove*** soils, increase nonnative plant spread, or reduce habitat for the beardless chinchweed negatively affect the species. Further, under this rule, the use of road graders will not be banned. The use of road graders in activities conducted, funded, permitted, or authorized by Federal agencies and the consequent effects to the beardless chinchweed would be evaluated in a section 7 consultation to ensure that their use is compatible with beardless chinchweed conservation. (22) Comment: Three commenters indicated that the Service's conclusion that small and isolated populations make recolonization of extirpated beardless chinchweed populations unlikely is unsupported. Response: The current distribution of beardless chinchweed consists of populations widely separated on the landscape, and the plant's seeds are not expected to travel long distances as typical of desert plants in a specialized environment (Van Oudtshoorn and Van Rooyen 2013, p.2). In addition, much of the grassland habitat surrounding known populations has been altered by nonnative plant invasion and no longer supports beardless chinchweed (National Park Service 2014, pp. 3-4; USFWS 2014b, pp. 1-2; USFWS 2014c, entire; USFWS 2014d, pp. 1-2). Throughout the range of the species, beardless chinchweed populations are naturally fragmented between mountain ranges that are many miles away from other mountain ranges, so natural re-establishment is unlikely. (23) Comment: Three commenters were concerned that critical habitat units will be closed off to grazing and livestock will be removed during the growing season on occupied allotments, which may have significant impacts on cattle ranchers, or that the designation of critical habitat will force the U.S ***Forest*** Service to build cattle exclosures. These allotments are dominated by nonnative species with the exception of where the beardless chinchweed occurs. One commenter recommended site-specific analysis to determine the level of management considerations needed. Response: The largest population of beardless chinchweed occurs on NPS ***lands*** and is not grazed by cattle. The USFS currently implements site-specific management for the extant beardless chinchweed sites, and we anticipate they will continue to do so in the future. Of 8 beardless chinchweed populations on USFS ***lands*** or portions of USFS ***lands***, 4 populations currently experience some level of grazing. Two populations occur in areas grazed only during March, which is outside of the growing season for the beardless chinchweed (Heitholt 2017a, pers. comm.). Another population is on an allotment that is grazed by cattle in winter and spring, also outside of the flowering period for the beardless chinchweed (Heitholt 2017b, pers. comm.). A fourth population is in a yearlong, deferred rest rotational grazing regime, meaning any growing season use is mitigated with growing season rest the following year; in general, this area receives less than 25 percent utilization due to topography and distance from water (Heitholt 2018, pers. comm.). Cattle have not grazed another population that occurs partially on USFS ***lands*** since 1968 (Wilcox 2017, pers. comm.). The overlap of grazing allotments with critical habitat units is fairly limited. Within occupied units, two allotments overlap with critical habitat by less than 5 percent of the allotments' ***land*** area (IEc 2018, p. 15). Within unoccupied units, one allotment overlaps critical habitat by approximately 7 percent and two allotments overlap by less than 3 percent of the allotments' ***land*** area (IEc 2018, p. 15). The USFS will conduct section 7 consultation on the effects of grazing to the beardless chinchweed and designated critical habitat following the listing of the species (see DATES, above). Any site-specific adjustments to grazing on allotments will be considered in the consultation process. (24) Comment: A commenter claimed the City of Sierra Vista, Fort Huachuca, and other affected parties were not consulted during the economic analysis process, which was performed too quickly. Response: For the economic analysis, we considered affected parties to be those that overlap with occurrences of, or are within immediate proximity to, the species (e.g , USFS, NPS, Federal agencies conducting border patrol activities). The City of Sierra Vista and Fort Huachuca are more than 18 miles from any known population of the beardless chinchweed; therefore, we did not seek input from those parties. (25) Comment: A commenter requested the opportunity to verify that their economic analysis comments were incorporated into the final economic analysis. Response: During the open public comment period on the December 6, 2019, proposed rule (84 FR 67060), we accepted comments on the draft economic analysis for the critical habitat designation for the beardless chinchweed. We considered comments we received on the draft economic analysis. To view the economic analysis, go to [*http://www.regulations.gov*](http://www.regulations.gov) and search for Docket No. FWS-R2-ES-2018-0104. (26) Comment: A commenter noted that proposed critical habitat units 1, 2, 6, 7, and 8 were visited during the 2019-2020 winter and that the proposed essential physical and biological features were present within discrete areas within a matrix of high canopy cover grassland primarily dominated by nonnative grasses. They recommended a wording change to indicate special management only in areas where all essential physical and biological features co-occur, as not all of these areas include all proposed essential physical and biological features. Response: Not all critical habitat units contain all of the essential physical and biological features; in fact, it is unlikely that any beardless chinchweed populations are free of nonnative grasses entirely. The critical habitat units are focused largely on areas that are currently dominated by native species or have a mix of native and nonnative plants (USFS 2017). One goal to conserve the beardless chinchweed is to work toward the reduction of nonnative plants in critical habitat units. If only units with no nonnative species were designated as critical habitat, there would be insufficient habitat to conserve the species. (27) Comment: One commenter is concerned that nonnatives are too extensive to treat outside of small areas. Response: We understand the challenges of controlling nonnative plants and restoring native grasses to a site. We note that treatment of nonnatives near beardless chinchweed populations is an initial step in conserving the species. (28) Comment: Two commenters stated that we failed to properly identify and use the species' physical and biological features to designate critical habitat. Another commenter stated that the physical and biological features identified in the proposed rule for the beardless chinchweed are general in nature and do not distinguish proposed critical habitat units from vast areas of potential habitat, suggesting there are hundreds of thousands (or more) acres of potential habitat for the species.[[Page 31837]] Response: The physical and biological features identified for the beardless chinchweed are based on the species' known biology, ecology, and habitat requirements. These include the habitat required to maintain pollinators, space for expansion and colonization of beardless chinchweed populations, and the need of the species to have open spaces without excessive nonnative grass competition. In unoccupied critical habitat units, not all physical and biological features may be present, but these areas are essential for the conservation of the beardless chinchweed. Southern Arizona grasslands, oak savannas, and evergreen woodlands have been invaded by nonnative plant species to an extensive degree, rendering much of the potential habitat less suitable.I. Final Listing DeterminationBackground Please refer to the December 6, 2019, proposed rule to list and designate critical habitat for the beardless chinchweed (84 FR 67060) and the SSA report for a full summary of species information. Both are available on our Southwest Region website at [*https://www.fws.gov/southwest*](https://www.fws.gov/southwest)/ and at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R2-ES-2018-0104.Regulatory and Analytical FrameworkRegulatory Framework Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an ``endangered species'' or a ``threatened species.'' The Act defines an endangered species as a species that is ``in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as a species that is ``likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The Act requires that we determine whether any species is an ``endangered species'' or a ``threatened species'' because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We use the term ``threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ``threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ``threat'' may encompass--either together or separately--the source of the action or condition or the action or condition itself. However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ``endangered species'' or a ``threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats--in light of those actions and conditions that will ameliorate the threats--on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ``endangered species'' or a ``threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.Analytical Framework The SSA report documents the results of our comprehensive biological status review for the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be listed as an endangered or threatened species under the Act. It does, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS-R2-ES-2018-0104 on [*http://www.regulations.gov*](http://www.regulations.gov) and at [*https://www.fws.gov/southwest/es/arizona/Docs\_Species.htm*](https://www.fws.gov/southwest/es/arizona/Docs_Species.htm). To assess beardless chinchweed's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability. The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.Summary of Biological Status and Threats In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability. The beardless chinchweed is an erect, many-branched perennial of the Asteraceae (sunflower) family. It occurs on sunny, south-facing slopes in native-dominated grasslands, oak savannas,[[Page 31838]]and oak woodlands in southern Arizona and northern Mexico. The species is particularly susceptible to competition from other plants and is impacted by nonnative, invasive grasses, which outcompete this species for light, water, nutrients, and space, and exacerbate unnatural high-severity fires. Nine populations have been extirpated since 1962, leaving 12 extant populations in Arizona and Mexico. The extirpated sites have high levels of invasion by nonnative grasses. Most populations are very small, with 92 percent of populations throughout the range of the species supporting fewer than 50 individuals. These small populations are particularly vulnerable to extirpation. The beardless chinchweed occurs between elevations of 3,799 to 5,699 ft. It requires steep, south-facing, sunny to partially shaded hillslopes with open areas and little competition from other plants. To maintain species' viability, populations with multiple subpopulations and overall high abundance must be distributed across the species range and represent a range of environmental conditions. These populations must experience recruitment that exceeds mortality. Beardless chinchweed requires habitat consisting of native-dominated plant communities on eroding limestone or granite bedrock substrate with precipitation adequate for germination, growth and reproduction. The native-dominated plant communities include plains, great basin, and semi-desert grasslands, oak savanna, or Madrean evergreen woodlands and communities dominated by bunchgrasses with open spacing and little competition from other plants. In addition, these communities must support sufficient beardless chinchweed pollinators (e.g , flies, bees, and butterflies) including plants for pollinator foraging and nesting within pollinator flight distance of beardless chinchweed populations. Several stressors influence whether beardless chinchweed populations will grow to maximize habitat occupancy, which increases the resiliency of a population to stochastic events. We evaluated the past, current, and future stressors (i.e , negative changes in the resources needed by beardless chinchweed) that influence the viability of the species. These stressors are described in detail in chapter 4 of the SSA report (Service 2020). Stressors that have the potential to affect beardless chinchweed population resiliency include: Loss of habitat due to invasion by nonnative species; Altered fire regime exacerbated by invasion by nonnative species; Altered precipitation, drought, and temperature; Erosion, sedimentation, and burial from road and trail maintenance, mining, livestock trampling and soil disturbance, and post-wildfire runoff; Grazing from wildlife and livestock; and Small population size exacerbating all other stressors. The largest risk to viability of the species is caused by the loss of habitat from the invasion of nonnative grasses that compete for space, water, light, and nutrients and that alter wildfire regimes. This combination of stressors has resulted in many populations having fewer than 50 individuals remaining, which puts them at risk of extirpation from the primary stressor as well as additional stressors that would not have been a concern under natural conditions. Much of the historical range of the beardless chinchweed in both the United States and Mexico has been altered by an invasion of nonnative grasses and herbaceous plants. Although there are many nonnative plant species growing in historical beardless chinchweed habitats in both the United States and Mexico, two species in particular are most problematic to the beardless chinchweed at this time: Lehmann's lovegrass (Eragrostis lehmanniana) and rose natal (Melinis repens). Both of these species are strong competitors on southern exposures where the beardless chinchweed occurs.Habitat Loss Caused by Nonnative Grasses Lehmann's lovegrass, a nonnative grass from South Africa, has numerous competitive advantages over native grasses in southern Arizona. Lehmann's lovegrass resprouts from roots and tiller nodes not killed by hot fire, is unhampered by the reduction in mycorrhizae associated with fire and erosion, responds to winter precipitation when natives grasses are dormant, produces copious seed earlier than native grasses, maintains larger seed banks than native grasses, and has higher seedling survival and establishment than native grasses during periods of drought (Anable 1990, p. 49; Anable et al. 1992, p. 182; Robinett 1992, p. 101; Fernandez and Reynolds 2000, pp. 94-95; Crimmins and Comrie 2004, p. 464; Geiger and McPherson 2005, p. 896; Schussman et al. 2006, p. 589; O'Dea 2007, p. 149; Archer and Predick 2008, p. 26; Mathias et al. 2013, entire). This species outcompetes native grasses for water, light, and nutrients, forming nonnative-dominated grasslands that reduce structural, species, and spatial diversity and that produce two to four times the biomass of native grasslands (D'Antonio and Vitousek 1992, p. 70; McPherson 1995, pp. 136-137; VanDevender et al. 1997, p. 4; Huang et al. 2009, pp. 903-904). This change in vegetation structure results in a higher fuel load that is long-lasting through slow decomposition and results in more frequent fires that have longer flames, faster rates of spread, and higher severity and frequency than historical low-intensity burns of native desert grasslands (Anable et al. 1992, p. 186; Dennet et al. 2000, pp. 22-23; Williams and Baruch 2000, p. 128; Crimmins and Comrie 2004, p. 464). In addition, Lehmann's lovegrass-dominated grasslands recover quickly from fire, as fires scarify the ample seeds and ***remove*** canopy, allowing for high seedling emergence (Cable 1965, p. 328; Anable 1990, p. 15; Roundy et al. 1992, p. 81; McPherson 1995, p. 137; Biedenbender and Roundy 1996, p. 160). Rose natal, a native of Africa and Madagascar, is invasive in many locations, including southern Arizona and northern Mexico (Stevens and Fehmi 2009, p. 379; Romo et al. 2012, p. 34). Similar to Lehmann's lovegrass, rose natal is capable of growing in low moisture situations and has many advantages to outcompete native grasses of southern Arizona, such as prolific seed production and culms that root from the nodes (Stokes et al. 2011, p. 527). This aggressive grass displaces native vegetation in shrublands and oak stands, and increases fire frequency (Romo et al. 2012, p. 35; Center for ***Agriculture*** and Biosciences International 2020, entire). In addition, several other invasive African grasses and an invasive Asian grass have been documented in southern Arizona and northern Mexico (Van Devender and Reina 2005, p. 160; NatureServe 2020, entire; Fire Effects Information System 2020, entire; SEINet, entire). Other nonnative grasses in Mexico show rapid expansion and degradation of native communities, with the potential to invade large areas of northern Mexico (Arriaga et al. 2004, p. 1504). No beardless chinchweed populations in the United States are more than 1 kilometer (km) (0.6 mile (mi)), and no beardless chinchweed populations in Mexico are more than 27 km (16.8 mi), away from documented nonnative grasses (SEINet, entire; Heitholt 2017b, pers. comm.). Because we have documented nonnative infestations in the field in locations not shown in SEINet, we conclude only a small portion of nonnative plants are[[Page 31839]]reported into the SEINet system in either country. Based on the above information, it is unlikely any beardless chinchweed population is free of nonnative plants. This encroachment of nonnatives has reduced beardless chinchweed population numbers and habitat, and as nonnatives continue to encroach on beardless chinchweed populations, the number of individuals and available habitat will continue to decrease.Altered Fire Regime The desert grasslands, oak savannas, and oak woodlands of southern Arizona historically had large-scale, low-severity fire roughly every 10 to 20 years and following periods of adequate moisture (McPherson and Weltzin 2000, p. 5; Brooks and Pyke 2002, p. 6; McDonald and McPherson 2011, p. 385; Fryer and Leunsmann 2012, entire). This low-severity disturbance likely benefited beardless chinchweed by maintaining open microhabitats and reducing competition. Fires are now more frequent and intense due to the unnaturally dense and evenly spaced canopies of nonnative-dominated communities (as compared to more open and heterogeneous native-dominated grasslands), coupled with more frequent fire starts from recreationists and cross-border violators (Anable et al. 1992, p. 186; D'Antonio and Vitousek 1992, p. 75; Dennet et al. 2000, pp. 22-23; Williams and Baruch 2000, p. 128; Crimmins and Comrie 2004, p. 464; Emerson 2010, pp. 15, 17; United States Government Accountability Office 2011, p. 1; Wildland Fire Lessons Learned Center 2011, entire). Nonnative grasses have higher seed output and large seed banks, earlier green-up in the spring, and greater biomass production than native grasses; all of these characteristics help to perpetuate a grass-fire cycle (D'Antonio and Vitousek 1992, p. 73; Zouhar et al. 2008, pp. 17, 21; Steidl et al. 2013, p. 529). In many locations in southern Arizona in recent decades, repeat fires have occurred within short periods of time, aided by the dominance of nonnative grasses in the landscape. For example, in the Pajarito and Atascosa Mountains area, multiple fires burned the landscape between 2008 and 2016 (figure 4.4 in Service 2020). This landscape is now dominated by both nonnative Lehmann's lovegrass and rose natal (Service 2014b, entire; Heitholt 2017b, pers. comm.), and many historically documented locations that supported beardless chinchweed have not been found again (Service 2014b, entire; Fernandez 2017, pers. comm.; Haskins and Murray 2017, p. 4). High-severity wildfires burn hotter than fires that beardless chinchweed evolved with; consequently, we conclude the plant is not capable of surviving high-severity fires.Altered Precipitation, Drought, and Temperature The southwestern United States is warming and experiencing severe droughts of extended duration, changes in amount of snowpack and timing of snow melt, and changes in timing and severity of precipitation and flooding (Garfin et al. 2014, entire). The effects of a changing climate are important considerations in the analysis of the stressors to the beardless chinchweed, including increased nonnative competition (described above) during times of low precipitation and drought (Anable 1990, p. 49; Robinett 1992, p. 101; Fernandez and Reynolds 2000, pp. 94-95; Geiger and McPherson 2005, p. 896; Schussman et al. 2006, p. 589; Archer and Predick 2008, p. 26; Mathias et al. 2013, entire). Low precipitation and drought will also impact moisture availability for beardless chinchweed germination, growth, and flowering. To analyze the effects of a changing climate on beardless chinchweed, we relied on the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment (IPCC 2014, entire) and IPCC Climate Change 2013--The Physical Science Basis (IPCC 2013, entire). Four ***emission*** scenarios, referred to as Representative Concentration Pathways (RCPs) were developed for the latest IPCC report (IPCC 2014, p. 57). We evaluated the effects of climate change on the beardless chinchweed using RCP 4.5 and RCP 8.5 to bracket the range of environmental variability. The IPCC report (2014) expresses confidence that ***emissions*** will fall within the RCP 4.5 and 8.5 range. Altered precipitation timing and form (snow versus rain), as well as reduced winter and spring precipitation and prolonged drought, are currently occurring and projected to increase or be altered from normal in the Southwest (Garfin et al. 2014, entire). Recently, there has been a decrease in the amount of snowpack, earlier snowmelt, and increased drought severity in the Southwest (Garfin et al. 2013, entire; Garfin 2013b, p. 465). Further, more wintertime precipitation is falling as rain rather than snow in the western United States (IPCC 2013, p. 204; Garfin 2013, p. 465). This means that the amount of runoff in the spring when snow melts is reduced, as is soil moisture. Precipitation is bimodal within the mountain ranges where the beardless chinchweed occurs, with dormant season snow and rain, and growing season monsoon rains. Precipitation during October through March is important for beardless chinchweed germination and growth. In addition, the beardless chinchweed does not flower until it reaches a height of more than 0.5 meter (m) (1.6 feet (ft)) tall; without sufficient precipitation, beardless chinchweed may be unable to attain adequate size for reproduction (Phillips et al. 1982, p. 8). Further, reduced precipitation, change in the timing and type of precipitation, and prolonged drought impact soil and ambient moisture availability for beardless chinchweed germination, seedling survival, plant growth, and flowering. In addition, due to increased nonnative competition during times of reduced precipitation and drought, impacts from these stressors to the beardless chinchweed would be exacerbated (Anable 1990, p. 49; Robinett 1992, p. 101; Fernandez and Reynolds 2000, pp. 94-95; Geiger and McPherson 2005, p. 896; Schussman et al. 2006, p. 589; Archer and Predick 2008, p. 26; Mathias et al. 2013, entire). Projections of precipitation changes are less certain than those for temperature (Garfin et al. 2014, p. 465). Downscaled models project average precipitation will decrease in the southern Southwest where beardless chinchweed occurs, with seasonal changes in precipitation predicted. Projections of change in the mean annual precipitation from 2021 to 2099 range from a decrease of 20 percent to an increase of 8 percent (RCP 8.5 (major effects scenario in the SSA)) and a decrease of 10 percent to an increase of 10 percent (RCP 4.5 (moderate effects scenario in the SSA)), with most models predicted a decline. (Garfin et al. 2013, p. 113). Under ***emissions*** scenarios of RCP 4.5 and 8.5, reduced winter and spring precipitation is consistently projected for the southern part of the Southwest by 2100, as part of the general global precipitation reduction in subtropical areas (Garfin et al. 2014, p. 465). Late winter-spring mountain snowpack in the Southwest is predicted to continue to decline over the 21st century under RCP 4.5 and RCP 8.5 scenarios because of increased temperature (Garfin et al. 2013, pp. 118-119). Reduced rain and snow, earlier snowmelt, and drying tendencies cause a reduction in late-spring and summer runoff. Together, these effects, along with increases in evaporation, result in lower soil moisture by early summer (Garfin 2013, p. 117).[[Page 31840]]Grazing There are two different perspectives on the influence of grazing on the beardless chinchweed: (1) Wildfire historically maintained native open habitat where the beardless chinchweed occurred, but with fire suppression, overgrazing may have alternatively provided native open habitats for this species to expand its range in the early 1900s, even without frequent fire (Schmalzel 2015, pers. comm.), due to open space being created and maintained by cattle; or (2) Grazing pressure may have contributed to the species' rareness (Keil 1982, entire) due to reduced reproduction and alteration in habitat. Regardless, grazing that occurs in small populations (fewer than 50 individuals) of beardless chinchweed would have a negative population-level impact through the reduction of flowers and seeds, and possibly individuals. Beardless chinchweed does not flower until it reaches a height of more than 0.5 m (1.6 ft) tall, indicating that grazing in summer or fall when the plant is growing and flowering could reduce seed production and recruitment. Approximately 75 percent of individuals studied in a population at Coronado National Memorial showed signs of deer browse (Souther 2019, pers. comm.). The effect on plant reproduction was variable, with browsing appearing at times to stimulate floral production (early season) and at other times appearing to inhibit it (immediately prior to seed set).Small Populations Small population size affects beardless chinchweed population resiliency, as all stressors are exacerbated in populations with only a small number of individuals (fewer than 50). Small populations are less able to recover from losses caused by random environmental changes (Shaffer and Stein 2000, pp. 308-310), such as fluctuations in reproduction (demographic stochasticity), variations in rainfall (environmental stochasticity), or changes in the frequency or severity of disturbances, such as wildfires. Five of the six extant beardless chinchweed populations in the United States contain fewer than 50 individuals. We expect that the six populations in Mexico are of similar size but may be in worse condition, because of limited native habitat management, similar climate change impacts, equally frequent wildfires, and likely more impacts from grazing. Losses due to mining, erosion, road and trail maintenance, trampling, grazing, or other stressors mentioned above are exacerbated in small populations and have the potential to seriously damage or completely ***remove*** these small populations. Synergistic interactions among wildfire, nonnative grasses, decreased precipitation, and increased temperatures cumulatively and cyclically impact the beardless chinchweed, and all stressors are exacerbated in small populations.Current Condition of Beardless Chinchweed Since 1962, we are aware of nine extirpated populations and one extirpated subpopulation of the beardless chinchweed in the United States. Currently, six extant beardless chinchweed populations occur across four mountain ranges in southern Arizona: The Atascosa-Pajarito, Huachuca, and Santa Rita Mountains and the Canelo Hills. These six populations consist of 992 individuals spread across less than 2 hectares (ha) (5 acres (ac)). Additionally, six populations have been reported from northern Mexico, but this information is from 1940 or earlier. In addition, we are aware of preliminary results of the fall 2020 survey efforts of the Coronado National ***Forest*** and the NPS including the discovery of as many as 225 additional individuals near and within known populations in the Coronado National Memorial and Coronado National ***Forest***. Prior to the discovery, the Coronado National Memorial population was the largest known with 846 beardless chinchweed individuals. The increased abundance and potential increased distribution improves the resiliency of the Coronado National Memorial population, but does not change the overall determination for the species. We will continue to incorporate the best scientific information from these and future survey efforts in revisions of the SSA and Service decisions.Population Resiliency of Beardless Chinchweed To determine current condition, we assessed each population in terms of its resiliency. Our analysis of the past, current, and future stressors on the resources that the beardless chinchweed needs for long-term viability revealed that there are a number of stressors influencing this species. All beardless chinchweed populations likely contain nonnative grasses with a competitive advantage over native grasses during periods of drought. Further, altered fire regime has the potential to affect all populations. This altered fire regime enhances the spread of nonnatives, and all populations of beardless chinchweed contain nonnatives. Consequently, fire will aid in the spread of nonnatives, is currently a risk to all populations of the beardless chinchweed, and will be further exacerbated by nonnative grasses in the near future (approximately 10 years). Altered precipitation, increased temperatures, increased evapotranspiration, decreased soil moisture, and decreased winter and spring precipitation are current and ongoing environmental conditions impacting all populations of the beardless chinchweed and exacerbating an altered fire regime. Road maintenance is likely resulting in the loss of individuals in three populations (Ruby Road, Scotia Canyon, and Coronado National Memorial). In addition, all individuals in these three populations are currently being impacted by dust from the road. The Ruby Road and Scotia Canyon populations exhibit low resiliency, and the Coronado National Memorial population exhibits moderate resiliency. Two additional populations (McCleary Canyon-Gunsight Pass and McCleary Canyon-Wasp Canyon) will be impacted by Rosemont mining operations and dust in the near future (approximately 10 years; Westland 2010, p. iv). One of these populations currently exhibits low resiliency, and the other exhibits moderate resiliency. Rangewide (including Mexico), 11 of the 12 populations (83 percent) are small (fewer than 50 individuals). Synergistic interactions among wildfire, nonnative grasses, decreased precipitation, and increased temperatures cumulatively and cyclically impact the beardless chinchweed, and all stressors are exacerbated in small populations. Of the six extant populations in the United States, two exhibit moderate resiliency and four exhibit low resiliency (see table 1, below). A population with moderate resilience is one in which abundance ranges from 100-300 individuals the population contains 2 subpopulations, and spatial distribution is limited with few groupings; seed production is moderate; recruitment and mortality are equal such that the population does not grow; the ability to withstand stochastic events or recover from stochastic events is limited due to low abundance and recruitment and to a reduced seed bank; and there is some suitable habitat. A population with low resilience is one in which abundance is less than 100 individuals, the population contains a single subpopulation, and spatial distribution is limited; seed production is low; mortality exceeds recruitment such that the population is declining; the ability[[Page 31841]]to withstand stochastic events or recover from stochastic events is unlikely due to low abundance and recruitment and to a limited seed bank; and there is limited suitable habitat. The categories of conditions used to determine population resiliency are further described in the SSA report (Service 2020, Table 5.10) and the proposed listing rule (84 FR 67060, December 6, 2019, p. 84 FR 67065). Table 1--Beardless Chinchweed Current Population Condition---------------------------------------------------------------------------------------------------------------- Number of Mountain range/country Population Subpopulation individuals Current condition----------------------------------------------------------------------------------------------------------------Atascosa-Pajarito Mountains, USA Pena Blanca Lake... .................. 0 Extirpated. Ruby Road.......... 10................ Low. Summit Motorway.... .................. 0 Extirpated.Canelo Hills, USA............... Audubon Research Post Canyon....... 0 Low. Ranch. Tributary of 37 O'Donnell Canyon. Copper Mountain.... .................. 0 Extirpated. Harshaw Creek...... .................. 0 Extirpated. Lampshire Well..... .................. 0 Extirpated.Huachuca Mountains, USA......... Scotia Canyon...... .................. 40 Low. Coronado National Visitor Center.... 785 Moderate. Memorial. State of Texas 61 Mine. Joe's Canyon Trail. .................. 0 Extirpated.Patagonia Mountains, USA........ Flux Canyon........ .................. 0 Extirpated. Washington Camp.... .................. 0 Extirpated.Santa Rita Mountains, USA....... Box Canyon......... .................. 0 Extirpated. McCleary Canyon- .................. 32 Moderate. Gunsight Pass. McCleary Canyon- .................. 32 Low. Wasp Canyon.Chihuahua, Mexico............... Batopililas, Rio .................. ~10 Low. Mayo. Guasaremos, Rio .................. ~10 Low. Mayo.Sonora, Mexico.................. Canon de la .................. ~10 Low. Petaquilla. North of .................. ~10 Low. Horconcitos. Canyon Estrella, .................. ~10 Low. Sierra de los Cendros; southeast of Tesopaco. Los Conejos, Rio .................. ~10 Low. Mayo.----------------------------------------------------------------------------------------------------------------Beardless Chinchweed Representation No genetic studies have been conducted within or among the 21 historical populations of the beardless chinchweed in southern Arizona and Mexico. Mountain ranges that have only one or two populations, or have only have one subpopulation per population, or low numbers of individuals per population with several miles between mountain ranges, may not be as genetically diverse because pollination or transport of seeds between populations may be very limited or nonexistent. Five of the six extant U.S populations do not have multiple subpopulations. The Coronado National Memorial population has two subpopulations. The six extant U.S populations are separated geographically into four ranges separated by 16 to 61 km (9.9 to 37.9 mi). There is likely genetic diversity among mountain ranges, but reduced genetic diversity within populations. Further, overall genetic diversity is likely reduced given that some populations are extirpated. Extant U.S populations of the beardless chinchweed range in elevation from 1,158 m (3,799 ft) to 1,737 m (5,699 ft). Of the 15 historical U.S populations, 8 (approximately 53 percent) fall below 1,457 m (1,500 ft) elevation. Of these eight, six have been extirpated in recent decades. This loss of lower elevation populations may mean the loss of some local adaptation to warmer or drier environments and genetic differentiation among populations. In the Ruby Road, Scotia Canyon, and Coronado National Memorial populations, and the Tributary of O'Donnell subpopulations, plants have been reported over many decades, indicating that these populations may have the genetic and environmental diversity needed to adapt to changing conditions. However, both the Ruby Road and Scotia Canyon populations have been reduced in size in the past 30 years, and we have no previous count data at Coronado National Memorial for comparison.Beardless Chinchweed Redundancy The beardless chinchweed populations in the United States and Mexico are naturally fragmented between mountain ranges. Currently, six extant U.S populations of the beardless chinchweed are spread across the Atascosa-Pajarito, Huachuca, and Santa Rita Mountains and the Canelo Hills. The Atascosa-Pajarito Mountains and the Canelo Hills have only one extant population each, while the Santa Rita and Huachuca Mountains have two extant populations each. Range separation makes natural gene exchange or re-establishment following extirpation very unlikely. In addition, six historical populations of the beardless chinchweed are distributed across two general areas in northern Chihuahua and Sonora, Mexico. Their status is unknown, but we expect they are small populations with poor habitat based on populations in the United States, which are small and dominated by nonnative species. Although this may imply some level of redundancy across the range of the beardless chinchweed, five of the six extant populations in the United States contain fewer than 50 individual plants. Further, nine populations and one subpopulation have been extirpated in recent decades, largely from the lower elevations of the species' range, and several populations have been reduced in size in recent decades. We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. Our assessment of the current and future conditions encompasses and[[Page 31842]]incorporates the threats individually and cumulatively. Our current and future condition assessment is iterative because it accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.Determination of Beardless Chinchweed's Status Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines ``endangered species'' as a species in danger of extinction throughout all or a significant portion of its range, and ``threatened species'' as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of ``endangered species'' or ``threatened species'' because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.Status Throughout All of Its Range Historically, beardless chinchweed was known from 21 populations. Nine populations have been extirpated, leaving 12 extant populations (six in the United States and six in Mexico). The six populations in the United States consist of approximately 992 individuals spread across less than 2 ha (5 ac). Six populations have been reported from northern Mexico, but this information is from 1940 or earlier. The proliferation of invasive, nonnative grasses throughout most of the beardless chinchweed's range has greatly affected this species through increased competition and altered fire regimes. Many of the historical locations no longer support the beardless chinchweed due to this alteration of habitat (NPS 2014, pp. 3-4; Service 2014a, pp. 1-2; Service 2014c, entire; Service 2014c, pp. 1-2). All beardless chinchweed populations likely contain nonnative grasses, resulting in habitat loss (Factor A). Further, an altered fire regime (Factors A and E) impacts all populations currently or in the near future and drives the spread of nonnatives (Factor A), exacerbating the encroachment of nonnative grasses. Consequently, all remaining populations of the beardless chinchweed are impacted by nonnative grasses now or will be in the near future. Altered precipitation (Factors A and E), increased temperatures (Factors A and E), and decreased annual precipitation (Factors A and E) are current and ongoing regional environmental conditions that are impacting all populations of the beardless chinchweed. These environmental conditions exacerbate an altered fire regime, driving the spread of nonnative grasses with competitive advantages over native grasses during periods of drought. Road and trail maintenance (Factors A and E) could damage or ***remove*** individuals in three populations with low resiliency (Ruby Road, Scotia Canyon, and Coronado National Memorial). In addition, all individuals in these three populations may be impacted by dust (Factor E) from the road. Two additional populations (McCleary Canyon-Gunsight Pass and McCleary Canyon-Wasp Canyon) will be impacted by roads (Factor A) related to mining operations in the near future (Westland 2010, p. iv). All individuals of these two populations will also be impacted by dust (Factor E). One of these populations is already of low resiliency and the other is of moderate resiliency. Eleven of 12 populations (92 percent) are small (fewer than 50 individuals). Synergistic interactions among wildfire, nonnative grasses, decreased precipitation, and increased temperatures cumulatively and cyclically impact the beardless chinchweed, and all stressors are exacerbated in small populations (Factor E). No conservation efforts have been implemented for this species. We find beardless chinchweed to have poor representation in the form of potential genetic diversity (Factor E). All but one population has fewer than 50 individuals. Small populations are susceptible to the loss of genetic diversity, genetic drift, and inbreeding. There are currently six populations spread across four mountain ranges in the United States and six populations in northern Mexico that are presumed extant. Five of the six extant U.S populations do not have multiple subpopulations (the Coronado National Memorial population has two subpopulations). Mountain ranges that have only one or two populations, have only one subpopulation per population, or have low numbers of individuals per population with several miles between mountain ranges, may not be genetically diverse because pollination or transport of seeds between populations may be very limited. This could mean that between-population genetic diversity may be greater than within-population diversity (Smith and Wayne 1996, p. 333; Lindenmayer and Peakall 2000, p. 200). Further, there may have been a loss of genetic diversity in the nine extirpated populations. Beardless chinchweed populations in the United States range in elevation from 1,158 m (3,799 ft) to 1,737 m (5,699 ft) in elevation. Of the 15 historical U.S populations, 8 (approximately 53 percent) fall below 1,457 m (4,780 ft) elevation. Of these eight, six have been extirpated in recent decades. The loss of lower elevation populations may mean a loss of local adaptation to warmer or drier environments and genetic differentiation among populations (Factor E). The beardless chinchweed needs to have multiple resilient populations distributed throughout its range to provide for redundancy. These multiple resilient populations should be spread over the range and distributed in such a way that a catastrophic event will not result in the loss of all populations. With the known extant populations separated by as much as 35 km (21.8 mi) in southern Arizona and even farther in northern Mexico, there is little connection potential between disjunct populations. Therefore, a localized stressor such as grazing during flowering would impact only those groups of plants near the activity. However, nonnative plant invasion, climatic changes, and repeated large-scale, moderate- and high-severity fires occur across the region and could impact all populations now or in the near future. The distance among populations reduces connectivity, making it unlikely that another population naturally recolonizes a site after extirpation (Factor E). After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the beardless chinchweed is presently in danger of extinction throughout its entire range based on the severity and immediacy of stressors currently impacting the species. The overall range has been significantly reduced (nine populations extirpated), and the remaining habitat and populations face a variety of factors[[Page 31843]]acting in combination to reduce the overall viability of the species. The risk of extinction is high because the remaining populations are small, are isolated, and have limited potential for natural recolonization. We find that a threatened species status is not appropriate for the beardless chinchweed because of the species' current precarious condition due to its contracted range, because the stressors are severe and occurring rangewide, and because the stressors are ongoing and expected to continue into the future. Thus, after assessing the best available information, we determine that the beardless chinchweed is in danger of extinction throughout all of its range.Status Throughout a Significant Portion of Its Range Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. Because we have determined that beardless chinchweed is in danger of extinction throughout all of its range, we did not undertake an analysis of any significant portions of its range. Because the beardless chinchweed warrants listing as endangered throughout all of its range, our determination is consistent with the decision in Center for Biological Diversity v. Everson, 2020 WL 437289 (D.D.C Jan. 28, 2020), in which the court vacated the aspect of our Final Policy on Interpretation of the Phrase ``Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ``Endangered Species'' and ``Threatened Species'' (79 FR 37578; July 1, 2014) that provided the Service and National Marine Fisheries Service do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range.Determination of Status Our review of the best available scientific and commercial information indicates that the beardless chinchweed meets the definition of an endangered species. Therefore, we are listing the beardless chinchweed as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.Available Conservation Measures Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies; private organizations; and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below. The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the stressors to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems. Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new stressors to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for downlisting (reclassification from endangered to threatened) or delisting (***removal*** from listed status), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website ([*http://www.fws.gov/endangered*](http://www.fws.gov/endangered)), or from our Arizona Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT). Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration of native vegetation, research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal ***lands*** because their range may occur primarily or solely on non-Federal ***lands***. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal ***lands***. Following publication of this final rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Arizona will be eligible for Federal funds to implement management actions that promote the protection or recovery of the beardless chinchweed. Information on our grant programs that are available to aid species recovery can be found at [*http://www.fws.gov/grants*](http://www.fws.gov/grants). Section 8(a) of the Act (16 U.S.C 1537(a)) authorizes the provision of limited financial assistance for the development and management of programs that the Secretary of the Interior determines to be necessary or useful for the conservation of endangered or threatened species in foreign countries. Sections 8(b) and 8(c) of the Act (16 U.S.C 1537(b) and (c)) authorize the Secretary to encourage conservation programs for foreign listed species, and to provide assistance for such programs, in the form of personnel and the training of personnel. Please let us know if you are interested in participating in recovery efforts for the beardless chinchweed. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see FOR FURTHER INFORMATION CONTACT). Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they[[Page 31844]]authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species, the responsible Federal agency must enter into consultation with the Service. Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal ***lands*** administered by the USFS (Coronado National ***Forest***), Bureau of ***Land*** Management, U.S Customs and Border Protection, and NPS (Coronado National Memorial). The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. The prohibitions of section 9(a)(2) of the Act, codified at 50 CFR 17.61, make it illegal for any person subject to the jurisdiction of the United States to: Import or export; ***remove*** and reduce to possession from areas under Federal jurisdiction; maliciously damage or destroy on any such area; ***remove***, cut, dig up, or damage or destroy on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce an endangered plant. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal ***land*** management agencies, and State conservation agencies. We may issue permits to carry out otherwise prohibited activities involving endangered plants under certain circumstances. Regulations governing permits are codified at 50 CFR 17.62 With regard to endangered plants, a permit may be issued for scientific purposes or for enhancing the propagation or survival of the species. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act. It is our policy, as published in the Federal Register on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of a listed species. Based on the best available information, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements; this list is not comprehensive: (1) Normal nonnative, invasive species control practices, such as herbicide use, that are carried out in accordance with any existing regulations, permit and label requirements, and best management practices; (2) Annual monitoring efforts; and (3) Additional surveys to understand the extent of occupied habitat. Based on the best available information, the following actions may potentially result in a violation of section 9 of the Act if they are not authorized in accordance with applicable law; this list is not comprehensive: (1) Unauthorized damage or collection of beardless chinchweed from ***lands*** under Federal jurisdiction; (2) Malicious destruction or degradation of the species or associated habitat on ***lands*** under Federal jurisdiction, including the intentional introduction of nonnative organisms that compete with or consume beardless chinchweed. Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arizona Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).II. Critical HabitatBackground Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) Essential to the conservation of the species, and (b) Which may require special management considerations or protection; and (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e , range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g , migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect ***land*** ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private ***lands***. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement ``reasonable and prudent alternatives'' to avoid destruction or adverse modification of critical habitat. Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the[[Page 31845]]species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features that occur in specific occupied areas, we focus on the specific features that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. When designating critical habitat, the Secretary will first evaluate areas occupied by the species. The Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species. In addition, for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species. Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards under the Endangered Species Act (published in the Federal Register on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge. Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.Physical or Biological Features In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define ``physical or biological features essential to the conservation of the species'' as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species. In considering whether features are essential to the conservation of the species, the Service may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring;[[Page 31846]]and habitats that are protected from disturbance. The beardless chinchweed needs multiple populations distributed across its range that are large enough to withstand stochastic events, and connectivity to reestablish extirpated populations. Species that are widely distributed are less susceptible to extinction and more likely to be viable than species confined to small ranges (Carroll et al. 2010, entire). Historically, there were 21 populations across seven mountain ranges. Nine populations (and one subpopulation) have been extirpated in the United States, and all populations are extirpated from the Patagonia Mountains in the United States. This leaves six populations across four mountain ranges covering an occupied area of about 2 ha (5 ac) in the United States and six small populations in Mexico. Further, two mountain ranges only have one population each with fewer than 50 individuals. In addition, one mountain range has only two populations, both with fewer than 50 individuals each. The current distribution of this species does not represent its historical geographical distribution. Additional populations are needed to increase the redundancy of the species to secure the species from catastrophic events like wildfire and nonnative grass encroachment. Increased representation in the form of ecological environments are needed to secure the species against environmental changes like increased temperatures, increased drought, and increased evapotranspiration. Specifically, populations at higher altitudes are likely needed to secure the species' viability. All populations need protection from wildfires of high severity and of greater frequency than was known historically and from nonnative grass encroachment. Further, all populations need protection from stressors related to one or more of the following activities: Recreation, road and trail maintenance, grazing, trampling, and mining. As discussed above, these stressors are currently, or will in the near future, impact all populations. Protection is needed from these stressors to ensure the conservation of the species. The minimum viable population size for this species is unknown. General conservation biology indicates that at least 500 individual are needed for a minimum viable population. Currently, 11 of the 12 populations have fewer than 50 individuals. In Arizona, there are currently approximately 992 individual beardless chinchweed plants spread across less than 2 ha (5 ac) within six extant populations spread across four mountain ranges. Space, in the form of habitat described above, is needed for an increase in the number of populations and the number of individuals per population. Space for individual and population growth is needed for the beardless chinchweed, including sites for germination, pollination, reproduction, pollen and seed dispersal, and seed banks in the form of open, native-dominated plains, great basin, and semi-desert grasslands, oak savannas, and Madrean evergreen or oak woodlands at 1,158 to 1,737 m (3,799 to 5,699 ft) in elevation (SEINet, entire) representing the ecosystems where beardless chinchweed occurs. In addition, plants need space on steep, south-facing, sunny to partially shaded hillslopes, with eroding bedrock and open areas with little competition from other plants. Native-dominated habitats have diverse assemblages of vegetation, each with different-shaped and -sized canopy and root system, which creates heterogeneity of form, height, and patchiness and provides openness. The diverse vegetation is dominated by bunchgrasses with open spacing (adjacent to and within 10 m (33 ft) of beardless chinchweed plants), providing beardless chinchweed with the necessary open habitat with little competition. The beardless chinchweed is presumed to be a poor competitor due to its preference for this open habitat and the inability to find the species under dense vegetation conditions. Pollination is necessary for effective fertilization, out-crossing, and seed production in beardless chinchweed. Bees, flies, and butterflies most likely pollinate beardless chinchweed, like other yellow-flowered composites. Many bees and butterflies can travel a distance of 1 km (0.62 mi); consequently, adequate space for pollinators is needed around beardless chinchweed populations to support pollinators and, therefore, cross-pollination within and among populations and subpopulations. In addition, open space is needed in the form of seedbanks for population growth. Further, beardless chinchweed populations need space with soil moisture and nutrients for individual and population growth. Specific details about the physical or biological features essential to this species are described earlier in this document and in the SSA report (Service 2020).Summary of Essential Physical or Biological Features We derived the specific physical or biological features essential to the conservation of the beardless chinchweed from studies of this species' habitat, ecology, and life history, as described below. We have determined that the following physical or biological features of the areas in Cochise, Pima, and Santa Cruz Counties, Arizona, are essential to the conservation of beardless chinchweed: (1) Native-dominated plant communities, consisting of: (a) Plains, great basin, and semi-desert grasslands, oak savanna, or Madrean evergreen woodland; (b) Communities dominated by bunchgrasses with open spacing (adjacent to and within 10 m (33 ft) of individual beardless chinchweed) and with little competition from other plants; and (c) Communities with plants for pollinator foraging and nesting within 1 km (0.62 mi) of beardless chinchweed populations. (2) Between elevation of 1,158 to 1,737 m (3,799 to 5,699 ft) elevation. (3) Eroding limestone or granite bedrock substrate. (4) Steep, south-facing, sunny to partially shaded hillslopes. (5) The presence of pollinators (i.e , flies, bees, and butterflies).Special Management Considerations or Protection When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of this species may require special management considerations or protection to reduce the following stressors: Altered fire regime, nonnative grass encroachment, grazing, erosion, and burial (see table 2, below). Special management considerations or protection are required within critical habitat areas to address these stressors. Management activities that could ameliorate these stressors include (but are not limited to): Prescribed fire, fire breaks, reduction of nonnative grasses, promotion or introduction of native forbs and grasses, cleaning of vegetation management equipment between uses, exclosure fences, and protection from erosion and burial. These management activities will protect the physical or biological features for the species by reducing or avoiding the encroachment or expansion of nonnative grass species, promoting native vegetation, and preventing the succession of vegetation so that open space and sun exposure are[[Page 31847]]maintained in beardless chinchweed habitat. Table 2--Features That May Require Special Management---------------------------------------------------------------------------------------------------------------- Special management orFeatures that may require special Stressors to features protection to address Features protected by management stressors----------------------------------------------------------------------------------------------------------------Native-dominated plant communities Altered fire regime; Fire breaks around Avoidance of encroachment nonnative grasses; populations; prescribed of nonnatives from grazing; road and fires; reduction of wildfires and drought; trail maintenance. nonnative grasses; clean promotion of native equipment to limit the species through natural spread of nonnatives; fire regime or other promotion or introduction tools; avoidance of of native forbs and introducing nonnative grasses. species.Plants for pollinators............ Altered fire regime; Fire breaks around Avoidance of encroachment nonnative grasses. populations; prescribed of nonnatives from fires; reduction of wildfires and drought; nonnative grasses; promotion of native promotion or introduction species through natural of native forbs and fire regime or other grasses. tools; avoidance of introducing nonnative species.Open, sunny sites................. Altered fire regime; Prescribed fires; Elimination or reduction nonnative grasses. reduction of nonnative of the loss of open grasses; promotion or space and sun exposure. introduction of native forbs and grasses.----------------------------------------------------------------------------------------------------------------Criteria Used To Identify Critical Habitat As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. Because of the vulnerability associated with small populations, limited distributions, or both, conservation of the beardless chinchweed requires protection of both existing occupied habitat and potential habitat (i.e , suitable for occupancy but currently unoccupied), and the establishment of new populations to reduce or eliminate such vulnerability. The current distribution of beardless chinchweed is reduced from its historical distribution to a level where the species is in danger of extinction. Of the six U.S populations that occur in four mountain ranges, two populations are in moderate condition and four are in low condition. Conservation of the species will require populations with increased resiliency, abundance, and distribution to increase the redundancy and representation of beardless chinchweed. Due to current stressors and expected future stressors, remaining populations are small, are isolated, and have limited potential for natural recolonization. We anticipate that recovery will require continued protection of existing populations and habitat, as well as reestablishment of populations at a subset of previously occupied habitats throughout the species' historical range in the United States. Reestablishment of additional populations will help to ensure that catastrophic events, such as wildfire, cannot simultaneously affect all known populations (i.e , increased redundancy). For these reasons, we conclude that a critical habitat designation limited to areas occupied at the time of listing would be inadequate to ensure the conservation of the species. We are designating critical habitat in areas within the geographical area currently occupied by the species (i.e , at the time of proposed listing). In this case, we determined that occupied areas are inadequate to ensure the conservation of the species. Thus, we looked at historically occupied areas that currently possess the physical and biological features to determine if any areas are suitable for beardless chinchweed recolonization and subsequent persistence. In addition to areas occupied by the species at the time of listing, we are designating specific areas outside the geographical area occupied by the species at the time of listing (Units 5, 6, and 7), which were historically occupied but are presently unoccupied, because those areas are essential for the conservation of the species and contain one or more of the physical or biological features essential to the conservation of the species. The Service is reasonably certain that the unoccupied areas will contribute to the conservation of the species as a result of ongoing conservation efforts for beardless chinchweed with USFS that are expected to continue, including habitat management and research. When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge. In this case, we used existing occurrence data for the beardless chinchweed and information on the habitat and ecosystems upon which it depends. These sources of information included, but were not limited to: (1) Data used to prepare the rule to list the species; (2) Information from biological surveys; (3) Various agency reports and databases; (4) Information from NPS and other cooperators; (5) Information from species experts; (6) Data and information presented in academic research theses; and (7) Regional Geographic Information System (GIS) data (such as species occurrence data, ***land*** use, topography, aerial imagery, soil data, and ***land*** ownership maps) for area calculations and mapping.Areas Occupied at the Time of Listing In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we reviewed available information pertaining to the habitat requirements of the species, identified specific areas within the geographical area occupied by the species at the time of listing, and examined whether we could identify any specific areas outside[[Page 31848]]the geographical area occupied by the species to be considered for designation as critical habitat. The critical habitat designation does not include all populations known to have been occupied by the species historically; instead, it includes all currently occupied areas within the historical range that have retained the necessary physical or biological features that will allow for the maintenance and expansion of these existing populations. The following populations meet the definition of areas occupied by the species at the time of listing: McCleary Canyon (2 populations), Audubon Research Ranch, Scotia Canyon, Coronado National Memorial, and Ruby Road.Areas Outside the Geographical Area Occupied at the Time of Listing Because we determined that a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species, we are also designating unoccupied areas. Pena Blanca Lake, Summit Motorway, Copper Mountain, Lampshire Well, Harshaw Creek, Flux Canyon, Washington Camp, Box Canyon, and Joe's Canyon are within the historical range of the beardless chinchweed, but are not currently occupied by the species. We determined these sites to be extirpated. Areas not occupied by the species at the time of listing are only considered to be essential if they contain one or more of the physical and biological features essential to the conservation of the species and if we have a reasonable certainty that the area will contribute to the conservation of the species. To determine if these areas are essential for the conservation of beardless chinchweed, we considered the life history, status, and conservation needs of the species such as: (1) The importance of the site to the overall status of the species to prevent extinction and contribute to future recovery of the beardless chinchweed; (2) whether the area could be restored to support the beardless chinchweed; (3) whether the site provides connectivity between occupied sites for genetic exchange; and (4) whether a population of the species could be reestablished in the area. Of the unoccupied areas, Lampshire Well, Harshaw Creek, and Washington Camp on USFS ***lands*** contain a mixture of native and nonnative grasses that could be feasibly restored to native conditions, thus making them suitable for reestablishment of the species, and they are important to the overall status of the species. The reestablishment of the Washington Camp population would reintroduce the species into the Patagonia Mountains, where currently it is extirpated. The reestablishment of beardless chinchweed into the Patagonia Mountains would restore the historical range of the species in terms of occupied mountain ranges. This area would provide key representation and redundancy needed for conservation of the species. Further, the addition of two reestablished populations in the Canelo Hills would increase the redundancy of the species in this area and reduce the chance that a catastrophic event would eliminate all populations in this area. Currently, there is only one population with 37 individuals in the Canelo Hills. Of the remaining historical populations in the United States, Pena Blanca Lake, Summit Motorway, Copper Mountain, Box Canyon, Joe's Canyon, and Flux Canyon are heavily infested with nonnative grasses to an extent where restoration of native vegetation is not likely feasible. Reestablishment of the species to these historical sites is not likely to be successful and, therefore, not likely to contribute to the recovery of the species. Therefore, these remaining historical sites are not included in the designation of critical habitat. In summary, for areas within the geographic area occupied by the species at the time of listing (i.e , currently occupied), we delineated critical habitat unit boundaries by evaluating the habitat suitability of areas within the geographic area occupied at the time of listing, and retaining those units that contain some or all of the physical or biological features to support life-history functions essential for conservation of the species. For areas outside the geographic area occupied by the species at the time of listing, we delineated critical habitat unit boundaries by evaluating areas not known to have been occupied at listing (i.e , that are not currently occupied) but that are within the historical range of the species to determine if they are essential to the survival and recovery of the species. Essential areas are those that: (1) Serve to extend an occupied unit; and (2) expand the geographic distribution within areas not occupied at the time of listing across the historical range of the species. We conclude that the areas we are designating as critical habitat provide for the conservation of the beardless chinchweed because they include habitat for all extant populations and include habitat for connectivity and dispersal opportunities within units. Such opportunities for dispersal assist in maintaining the population structure and distribution of the species. In addition, the unoccupied units each contain one or more of the physical or biological features and are likely to provide for the conservation of the species. Each of the unoccupied areas are on ***lands*** managed by the Coronado National ***Forest***. The ***Forest*** Plan for the Coronado National ***Forest*** contains several important guidelines that will contribute to the conservation of the beardless chinchweed, including control of nonnative vegetation, promotion of native grasses, and protections for species listed under the Act (USFS 2018). Designation of critical habitat will facilitate the application of this guidance where it will do the most good for the beardless chinchweed. As a final step, we evaluated occupied units and refined the area by evaluating the presence or absence of appropriate physical or biological features. We selected the boundary of a unit to include 1 km (0.62 mi) of foraging and reproductive habitat for pollinators necessary for the beardless chinchweed. We then mapped critical habitat units using ArcMap version 10 (Environmental Systems Research Institute, Inc.), a GIS program. The areas included in the critical habitat designation provide sufficient habitat for recruitment, pollinators, seed bank, and seed dispersal. In general, the physical or biological features of critical habitat are contained within 1 km (0.62 mi) of beardless chinchweed plants within the population. When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas such as ***lands*** covered by buildings, pavement, and other structures because such ***lands*** lack the physical or biological features necessary for the beardless chinchweed. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed ***lands***. Any such ***lands*** inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these ***lands*** will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat. We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing (i.e , currently occupied) and that contain one or more of the physical or biological features that are essential to[[Page 31849]]support the life-history processes of the species. Because of the species' vulnerabilities related to small, isolated populations, current and ongoing stressors, and limited distribution, we have determined that occupied areas are inadequate to ensure the conservation of the species. We are also designating specific areas outside the geographical area occupied by the species at the time of listing, that were historically occupied but are presently unoccupied, because we have determined that such areas are essential for the conservation of the species. On December 16, 2020, we published a final rule in the Federal Register (85 FR 81411) adding a definition of ``habitat'' to our regulations for purposes of critical habitat designations under the Endangered Species Act of 1973, as amended (Act). This rule became effective on January 15, 2021 and only applies to critical habitat rules for which a proposed rule was published after January 15, 2021. Consequently, this new regulation does not apply to this final rule. Units are designated based on one or more of the physical or biological features being present to support the beardless chinchweed's life-history processes. Some units contain all of the identified physical or biological features and support multiple life-history processes. Some units contain only some of the physical or biological features necessary to support the beardless chinchweed's particular use of that habitat. The critical habitat designation is defined by the map, as modified by any accompanying regulatory text, presented at the end of this document under Regulation Promulgation. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which the map is based available to the public on [*http://www.regulations.gov*](http://www.regulations.gov) at Docket No. FWS-R2-ES-2018-0104, on our internet site at [*https://www.fws.gov/southwest/es/arizona/Docs\_Species.htm*](https://www.fws.gov/southwest/es/arizona/Docs_Species.htm), and at the field office responsible for the designation (see FOR FURTHER INFORMATION CONTACT).Final Critical Habitat Designation We are designating approximately 10,604 ac (4,291 ha) in eight units as critical habitat for the beardless chinchweed. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the beardless chinchweed. Those eight units are: (1) McCleary Canyon, (2) Audubon Research Ranch, (3) Scotia Canyon, (4) Coronado National Memorial, (5) Lampshire Well, (6) Harshaw Creek, (7) Washington Camp, and (8) Ruby Road. Table 3 shows the name, occupancy of the unit, ***land*** ownership, and approximate area of the designated critical habitat for the beardless chinchweed. Table 3--Critical Habitat Units and Occupancy of Beardless Chinchweed---------------------------------------------------------------------------------------------------------------- Occupied at the time of Size of unit in acres Critical habitat unit listing Ownership (hectares)----------------------------------------------------------------------------------------------------------------1--McCleary Canyon................. Yes.......................... U.S ***Forest*** Service 1,686 ac (682 ha). (USFS).2--Audubon Research Ranch.......... Yes.......................... Bureau of ***Land*** 1,170 ac (474 ha) Management (BLM), BLM; 817 ac (331 ha) USFS, Private USFS; 300 ac (121 (Audubon Research ha) private. Ranch).3--Scotia Canyon................... Yes.......................... USFS................. 855 ac (346 ha).4--Coronado National Memorial...... Yes.......................... National Park Service 2,109 ac (853 ha).5--Lampshire Well.................. No........................... USFS................. 939 ac (380 ha).6--Harshaw Creek................... No........................... USFS................. 1,013 ac (410 ha).7--Washington Camp................. No........................... USFS................. 939 ac (380 ha).8--Ruby Road....................... Yes.......................... USFS................. 776 ac (314 ha). ---------------------- Total.......................... ............................. ..................... 10,604 ac (4,291 ha)----------------------------------------------------------------------------------------------------------------Note: Area sizes may not sum due to rounding. We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the beardless chinchweed, below. Each of the eight units contain at least one of the physical or biological features essential to the conservation of beardless chinchweed (see Summary of Essential Physical or Biological Features, above).Unit 1: McCleary Canyon The McCleary Canyon unit occurs in the northeastern portion of the Santa Rita Mountains in Pima County, Arizona, and is managed by the USFS. This unit is 1,686 ac (682 ha) in size and is currently occupied. The unit contains two extant populations: Gunsight Pass and Wasp Canyon. Each population within the McCleary Canyon unit supports 32 individual beardless chinchweed plants. The proposed Rosemont Copper Mine occurs in this unit, and ongoing and historical mining activities occur throughout the Santa Rita Mountains. This unit also receives substantial recreational pressure and livestock grazing. The Gunsight Pass population is one of the few populations within the range of the beardless chinchweed where native grass species dominate the site. The Wasp Canyon population has a mixture of native and nonnative grass species. The McCleary Canyon unit provides all five of the physical or biological features essential to the conservation of the beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence, promotion of native forbs and grasses, ***removal*** of livestock between April and October, and the creation of exclosures. This unit includes habitat for species already listed under the Act, including the jaguar (Panthera onca), ocelot (Leopardus (=Felis) pardalis), Mexican spotted owl (Strix occidentalis lucida), yellow-billed cuckoo (Coccyzus americanus), and Chiricahua leopard frog (Lithobates chiricahuensis, listed as Rana chiricahuensis). This unit overlaps with designated critical habitat for the jaguar.Unit 2: Audubon Research Ranch The Audubon Research Ranch unit occurs in the northern portion of the Canelo Hills in Santa Cruz County, Arizona, and is managed by the Audubon Society, and some plants occur on the Coronado National ***Forest***. This unit is 2,287 ac (926 ha) in size and is currently occupied. The O'Donnell Canyon population is currently extant but there was one additional population, Post Canyon, that occurred[[Page 31850]]here historically. The Audubon Research Ranch unit supports 37 individual beardless chinchweed plants and is one of the few sites within the range of the beardless chinchweed where native grass species dominate the site. The Audubon Research Ranch unit provides all five of the physical or biological features essential to the conservation of the beardless chinchweed. Features in this unit may require special management considerations, including reduction in nonnative grass presence and promotion of native forbs and grasses. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, Gila chub (Gila intermedia), northern Mexican gartersnake (Thamnophis eques megalops), and Huachuca water-umbel (Lilaeopsis schaffneriana var. recurva). In addition, this unit includes designated critical habitat for Chiricahua leopard frog, Gila chub, and Huachuca water-umbel, and proposed critical habitat for northern Mexican gartersnake.Unit 3: Scotia Canyon The Scotia Canyon unit occurs on the western slopes of the Huachuca Mountains in Cochise County, Arizona, and is managed by the USFS. This unit is 855 ac (346 ha) in size and is currently occupied by beardless chinchweed. This unit includes one extant population estimated to contain 40 individual beardless chinchweed plants. This unit has been impacted by historical mining, grazing, and wildfire. High recreational use also occurs in this unit. The Scotia Canyon unit is one of the few sites within the range of beardless chinchweed where native grass species dominate the site. The Scotia Canyon unit provides all five of the physical or biological features essential to the conservation of the beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence, promotion of native forbs and grasses, reduction in road maintenance activity, ***removal*** of livestock between April and October, and the creation of exclosures. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, and Huachuca water-umbel. In addition, this unit includes designated critical habitat for jaguar and Huachuca water-umbel, and proposed critical habitat for northern Mexican gartersnake.Unit 4: Coronado National Memorial The Coronado National Memorial unit occurs in the southern portion of the Huachuca Mountains in Cochise County, Arizona, and is managed by the NPS. This unit is 2,109 ac (853 ha) in size and is occupied by beardless chinchweed. The unit contains two extant subpopulations: The Visitor Center and the State of Texas Mine. The area around the visitor center supports approximately 785 individual beardless chinchweed plants. Another 61 plants have been documented in the vicinity of the State of Texas mine. This unit includes ***lands*** within the 1 km buffer of foraging and reproductive habitat for pollinators necessary for the beardless chinchweed where the historical subpopulation, Joe's Canyon Trail, occurred. As described in the response to public comments, beardless chinchweed may have been noted at Joe's Canyon Trail in 2012; however, three surveys since 2014 have not detected the species. The ***lands*** in this unit have been affected by historical mining, support a high level of recreational use, and experience ongoing impacts from wildfire. Portions of the Coronado National Memorial unit are dominated by native grass species, while other areas are a mixture of native and nonnative grasses. The Coronado National Memorial unit provides all five of the physical or biological features essential to the conservation of beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence and promotion of native forbs and grasses. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, and Huachuca water-umbel. In addition, this unit includes designated critical habitat for jaguar and Mexican spotted owl.Unit 5: Lampshire Well The Lampshire Well unit occurs in the Canelo Hills in Santa Cruz County, Arizona, and is managed by the USFS. This unit is 939 ac (380 ha) in size and is currently unoccupied. Historically, beardless chinchweed populations occurred on this unit. This unit is characterized by communities of mixed native and nonnative grasses, and is subject to impacts from cross-border activities (foot traffic and increased fire ignition) and wildfire. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, Huachuca water-umbel, and Canelo Hills ladies'-tresses (Spiranthes delitescens). In addition, this unit includes designated critical habitat for jaguar and proposed critical habitat for northern Mexican gartersnake. Although it is currently unoccupied, this unit contains all five of the physical or biological features essential to the conservation of beardless chinchweed. This unit consists of a mix of native and nonnative grasses, with scattered oak and juniper, at an elevation of 1,646 m (5,400 ft), on granitic substrate with steep slopes facing the southwest. There are areas in this unit that contain more native grasses than nonnative grasses. The USFS is committed to managing for the recovery of listed species; reducing nonnative, invasive species; and managing fuel loads to reduce potential for high-intensity wildfire (USDA FS 2018, pp. 18, 67, 212, 216). The Lampshire Well unit is essential to the conservation of the species because it provides for habitat and population restoration opportunities, as well as provides habitat connectivity for beardless chinchweed and its pollinators. Recovery of this species will require new and expanded populations, and this unit provides necessary habitat that will contribute to the species' resiliency (larger and more populations), redundancy (more populations across the range), and representation (opportunities for increased genetic and environmental variation). We have determined that this unoccupied unit contains all five of the physical or biological features that are essential to the conservation of the species and that it is reasonably certain that it will contribute to the conservation of the species.Unit 6: Harshaw Creek The Harshaw Creek unit occurs in the Canelo Hills in Santa Cruz County, Arizona, and is managed by the U.S ***Forest*** Service. This unit is 1,013 ac (410 ha) in size and is currently unoccupied. Historically, beardless chinchweed populations occurred on this unit. This unit is characterized by communities of mixed native and nonnative grasses, and is subject to cross-border activities (foot traffic and increased fire ignition) and wildfire. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, Huachuca water-umbel, and Canelo Hills ladies'-tresses. In addition, this unit includes designated critical habitat for jaguar and proposed[[Page 31851]]critical habitat for northern Mexican gartersnake. Although it is currently unoccupied, portions of this unit contain all five of the physical or biological features essential for the conservation of beardless chinchweed. This unit consists of a mix of native and nonnative grasses, with scattered oak and junipers, at an elevation of 1,494 m (4,900 ft), on granitic, rocky substrate with steep slopes facing the southwest. There are areas in this unit with more native grasses than nonnative grasses. The U.S ***Forest*** Service is committed to managing for the recovery of listed species; reducing nonnative, invasive species; and managing fuel loads to reduce potential for high-intensity wildfire (USDA ***Forest*** Service 2018, pp. 18, 67, 212, 216). The Harshaw Creek unit is essential to the conservation of the species because it provides for habitat and population restoration opportunities, as well as provides habitat connectivity for beardless chinchweed and its pollinators. Recovery of this species will require new and expanded populations, and this unit provides for this needed habitat that will contribute to the species' resiliency (larger and more populations), redundancy (more populations across the range), and representation (opportunities for increased genetic and environmental variation). We have determined that this unoccupied unit contains all five of the physical or biological features that are essential to the conservation of the species and that it is reasonably certain to contribute to the conservation of the species.Unit 7: Washington Camp The Washington Camp unit occurs in the northeastern portion of the Patagonia Mountains in Santa Cruz County, Arizona, and is managed by the U.S ***Forest*** Service. This unit is 939 ac (380 ha) in size and is currently unoccupied. A number of mining activities are proposed on ***lands*** within this unit, and this unit is also subject to cross-border activities (foot traffic and increased fire ignition), recreational use, and wildfire. This unit is characterized by a mixture of native and nonnative grass species. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, and northern Mexican gartersnake. In addition, this unit includes designated critical habitat for jaguar and Mexican spotted owl, and proposed critical habitat for northern Mexican gartersnake. Although it is currently unoccupied, portions of this unit contain all five of the physical or biological features essential for the conservation of beardless chinchweed. This unit consists of a mix of native and nonnative grasses, with scattered oak and juniper at an elevation of 1,646 m (5,400 ft), on granitic substrate with steep slopes facing the southwest. There are areas in this unit that contain more native grasses than nonnative grasses. The U.S ***Forest*** Service is committed to managing for the recovery of listed species; reducing nonnative, invasive species; and managing fuel loads to reduce potential for high-intensity wildfire (USDA ***Forest*** Service 2018, pp. 18, 67, 212, 216). The Washington Camp unit is essential to the conservation of the species because it provides for habitat and population restoration opportunities, as well as provides habitat connectivity for beardless chinchweed and its pollinators. Recovery of this species will require new and expanded populations, and this unit provides for this needed habitat that will contribute to the species' resiliency (larger and more populations), redundancy (more populations across the range), and representation (opportunities for increased genetic and environmental variation). We have determined that this unoccupied unit contains one or more of the physical or biological features that are essential to the conservation of the species and that it is reasonably certain that it will contribute to the conservation of the species.Unit 8: Ruby Road The Ruby Road unit occurs in the Atascosa-Pajarito Mountains in Santa Cruz County, Arizona, and is managed by the U.S ***Forest*** Service. This unit is 776 ac (314 ha) in size and is currently occupied. There is one extant population, Ruby Road, within this unit that supports approximately 10 individual beardless chinchweed plants. Despite the fact that nonnative grasses dominate this unit, beardless chinchweed is able to overcome this competition by occurring in areas along a roadside that is regularly maintained, which ***removes*** much of the nonnative grass cover. This unit has been affected by past mining activities, and is subject to ongoing cross-border activities (foot traffic and increased fire ignition), recreational use, grazing, and wildfire. The Ruby Road unit currently provides four of the physical or biological features essential to the conservation of beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence, promotion of native forbs and grasses, reduction in road maintenance activity, ***removal*** of livestock between April and October, and creation of exclosures. This unit includes habitat for species already listed under the Act: Jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, and northern Mexican gartersnake. In addition, this unit includes designated critical habitat for jaguar, Mexican spotted owl, and Chiricahua leopard frog.Effects of Critical Habitat DesignationSection 7 Consultation Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat. We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private ***lands*** that require a Federal permit (such as a permit from the U.S Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C 1251 et seq.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private ***lands*** that are not federally funded, authorized, or carried out by a Federal agency, do not require section 7 consultation.[[Page 31852]] Compliance with the requirements of section 7(a)(2) is documented through our issuance of: (1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or (2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat. When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define ``reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during consultation that: (1) Can be implemented in a manner consistent with the intended purpose of the action, (2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, (3) Are economically and technologically feasible, and (4) Would, in the Service Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable. Regulations at 50 CFR 402.16 require Federal agencies to reinitiate formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation, we have listed a new species or designated critical habitat that may be affected by the Federal action, or the action has been modified in a manner that affects the species or critical habitat in a way not considered in the previous consultation. In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but the regulations also specify some exceptions to the requirement to reinitiate consultation on specific ***land*** management plans after subsequently listing a new species or designating new critical habitat. See the regulations for a description of those exceptions.Application of the ``Adverse Modification'' Standard The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species. Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final rule that designates critical habitat, activities involving a Federal action that may violate 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation. Activities that the Services may, during a consultation under section 7(a)(2) of the Act, find are likely to destroy or adversely modify critical habitat include, but are not limited to: (1) Actions that would ***remove*** native bunchgrass communities. Such activities could include, but are not limited to, livestock grazing; fire management; trails construction and maintenance; infrastructure and road construction and maintenance; recreation management; minerals extraction and restoration; visitor use and management; and construction and maintenance of border roads, fences, barriers, and towers. These activities could eliminate or reduce open habitat necessary for growth, seed production, seedbank, and pollinators of beardless chinchweed. (2) Actions that would result in the introduction, spread, or augmentation of nonnative grass species. Such activities could include, but are not limited to, livestock grazing; fire management; trails construction and maintenance; infrastructure and road construction and maintenance; recreation management; minerals extraction and restoration; visitor use and management; and construction and maintenance of border roads, fences, barriers, and towers. These activities could increase the amount of nonnative grasses or introduce nonnative grasses, which eliminate or reduce open habitat necessary for growth, seed production, seedbank, and pollinators of beardless chinchweed. (3) Actions that would promote high-severity wildfires. Such activities could include, but are not limited to, recreation and encouraging the encroachment of nonnative grasses. These activities could eliminate or reduce open habitat necessary for growth, seed production, seedbank, and pollinators of beardless chinchweed.ExemptionsApplication of Section 4(a)(3) of the Act Section 4(a)(3)(B)(i) of the Act (16 U.S.C 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any ***lands*** or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no Department of Defense ***lands*** with a completed INRMP within the final critical habitat designation.Consideration of Impacts Under Section 4(b)(2) of the Act Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. On December 18, 2020, we published a final rule in the Federal Register (85 FR 82376) revising portions of our regulations pertaining to exclusions of critical habitat. These final regulations became effective on January 19, 2021 and apply to critical habitat rules for which a proposed rule was published after January 19, 2021. Consequently, these new regulations do not apply to this final rule. We describe below the process that we undertook for taking into[[Page 31853]]consideration each category of impacts and our analyses of the relevant impacts.Consideration of Economic Impacts Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. To assess the probable economic impacts of a designation, we must first evaluate specific ***land*** uses or activities and projects that may occur in the area of the critical habitat. We then must evaluate the impacts that a specific critical habitat designation may have on restricting or modifying specific ***land*** uses or activities for the benefit of the species and its habitat within the areas proposed. We then identify which conservation efforts may be the result of the species being listed under the Act versus those attributed solely to the designation of critical habitat for this particular species. The probable economic impact of a critical habitat designation is analyzed by comparing scenarios both ``with critical habitat'' and ``without critical habitat.'' The ``without critical habitat'' scenario represents the baseline for the analysis, which includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat (e.g , under the Federal listing as well as other Federal, State, and local regulations). The baseline, therefore, represents the costs of all efforts attributable to the listing of the species under the Act (i.e , conservation of the species and its habitat incurred regardless of whether critical habitat is designated). The ``with critical habitat'' scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts would not be expected without the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat, above and beyond the baseline costs. These are the costs we use when evaluating the benefits of inclusion and exclusion of particular areas from the final designation of critical habitat when conducting a discretionary 4(b)(2) exclusion analysis. For this particular designation, we developed an incremental effects memorandum (IEM) considering the probable incremental economic impacts that may result from the designation of critical habitat. The information contained in our IEM was then used to develop a screening analysis of the probable effects of the designation of critical habitat for the beardless chinchweed (Industrial Economics, Incorporated (IEc) 2018, entire). We began by conducting a screening analysis of the designation of critical habitat in order to focus our analysis on the key factors that are likely to result in incremental economic impacts. The purpose of the screening analysis is to filter out particular geographic areas of critical habitat that are already subject to such protections and are, therefore, unlikely to incur incremental economic impacts. In particular, the screening analysis considers baseline costs (i.e , absent critical habitat designation) and includes probable economic impacts where ***land*** and water use may be subject to conservation plans, ***land*** management plans, best management practices, or regulations that protect the habitat area as a result of the Federal listing status of the species. Ultimately, the screening analysis allows us to focus our analysis on evaluating the specific areas or sectors that may incur probable incremental economic impacts as a result of the designation. If there are any unoccupied units in the critical habitat designation, the screening analysis assesses whether any additional management or conservation efforts may incur incremental economic impacts. This screening analysis, combined with the information contained in our IEM, is what we consider our economic analysis of the critical habitat designation for the beardless chinchweed and is summarized in the narrative below. Executive Orders (E.O ) 12866 and 13563 direct Federal agencies to assess the costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consistent with the E.O regulatory analysis requirements, our effects analysis under the Act may take into consideration impacts to both directly and indirectly affected entities, where practicable and reasonable. If sufficient data are available, we assess to the extent practicable the probable impacts to both directly and indirectly affected entities. As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the designation of critical habitat for beardless chinchweed, first we identified, in the IEM dated August 30, 2018, probable incremental economic impacts associated with the following categories of activities: (1) Federal ***lands*** management (NPS, USFS, Bureau of ***Land*** Management); (2) grazing (USFS, Bureau of ***Land*** Management); (3) wild and prescribed fire (NPS, USFS, Bureau of ***Land*** Management); (4) groundwater pumping (USFS); (5) mining (USFS); (6) fuels management (NPS, USFS, Bureau of ***Land*** Management); (7) transportation (road construction and maintenance; NPS, USFS); and (8) trampling and dust creation from recreation and border protection activities (U.S Customs and Border Protection, USFS, NPS). We considered each industry or category individually. Additionally, we considered whether their activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, the designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where beardless chinchweed is present, Federal agencies would already be required to consult with the Service under section 7 of the Act on activities they conduct, fund, permit, or authorize that may affect the species. When this rule becomes effective (see DATES, above), consultations to avoid the destruction or adverse modification of beardless chinchweed critical habitat will be incorporated into the existing consultation process. In our IEM, we clarified the distinction between the effects that would result from the species being listed and those attributable to the critical habitat designation (i.e , difference between the jeopardy and adverse modification standards) for beardless chinchweed. For species where the designation of critical habitat is finalized concurrently with the listing, like beardless chinchweed, it has been our experience that it is more difficult to discern which conservation efforts are attributable to the species being listed and those which will result solely from the designation of critical habitat. However, the following specific circumstances in this case help to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm or harassment to constitute jeopardy to beardless chinchweed would also likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical[[Page 31854]]habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this designation of critical habitat. The critical habitat designation for beardless chinchweed totals approximately 7,713 ac (3,121 ha, or 73 percent of the total critical habitat designation) of currently occupied habitat and 2,891 ac (1,170 ha, or 27 percent of the total critical habitat designation) of unoccupied habitat (see Table 3, above). Every unit of critical habitat for the beardless chinchweed overlaps with the ranges of a number of currently listed species and designated critical habitats. Therefore, the actual number of section 7 consultations is not expected to increase; however, the analysis within these consultations would expand to consider effects to critical habitat for the beardless chinchweed. Consequently, there would likely be a small increase in the time needed to complete the consultation to include the assessment of beardless chinchweed critical habitat units (IEc 2018, entire). Section 7 consultations involving third parties (State, Tribal, or private ***lands***) are limited. Based on the locations of the critical habitat units and the types of projects we typically evaluate for the Coronado National ***Forest*** and the Coronado National Memorial, we estimate that there would likely be 4 to 6 consultations annually that would include the beardless chinchweed. The entities that would incur incremental costs are Federal agencies, because 97 percent of critical habitat is on Federal ***land***. In the 7,713 ac (3,121 ha) of occupied critical habitat (Units 1, 2, 3, 4, and 8), any actions that may affect the species or its habitat would also affect designated critical habitat. Consequently, it is unlikely that any additional conservation efforts would be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of the beardless chinchweed. Therefore, only administrative costs are expected in these occupied units. While this additional analysis will require time and resources by the Federal action agency, the Service, and third parties, it is expected that, in most circumstances, these costs would predominantly be administrative in nature and would not be significant (IEc 2018, entire). In unoccupied areas, any conservation efforts or associated probable impacts would be considered incremental effects attributed to the critical habitat designation. In units occupied by the chinchweed, we determine the additional administrative cost to address chinchweed critical habitat in the consultation is minor, costing approximately $5,100 per consultation (2017 dollars). For the critical habitat units that are currently occupied by beardless chinchweed (Units 1, 2, 3, 4, and 8), we have not identified any ongoing or future projects or actions that would warrant additional recommendations or modifications to avoid adversely modifying critical habitat above those that we would recommend for avoiding jeopardy. Therefore, project modifications resulting from section 7 consultations in occupied units are unlikely to be affected by the designation of critical habitat. In unoccupied units (Units 5, 6, and 7), we determined the incremental administrative effort will be greater on a per consultation basis. Thus, we concluded an incremental per consultation administrative cost of $15,000 in unoccupied units (2017 dollars). In unoccupied units, incremental project modifications are possible. No known projects are currently scheduled to occur within the designated areas; however, U.S ***Forest*** Service staff express there is always a possibility of future projects related to grazing, transportation, mining, and recreation activities in this region. We discuss potential costs resulting from these activities below. There are grazing allotments that overlap with unoccupied critical habitat. However, only one allotment overlaps with unoccupied critical habitat by more than 5 percent of the allotment's ***land*** area and two allotments with less than 5 percent of unoccupied critical habitat. In unoccupied units, our recommendations regarding alterations in amount or timing of grazing activities are not required because the species is not present. However, U.S ***Forest*** Service may undertake range improvements to reduce the loss of native plant communities (e.g , bunchgrass) in the unoccupied critical habitat overlapping with grazing allotment units. The economic analysis estimates that range improvement projects in a given year may cost the agency from $1,000 to $250,000. During the improvement project, electric fencing (included in the U.S ***Forest*** Service cost estimate) would be installed temporarily to exclude cattle. During this period, there could be a loss of forage, depending on the extent of overlap with existing grazing allotments, resulting in a temporary reduction in the number of animal unit months (AUMs; a measure of the amount of forage consumed by one cow and calf during one month) associated with the relevant allotment. The value of grazing permits associated with allotments on Federal ***land*** can be used to estimate the potential loss to ranchers during an exclusion period. We estimated a range of potential costs related to grazing, based on two scenarios. In the low-end scenario, we determined that AUM reductions would only occur in allotments where critical habitat accounts for greater than 5 percent of the total allotment area. Otherwise, ranchers are likely to be able to implement changes in practices that avoid the need to reduce the amount of cattle grazed on the allotment, and thus they avoid costs associated with lost AUMs. In the high-end scenario, we determined that ranchers are unable to change practices, and the loss in AUMs is proportional to the amount of overlap between designated critical habitat and the relevant allotment. To identify the allotments overlapping unoccupied units and the number of AUMs permitted in each allotment, data were obtained from U.S ***Forest*** Service. Those data were then used to calculate potential AUM reduction for each allotment unit overlapping with unoccupied critical habitat. Only one allotment (San Rafael) overlaps with unoccupied critical habitat by more than 5 percent of the allotment's ***land*** area. In this allotment, a temporary reduction of 402 AUMs is possible. For the remaining allotments, we determined no impact on permitted AUMs in the low-end scenario. In the high-end scenario, a temporary reduction of 747 AUMs is possible if all of the unoccupied units are fenced to exclude cattle during range improvement efforts. The cost of reducing AUMs from occupied critical habitat during range improvement activities is unlikely to exceed $41,000 in the low-end scenario or $76,000 in the high-end scenario (2017 dollars). Impacts associated with reduced AUMs could be greatest in Unit 7 ($27,000), followed by Unit 6 ($25,000) and Unit 5 ($24,000). These estimates represent perpetuity values; thus, the single year loss would be a fraction of this amount. Other activities that could overlap with unoccupied critical habitat include mining and road and trail construction. To avoid adverse effects to critical habitat, U.S ***Forest*** Service might recommend moving these projects, if feasible, to avoid the critical habitat units. This could result in the need to construct additional linear miles of[[Page 31855]]road. If projects can easily be moved to other areas, U.S ***Forest*** Service estimates total, on-time costs to the agency, as well as the project proponents, in the range of $0 to $500,000. Where avoidance of critical habitat is prohibitively expensive, U.S ***Forest*** Service states that it would instead recommend monitoring and subsequent treatment for the introduction or spread of invasive plants due to project activities. The costs to U.S ***Forest*** Service and project proponents of these activities might range from $1,000 to $500,000. For projects that result in a significant amount of vegetation that would not regrow in a timely manner (approximately 2 years), U.S ***Forest*** Service might require more all-inclusive restoration, reclamation, and revegetation of the disturbed project footprints. In these cases, costs to U.S ***Forest*** Service and project proponents might range from $10,000 to $1,000,000. The Service estimates a total of four to six consultations are likely to occur in a given year in designated areas. As a conservative estimate (i.e , more likely to overestimate than underestimate costs), we concluded that six consultations will occur and all of the consultations will be formal. The total administrative cost of these consultations is estimated to be $48,000 (IEc 2018, p. 16), including costs to the Service, the Federal action agency, and third parties. Incremental project modifications resulting solely from the designation of critical habitat are unlikely in occupied critical habitat. In unoccupied units, which are all managed by the U.S ***Forest*** Service, projects associated with grazing, mining, road or trail construction and maintenance, and range improvements are possible. The costs per project, including costs to the U.S ***Forest*** Service and State, local, or private project proponents, might range from $0 (simply moving a project to avoid critical habitat where the overlap between the project and critical habitat is minor) to $1,000,000 (projects that result in a significant amount of surface disturbance, such as a new mining proposal in an unoccupied unit); however, it is very difficult to accurately predict these potential costs as often they are significantly reduced through the section 7 consultation process. When no more than six consultations, and therefore projects, are likely in a given year, the section 7 impacts of this critical habitat designation are unlikely to exceed $10 million in a given year (IEc 2018, p. 16). However, as stated above, no known projects are currently scheduled to occur within the designated unoccupied areas; thus, these estimated impacts are meant to capture a conservative high-end estimate of potential impacts. Therefore, our economic screening analysis indicates the incremental costs associated with critical habitat are unlikely to exceed $100 million in any single year, and, therefore, would not be significant.Exclusions Based on Economic Impacts We considered the economic impacts of the critical habitat designation and the Secretary is not exercising her discretion to exclude any areas from this designation of critical habitat for the beardless chinchweed based on economic impacts. A copy of the IEM and screening analysis with supporting documents may be obtained by contacting the Arizona Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT) or by downloading from the internet at [*http://www.regulations.gov*](http://www.regulations.gov) Exclusions Based on Impacts on National Security and Homeland Security Section 4(a)(3)(B)(i) of the Act may not cover all Department of Defense (DoD) ***lands*** or areas that pose potential national-security concerns (e.g , a DoD installation that is in the process of revising its INRMP for a newly listed species or a species previously not covered). If a particular area is not covered under section 4(a)(3)(B)(i), national-security or homeland-security concerns are not a factor in the process of determining what areas meet the definition of ``critical habitat.'' Nevertheless, when designating critical habitat under section 4(b)(2), the Service must consider impacts on national security, including homeland security, on ***lands*** or areas not covered by section 4(a)(3)(B)(i). Accordingly, we will always consider for exclusion from the designation areas for which DoD, Department of Homeland Security (DHS), or another Federal agency has requested exclusion based on an assertion of national-security or homeland-security concerns. We cannot, however, automatically exclude requested areas. When DoD, DHS, or another Federal agency requests exclusion from critical habitat on the basis of national-security or homeland-security impacts, it must provide a reasonably specific justification of an incremental impact on national security that would result from the designation of that specific area as critical habitat. That justification could include demonstration of probable impacts, such as impacts to ongoing border-security patrols and surveillance activities, or a delay in training or facility construction, as a result of compliance with section 7(a)(2) of the Act. If the agency requesting the exclusion does not provide us with a reasonably specific justification, we will contact the agency to recommend that it provide a specific justification or clarification of its concerns relative to the probable incremental impact that could result from the designation. If the agency provides a reasonably specific justification, we will defer to the expert judgment of DoD, DHS, or another Federal agency as to: (1) Whether activities on its ***lands*** or waters, or its activities on other ***lands*** or waters, have national-security or homeland-security implications; (2) the importance of those implications; and (3) the degree to which the cited implications would be adversely affected in the absence of an exclusion. In that circumstance, in conducting a discretionary section 4(b)(2) exclusion analysis, we will give great weight to national-security and homeland-security concerns in analyzing the benefits of exclusion. No ***lands*** within the designation of critical habitat for beardless chinchweed are owned or managed by the DoD. The U.S Customs and Border Protection (Department of Homeland Security) conducts border security operations and enforcement activities within and outside the 60-foot Roosevelt Reservation along the United States/Mexico border (Unit 4). This rule takes into account any relevant national security impacts of the designation of critical habitat for the beardless chinchweed. We coordinated with the Customs and Border Protection (Department of Homeland Security) on the proposed and final designations of critical habitat. The agency did not request an exclusion from critical habitat based on potential national security impacts. We note that Congress has provided to the Secretary of Homeland Security a number of authorities necessary to carry out the Department's border security mission. One of those authorities is found at section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended (``IIRIRA''). In section 102(a) of IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the ***removal*** of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States. In[[Page 31856]]section 102(b) of IIRIRA, Congress mandated the installation of additional fencing, barriers, roads, lighting, cameras, and sensors on the southwest border. Finally, in section 102(c) of IIRIRA, Congress granted to the Secretary of Homeland Security the authority to waive all legal requirements that he determines are necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of IIRIRA. On May 15, 2019, the Secretary of Homeland Security issued waivers for legal requirements covering border barrier activities directly in the vicinity of the beardless chinchweed's known range and proposed critical habitat (85 FR 9794). No impacts to national security or homeland security were presented to the Service, and we have no reason to expect such impacts from this designation of critical habitat. Consequently, the Secretary is not exercising her discretion to exclude any areas from the final designation based on impacts on national security.Exclusions Based on Other Relevant Impacts Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether there are permitted conservation plans covering the species in the area, such as habitat conservation plans, safe harbor agreements, or candidate conservation agreements with assurances, or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at the existence of Tribal conservation plans and partnerships and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation. In preparing this final rule, we have determined that there are currently no permitted conservation plans or other non-permitted conservation agreements or partnerships for the beardless chinchweed, and the final critical habitat designation does not include any Tribal ***lands*** or trust resources. We anticipate no impact on Tribal ***lands***, partnerships, or permitted or non-permitted plans or agreements from this critical habitat designation. Accordingly, the Secretary is not exercising her discretion to exclude any areas from the final designation based on other relevant impacts.Required DeterminationsRegulatory Planning and Review (Executive Orders 12866 and 13563) Executive Order 12866 provides that the Office of Information and Regulatory Affairs in the Office of Management and Budget (OMB) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant. Executive Order (E.O ) 13563 reaffirms the principles of E.O 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.Regulatory Flexibility Act (5 U.S.C 601 et seq.) Under the Regulatory Flexibility Act (RFA; 5 U.S.C 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C 801 et seq.), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e , small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and ***agricultural*** businesses with annual sales less than $750,000. To determine if potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term ``significant economic impact'' is meant to apply to a typical small business firm's business operations. Under the RFA, as amended, and as understood in the light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, the Service certifies that this critical habitat designation will not have a significant economic impact on a substantial number of small entities. During the development of this final rule, we reviewed and evaluated all information submitted during the comment period on the December 6, 2019, proposed rule (84 FR 67060) that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this critical habitat[[Page 31857]]designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.Energy Supply, Distribution, or Use--Executive Order 13211 Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute ``a significant adverse effect'' when compared to not taking the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with beardless chinchweed conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.Unfunded Mandates Reform Act (2 U.S.C 1501 et seq.) In accordance with the Unfunded Mandates Reform Act (2 U.S.C 1501 et seq.), we make the following findings: (1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or tribal governments, or the private sector, and includes both ``Federal intergovernmental mandates'' and ``Federal private sector mandates.'' These terms are defined in 2 U.S.C 658(5)-(7). ``Federal intergovernmental mandate'' includes a regulation that ``would impose an enforceable duty upon State, local, or tribal governments'' with two exceptions. It excludes ``a condition of Federal assistance.'' It also excludes ``a duty arising from participation in a voluntary Federal program,'' unless the regulation ``relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,'' if the provision would ``increase the stringency of conditions of assistance'' or ``place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or tribal governments ``lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ``Federal private sector mandate'' includes a regulation that ``would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.'' The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments. (2) We do not believe that this rule will significantly or uniquely affect small governments because the area included in the critical habitat designation is largely owned by Federal agencies, with a small amount of private ***land*** (3 percent). Consequently, we do not believe that the critical habitat designation significantly or uniquely affects small government entities. Therefore, a Small Government Agency Plan is not required.Takings--Executive Order 12630 In accordance with E.O 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the beardless chinchweed in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private ***lands*** or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect ***land*** ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for beardless chinchweed does not pose significant takings implications for ***lands*** within or affected by the designation.Federalism--Executive Order 13132 In accordance with E.O 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of the critical habitat designation with, the appropriate State resource agencies in Arizona. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the State, or on the relationship between the national government and the State, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist these local governments in long-range planning because these local governments no longer have to wait for case-by-case section 7 consultations to occur. Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation[[Page 31858]]under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.Civil Justice Reform--Executive Order 12988 In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this rule identifies the elements of physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on a map, and the rule provides several options for the interested public to obtain more detailed location information, if desired.Paperwork Reduction Act of 1995 (44 U.S.C 3501 et seq.) This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C 3501 et seq.) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.National Environmental Policy Act (42 U.S.C 4321 et seq.) It is our position that, outside the jurisdiction of the U.S Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C 4321 et seq.) in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244). This position was upheld by the U.S Court of Appeals for the Ninth Circuit (Douglas County v. Babbitt, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S 1042 (1996)).Government-to-Government Relationship With Tribes In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal ***lands*** are not subject to the same controls as Federal public ***lands***, to remain sensitive to Indian culture, and to make information available to Tribes. We determined that there are no Tribal ***lands*** occupied by the beardless chinchweed at the time of listing that contain the physical or biological features essential to the conservation of the species, and no Tribal ***lands*** unoccupied by the beardless chinchweed that are essential to the conservation of the species. Therefore, we are not designating critical habitat for the beardless chinchweed on Tribal ***lands***, and no Tribal ***lands*** are affected by the designation.References Cited A complete list of references cited in the SSA report and this rulemaking is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R2-ES-2018-0104 and upon request from the Arizona Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).Authors The primary authors of this final rule are the staff members of the U.S Fish and Wildlife Service's Species Assessment Team and the Arizona Ecological Services Field Office.List of Subjects in 50 CFR Part 17 Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Regulation Promulgation Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:PART 17--ENDANGERED AND THREATENED WILDLIFE AND PLANTS01. The authority citation for part 17 continues to read as follows: Authority: 16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.02. Amend Sec. 17.12(h), the List of Endangered and Threatened Plants, by adding an entry for ``Pectis imberbis'' in alphabetical order under FLOWERING PLANTS to read as set forth below:Sec. 17.12 Endangered and threatened plants.\* \* \* \* \* (h) \* \* \*---------------------------------------------------------------------------------------------------------------- Listing citations and Scientific name Common name Where listed Status applicable rules---------------------------------------------------------------------------------------------------------------- Flowering Plants \* \* \* \* \* \* \*Pectis imberbis................. Beardless Wherever found.... E 86 FR [INSERT Federal chinchweed. Register PAGE WHERE THE DOCUMENT BEGINS], June 15, 2021; 50 CFR 17.96(a).\CH\ \* \* \* \* \* \* \*----------------------------------------------------------------------------------------------------------------03. Amend Sec. 17.96(a) by adding an entry, in alphabetical order, for ``Family Asteraceae: Pectis imberbis (beardless chinchweed)'' to read as follows:Sec. 17.96 Critical habitat--plants. (a) Flowering plants.\* \* \* \* \*Family Asteraceae: Pectis imberbis (Beardless Chinchweed) (1) Critical habitat units are depicted for Cochise, Pima, and Santa Cruz[[Page 31859]]Counties, Arizona, on the map in this entry. (2) Within these areas, the physical or biological features essential to the conservation of the beardless chinchweed consist of the following components: (i) Native-dominated plant communities, consisting of: (A) Plains, great basin, and semi-desert grasslands, oak savanna, or Madrean evergreen woodland; (B) Communities dominated by bunchgrasses with open spacing (adjacent to and within 10 meters (33 feet) of individual beardless chinchweed plants) and with little competition from other plants; and (C) Communities with plants for pollinator foraging and nesting within 1 kilometer (0.62 miles) of beardless chinchweed populations. (ii) 1,158 to 1,737 meters (3,799 to 5,699 feet) elevation. (iii) Eroding limestone or granite bedrock substrate. (iv) Steep, south-facing, sunny to partially shaded hillslopes. (v) The presence of pollinators (i.e , flies, bees, and butterflies). (3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the ***land*** on which they are located existing within the legal boundaries on the effective date of the rule. (4) Data layers defining map units were created using ArcMap version 10 (Environmental Systems Research Institute, Inc.), a geographic information systems program on a base of USA Topo Maps. Critical habitat units were then mapped using NAD 1983, Universal Transverse Mercator (UTM) Zone 12N coordinates. The maps in this entry, as modified by any accompanying regulatory text, establishes the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service's internet site at [*https://www.fws.gov/southwest/es/arizona/Docs\_Species.htm*](https://www.fws.gov/southwest/es/arizona/Docs_Species.htm) and at [*http://www.regulations.gov*](http://www.regulations.gov) at Docket No. FWS-R2-ES-2018-0104, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2 (5) Note: Index map follows:BILLING CODE 4333-15-P[GRAPHIC] [TIFF OMITTED] TR15JN21.000[[Page 31860]] (6) Unit 1: McCleary Canyon, Pima County, Arizona. (i) Unit 1 consists of 682 hectares (1,686 acres) of U.S ***Forest*** Service ***lands***. (ii) Map of Unit 1 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.001 [[Page 31861]] (7) Unit 2: Audubon Research Ranch, Santa Cruz County, Arizona. (i) Unit 2 consists of 926 hectares (2,287 acres) of ***land***, of which 331 hectares (817 acres) are owned by the U.S ***Forest*** Service, 474 hectares (1,170 acres) by the Bureau of ***Land*** Management, and 121 hectares (300 acres) by the Audubon Research Ranch. (ii) Map of Unit 2 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.002 [[Page 31862]] (8) Unit 3: Scotia Canyon, Cochise County, Arizona. (i) Unit 3 consists of 346 hectares (855 acres) of U.S ***Forest*** Service ***lands***. (ii) Map of Unit 3 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.003 [[Page 31863]] (9) Unit 4: Coronado National Memorial, Cochise County, Arizona. (i) Unit 4 consists of 853 hectares (2,109 acres) of National Park Service ***lands***. (ii) Map of Unit 4 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.004 [[Page 31864]] (10) Unit 5: Lampshire Well, Santa Cruz County, Arizona. (i) Unit 5 consists of 380 hectares (939 acres) of U.S ***Forest*** Service ***lands***. (ii) Map of Unit 5 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.005 [[Page 31865]] (11) Unit 6: Harshaw Creek, Santa Cruz County, Arizona. (i) Unit 6 consists of 410 hectares (1,013 acres) of U.S ***Forest*** Service ***lands***. (ii) Map of Unit 6 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.006 [[Page 31866]] (12) Unit 7: Washington Camp, Santa Cruz County, Arizona. (i) Unit 7 consists of 380 hectares (939 acres) of U.S ***Forest*** Service ***lands***. (ii) Map of Unit 7 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.007 [[Page 31867]] (13) Unit 8: Ruby Road, Santa Cruz County, Arizona. (i) Unit 8 consists of 314 hectares (776 acres) of U.S ***Forest*** Service ***lands***. (ii) Map of Unit 8 follows: [GRAPHIC] [TIFF OMITTED] TR15JN21.008 [[Page 31868]]\* \* \* \* \*Martha Williams,Principal Deputy Director, Exercising the Delegated Authority of the Director, U.S Fish and Wildlife Service.[FR Doc. 2021-12005 Filed 6-14-21; 8:45 am]BILLING CODE 4333-15-C

**Load-Date:** June 16, 2021

**End of Document**



[***FACT SHEET: Bipartisan Infrastructure Framework Creates Economic Opportunities for Rural America July 08, 2021***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:633V-6541-F0YC-N2D6-00000-00&context=1516831)

Impact News Service

July 9, 2021 Friday

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**Length:** 1233 words

**Body**

Washington: White House Administration has issued the following news release:

Today, despite the fact that rural and Tribal communities across the country are asset-rich, they make up a disproportionate number of persistent poverty communities. The Bipartisan Infrastructure Framework invests in rural and Tribal communities, creating jobs in rural America and wealth that stays in rural America. The Framework delivers 100% broadband coverage, rebuilds crumbling infrastructure like roads and bridges, eliminates lead pipes and service lines, builds resilience to climate change and extreme weather events, and puts Americans to work cleaning up pollution that has impacted fossil fuel communities in rural America.

In addition to being the largest-long term investment in our infrastructure in nearly a century – four times the infrastructure investment in the 2009 Recovery Act – the Bipartisan Infrastructure Framework is a generational investment in rural America.

Investments in the Bipartisan Infrastructure Framework to strengthen and create jobs in rural communities include:

Provide high speed internet to every home. More than 35 percent of rural Americans and Tribal communities lack wired access to broadband at acceptable speeds. The Bipartisan Infrastructure Frameworkinvests $65 billion, including through USDA rural broadband programs, to make high-speed internet available to all Americans, bring down high-speed internet prices across the board, and provide technical assistance to communities seeking to expand broadband. With the 1936 Rural Electrification Act, the Federal government made a historic investment in bringing electricity to nearly every home and farm in America, and millions of families and our economy reaped the benefits. Broadband internet is the new electricity. It is necessary for Americans to do their jobs, to accelerate precision ***agriculture***, to participate equally in school learning and health care, and to stay connected.

Ensure clean drinking water in every home. Across the country, including in rural and Tribal communities, pipes and treatment plants are aging and polluted drinking water endanger public health. The Bipartisan Infrastructure Framework invests $55 billion in clean drinking water. It will replace 100 percent of the nation’s lead pipes and service lines, benefiting up to 10 million American households and 400,000 schools and child care centers. The Framework invests in water infrastructure across America, including in Tribal Nations and disadvantaged communities that need it most.

Fix Rural Roads and Bridges. As part of a $110 billion investment to repair America’s crumbling infrastructure, the Bipartisan Infrastructure Framework invests in fixing 10,000 off-system bridges, many in rural areas, that provide critical linkages for communities to economic opportunity.

Build Drought, Fire and Flood Resilience. Last year, the United States faced 22 extreme weather and climate-related disaster events with losses over $1 billion – a cumulative price tag of nearly $100 billion. These included damaging floods, fires, and wind storms across rural America. The Bipartisan Infrastructure Framework invests $52 billion to help communities build resilience to wildfires and floods through investments in ***forest*** management and upgrades to critical infrastructure — such as elevating buildings, roads, and bridges, hardening physical infrastructure, and winterizing the power grid. And, it will fund state and local infrastructure improvements and emergency response strategies, such as planning grants to support the development of evacuation routes or upgrades community shelters.

The Framework also helps Western farmers, ranchers, Tribes, families, and communities better prepare for future droughts. It invests in ecosystem restoration, such as the restoration of wetlands that can reduce flood risk for communities.

Plug Orphan Wells, Clean Up Abandoned Mines, and Remediate Idle Rural Property. In rural and Tribal communities around the country, former industrial and energy sites are now idle and sources of blight and pollution. The Bipartisan Infrastructure Framework provides the full American Jobs Plan funding level — $21 billion – to create good-paying union jobs plugging orphan oil and gas wells, cleaning up abandoned mines, and remediating Brownfield and Superfund sites in rural areas and on Tribal ***lands***. The Bipartisan Infrastructure Framework will create jobs and build wealth in communities across the country that powered our economic growth for decades and have been affected most by the impacts of climate change and pollution, including rural communities and communities of color.

Connect Rural Communities Through Rail. U.S passenger rail lags behind the rest of the world in reliability, speed, and coverage. China already has 22,000 miles of high-speed rail, and is planning to double that by 2035. The lack of rail options affects rural communities in particular. This the largest investment in passenger rail since the creation of Amtrak 50 years ago. The Framework invests $66 billion in passenger and freight rail, including to bring world-class rail service to areas outside the northeast and mid-Atlantic.

Build and Upgrade Airports, Ports, and Waterways in Rural America. While the United States pioneered the modern aviation industry, today, U.S airports lag far behind and many rural airports need repair. Only 9 percent of roads outside ports are in good or very good condition and the American Society of Civil Engineers gives America’s Inland Waterways infrastructure a D+. The Bipartisan Infrastructure Framework meets this challenge by investing $16.3 billion in port infrastructure and $25 billion in airports to address repair and maintenance backlogs, reduce congestion and ***emissions*** near ports and airports, and drive electrification and other low-carbon technologies. Modern, resilient, and sustainable port, airport, and freight infrastructure will help American farmers and ranchers sell their goods around the nation and world by ***removing*** bottlenecks and expediting commerce and reduce the environmental impact on neighboring communities.

Build Electric Transmission Infrastructure in Rural America. Power outages cost the U.S economy up to $70 billion annually. For example, the recent Texas power outages caused estimated losses of up to $90 billion for the state. At times, rural communities can be without power for days during these outages. The Bipartisan Infrastructure Framework meets this challenge by making the single largest investment in transmission in American history. It creates a Grid Development Authority at the Department of Energy to enable a national, clean energy power grid and funds to support activities that reduce the impacts to the electric grid and communities from extreme weather, wildfire, and natural disasters. It deploys long distance, high voltage transmission to enhance reliability and resilience, lower costs, and integrate the highest value clean energy resources. It invests in research and development for advanced transmission and electricity distribution technologies, and smart grid technologies that deliver flexibility and resilience. And, it invests more than $22 billion in demonstration projects and research hubs for next generation technologies like advanced nuclear reactors, carbon capture for industrial plants, and green hydrogen.

**Load-Date:** July 10, 2021

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[***Federal Register: Subsistence Management Regulations for Public Lands in Alaska-2021-2022 and 2022-2023 Subsistence Taking of Fish Regulations Pages 17713 - 17726 [FR DOC #2021-07016]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62CS-TMN1-F0YC-N16F-00000-00&context=1516831)

Impact News Service

April 6, 2021 Tuesday

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF AGRICULTUREForest Service36 CFR Part 242DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 100[Docket No. FWS-R7-SM-2019-0092; FXFR13350700640-212-FF07J00000; FBMS#4500151540]RIN 1018-BE36Subsistence Management Regulations for Public ***Lands*** in Alaska--2021-2022 and 2022-2023 Subsistence Taking of Fish RegulationsAGENCY: ***Forest*** Service, ***Agriculture***; Fish and Wildlife Service, Interior.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: This final rule revises regulations for seasons, harvest limits, methods, and means related to taking of fish for subsistence uses in Alaska during the 2021-2022 and 2022-2023 regulatory years. The Federal Subsistence Board (Board) completes the biennial process of revising subsistence hunting and trapping regulations in even-numbered years and subsistence fishing and shellfish regulations in odd-numbered years; public proposal and review processes take place during the preceding year. The Board also addresses customary and traditional use and rural determinations during the applicable biennial cycle. This rule also revises rural determinations.DATES: This rule is effective April 6, 2021.ADDRESSES: The Board meeting transcripts are available for review at the Office of Subsistence Management, 1011 East Tudor Road, Mail Stop 121, Anchorage, AK 99503, or on the Office of Subsistence Management website ([*https://www.doi.gov/subsistence*](https://www.doi.gov/subsistence)). The comments received in response to the proposed rule are available on [*www.regulations.gov*](http://www.regulations.gov) in Docket No. FWS-R7-SM-2019-0092.FOR FURTHER INFORMATION CONTACT: Chair, Federal Subsistence Board, c/o U.S Fish and Wildlife Service, Attention: Sue Detwiler, Office of Subsistence Management; (907) 786-3888 or [*subsistence@fws.gov*](mailto:subsistence@fws.gov) For questions specific to National ***Forest*** System ***lands***, contact Gregory Risdahl, Subsistence Program Leader, U.S Department of ***Agriculture*** (USDA), ***Forest*** Service, Alaska Region; (907) 302-7354 or [*gregory.risdahl@usda.gov.SUPPLEMENTARY*](mailto:gregory.risdahl@usda.gov.SUPPLEMENTARY) INFORMATION:Background Under Title VIII of the Alaska National Interest ***Lands*** Conservation Act (ANILCA) (16 U.S.C 3111-3126), the Secretary of the Interior and the Secretary of ***Agriculture*** (Secretaries) jointly implement the Federal Subsistence Management Program. This program provides a preference for take of fish and wildlife resources for subsistence uses on Federal public ***lands*** and waters in Alaska. The Secretaries published temporary regulations to carry out this program in the Federal Register on June 29, 1990 (55 FR 27114), and published final regulations in the Federal Register on May 29, 1992 (57 FR 22940). The Program managers have subsequently amended these regulations a number of times. Because this program is a joint effort between Interior and ***Agriculture***, these regulations are located in two titles of the Code of Federal Regulations (CFR): Title 36, ``Parks, ***Forests***, and Public Property,'' and Title 50, ``Wildlife and Fisheries,'' at 36 CFR 242.1-242.28 and 50 CFR 100.1-100.28, respectively. The regulations contain subparts as follows: Subpart A, General Provisions; Subpart B, Program Structure; Subpart C, Board Determinations; and Subpart D, Subsistence Taking of Fish and Wildlife. Consistent with subpart B of these regulations, the Secretaries established a Federal Subsistence Board to administer the Federal Subsistence Management Program. The Board comprises: A Chair appointed by the Secretary of the Interior with concurrence of the Secretary of ***Agriculture***; The Alaska Regional Director, U.S Fish and Wildlife Service; The Alaska Regional Director, National Park Service; The Alaska State Director, Bureau of ***Land*** Management; The Alaska Regional Director, Bureau of Indian Affairs; The Alaska Regional ***Forester***, USDA ***Forest*** Service; and Two public members appointed by the Secretary of the Interior with concurrence of the Secretary of ***Agriculture***. Through the Board, these agencies participate in the development of regulations for subparts C and D, which, among other things, set forth program eligibility and specific harvest seasons and limits. In administering the program, the Secretaries divided Alaska into 10 subsistence resource regions, each of[[Page 17714]]which is represented by a Federal Subsistence Regional Advisory Council (Council). The Councils provide a forum for rural residents with personal knowledge of local conditions and resource requirements to have a meaningful role in the subsistence management of fish and wildlife on Federal public ***lands*** in Alaska. The Council members represent varied geographical, cultural, and user interests within each region. The Board addresses customary and traditional use determinations during the applicable biennial cycle. Section \_\_.24 (customary and traditional use determinations) was originally published in the Federal Register on May 29, 1992 (57 FR 22940). The regulations at 36 CFR 242.4 and 50 CFR 100.4 define ``customary and traditional use'' as ``a long-established, consistent pattern of use, incorporating beliefs and customs which have been transmitted from generation to generation. . . .'' Since 1992, the Board has made a number of customary and traditional use determinations at the request of affected subsistence users. Those modifications for fish and shellfish, along with some administrative corrections, were published in the Federal Register as follows: Modifications to Sec. \_\_.24------------------------------------------------------------------------ Rule made changes to Federal Register citation Date of the following publication provisions of \_\_.24------------------------------------------------------------------------59 FR 27462................... May 27, 1994..... Wildlife and Fish/ Shellfish.59 FR 51855................... October 13, 1994. Wildlife and Fish/ Shellfish.60 FR 10317................... February 24, 1995 Wildlife and Fish/ Shellfish.61 FR 39698................... July 30, 1996.... Wildlife and Fish/ Shellfish.62 FR 29016................... May 29, 1997..... Wildlife and Fish/ Shellfish.63 FR 35332................... June 29, 1998.... Wildlife and Fish/ Shellfish.63 FR 46148................... August 28, 1998.. Wildlife and Fish/ Shellfish.64 FR 1276.................... January 8, 1999.. Fish/Shellfish.66 FR 10142................... February 13, 2001 Fish/Shellfish.67 FR 5890.................... February 7, 2002. Fish/Shellfish.68 FR 7276.................... February 12, 2003 Fish/Shellfish.69 FR 5018.................... February 3, 2004. Fish/Shellfish.70 FR 13377................... March 21, 2005... Fish/Shellfish.71 FR 15569................... March 29, 2006... Fish/Shellfish.72 FR 12676................... March 16, 2007... Fish/Shellfish.72 FR 73426................... December 27, 2007 Wildlife/Fish.74 FR 14049................... March 30, 2009... Fish/Shellfish.76 FR 12564................... March 8, 2011.... Fish/Shellfish.77 FR 35482................... June 13, 2012.... Wildlife.79 FR 35232................... June 19, 2014.... Wildlife.81 FR 52528................... August 8, 2016... Wildlife.83 FR 3079.................... January 23, 2018. Fish.83 FR 50758................... October 9, 2018.. Wildlife.84 FR 39744................... August 12, 2019.. Fish.85 FR 74796................... November 23, 2020 Wildlife.------------------------------------------------------------------------Current Rule The Departments published a proposed rule, Subsistence Management Regulations for Public ***Lands*** in Alaska--2021-22 and 2022-23 Subsistence Taking of Fish Regulations, on February 19, 2020 (85 FR 9430), to amend the fish section of subparts C and D of 36 CFR part 242 and 50 CFR part 100. The proposed rule opened a comment period, which closed on April 20, 2020. The Departments advertised the proposed rule by mail, email, web page, social media, radio, and newspaper, and comments were submitted via [*www.regulations.gov*](http://www.regulations.gov) to Docket No. FWS-R7-SM-2019-0092. During that period, the Councils met and, in addition to other Council business, received suggestions for proposals from the public. The Board received a total of 13 proposals for changes to subpart D. In addition, 12 fisheries closure reviews were presented for comment as required by Board policy that specifies a 3-year review of all closures. Comments were also requested on a subpart C proposal addressing rural determination. After the comment period closed, the Board prepared a booklet describing the proposals and distributed it to the public. The proposals were also available online. The public then had an additional 70 days in which to comment on the proposed regulatory changes, which ended on July 2, 2020. The 10 Councils met again, received public comments, and formulated their recommendations to the Board on proposals for their respective regions. The Councils had a substantial role in reviewing the proposed rule and making recommendations for the final rule. Moreover, a Council Chair, or a designated representative, presented each Councils' recommendations at the Board's public meeting of January 26-29, 2021. These final regulations reflect Board review and consideration of Council recommendations, Tribal and Alaska Native corporation consultations, and public comments. The public received extensive opportunity to review and comment on all changes. Of the 14 valid proposals and 12 fishery closure reviews, 16 were on the Board's non-consensus agenda and 10 were on the consensus agenda. The consensus agenda is made up of proposals for which there is agreement among the affected Councils, a majority of the Interagency Staff Committee members, and the Alaska Department of Fish and Game concerning a proposed regulatory action. Anyone may request that the Board ***remove*** a proposal from the consensus agenda and place it on the non-consensus agenda. The Board votes en masse on the consensus agenda after deliberation and action on all other proposals. Of the proposals on the consensus agenda, the Board adopted eight and rejected two. Analysis and justification for the action taken on each proposal on the consensus agenda are available for review at the Office of Subsistence Management, 1011 East Tudor Road,[[Page 17715]]Mail Stop 121, Anchorage, AK 99503, or on the Office of Subsistence Management website ([*https://www.doi.gov/subsistence*](https://www.doi.gov/subsistence)). Of the proposals on the non-consensus agenda, the Board adopted one; adopted one with modification; rejected six; and deferred eight.Summary of Non-Consensus Proposals Not Adopted by the Board The Board rejected six non-consensus proposals and deferred eight. The rejected proposals were recommended for rejection by the majority of the affected Councils or as noted below.Yukon-Northern Area The Board voted to maintain a closure to the take of all fish on the Jim River drainage, with the expectation that the affected Councils will submit a special action and followup proposal to establish a season and harvest limits. The affected Councils recommended a modification to establish a season with harvest limits; however, this would have gone beyond the scope of the closure review and would not have allowed for the public review process or Tribal consultations regarding a new season and harvest limits. The Board voted to maintain a closure to the take of Arctic Grayling on Nome Creek in the Yukon River drainage, with the expectation that the affected Councils will submit a special action and followup proposal to establish a season and harvest limits. At the Board's meeting, new data was presented that was not available to the Councils during their original discussions and recommendations to the Board. The Council Chairs supported this action.Kuskokwim Area The Board rejected a proposal that would have reduced the required distance between set nets. This action was to prevent overcrowding in the fishing area and was supported by both affected Councils.Aleutian Islands, Alaska Peninsula and Chignik, and Kodiak Areas The Board deferred seven fishery closure reviews, which are in the Kodiak/Aleutians Regional Advisory Council region, to allow for the Council to have additional time to meet with remote communities and have further discussions and allow for additional public input. These closure reviews will be addressed during the next fisheries cycle.Prince William Sound Area The Board deferred a proposal to establish a dip net fishery on the lower Copper River to allow conflicting users groups an opportunity to meet and attempt to reach a compromise. The Board rejected a proposal to require harvest reports to be submitted within 3 days. This proposal was deemed as an undue burden on subsistence users and was supported by both affected Councils. The Board rejected a proposal that would have prohibited the use of mono-filament and multifilament mesh dip nets during specified times along the upper Copper River. This proposal was deemed as an undue burden on subsistence users and was supported by both affected Councils. The Board rejected a proposal that would have prohibited fishing with dip nets from boats or watercraft along the upper Copper River. This action would have reduced opportunity for subsistence users and was supported by one Council and opposed by another.Summary of Non-Consensus Proposals Adopted by the Board The Board adopted one proposal and one proposal with modification on the non-consensus agenda. The modification was suggested by the affected Council and developed during the analysis process. All of the adopted proposals were recommended for adoption by at least one of the Councils as noted below.Prince William Sound Area The Board adopted a proposal to prohibit the use of bathymetry and or fish locator devices while fishing on the upper Copper River. This regulation does not require the ***removal*** or uninstallation of these devices from the boat or watercraft. This action was supported by one Council and opposed by another.Southcentral Region The Board adopted with modification a proposal that determined the community (Census Designated Place) of Moose Pass as rural. The Board modified this determination to also include the Census Designated Places of Crown Point and Primrose. This action was supported by the affected Council. These final regulations reflect Board review and consideration of Council recommendations, Tribal and Alaska Native corporation consultations, and public comments. While all public comments received on the proposed rule were considered, some were outside the scope of this rulemaking action. Because this rule concerns public ***lands*** managed by an agency or agencies in both the Departments of ***Agriculture*** and the Interior, identical text will be incorporated into 36 CFR part 242 and 50 CFR part 100.Conformance With Statutory and Regulatory AuthoritiesAdministrative Procedure Act Compliance The Board has provided extensive opportunity for public input and involvement in compliance with Administrative Procedure Act requirements, including publishing a proposed rule in the Federal Register, participation in multiple Council meetings, additional public review and comment on all proposals for regulatory change, and opportunity for additional public comment during the Board meeting prior to deliberation. Additionally, an administrative mechanism exists (and has been used by the public) to request reconsideration of the Board's decision on any particular proposal for regulatory change (36 CFR 242.20 and 50 CFR 100.20). Therefore, the Board believes that sufficient public notice and opportunity for involvement have been given to affected persons regarding Board decisions. In the more than 30 years that the Program has been operating, no benefit to the public has been demonstrated by delaying the effective date of the subsistence regulations. A lapse in regulatory control could affect the continued viability of fish or wildlife populations and future subsistence opportunities for rural Alaskans, and would generally fail to serve the overall public interest. Therefore, the Board finds good cause pursuant to 5 U.S.C 553(d)(3) to make this rule effective upon the date set forth in DATES to ensure continued operation of the subsistence program.National Environmental Policy Act Compliance A Draft Environmental Impact Statement that described four alternatives for developing a Federal Subsistence Management Program was distributed for public comment on October 7, 1991. The Final Environmental Impact Statement (FEIS) was published on February 28, 1992. The Record of Decision (ROD) on Subsistence Management for Federal Public ***Lands*** in Alaska was signed April 6, 1992. The selected alternative in the FEIS (Alternative IV) defined the administrative framework of an annual regulatory cycle for subsistence regulations.[[Page 17716]] A 1997 environmental assessment dealt with the expansion of Federal jurisdiction over fisheries and is available at the office listed under FOR FURTHER INFORMATION CONTACT. The Secretary of the Interior, with concurrence of the Secretary of ***Agriculture***, determined that expansion of Federal jurisdiction does not constitute a major Federal action significantly affecting the human environment and, therefore, signed a Finding of No Significant Impact.Section 810 of ANILCA An ANILCA section 810 analysis was completed as part of the FEIS process on the Federal Subsistence Management Program. The intent of all Federal subsistence regulations is to accord subsistence uses of fish and wildlife on public ***lands*** a priority over the taking of fish and wildlife on such ***lands*** for other purposes, unless restriction is necessary to conserve healthy fish and wildlife populations. The final section 810 analysis determination appeared in the April 6, 1992, ROD and concluded that the Program, under Alternative IV with an annual process for setting subsistence regulations, may have some local impacts on subsistence uses, but will not likely restrict subsistence uses significantly. During the subsequent environmental assessment process for extending fisheries jurisdiction, an evaluation of the effects of this rule was conducted in accordance with section 810. That evaluation also supported the Secretaries' determination that the rule will not reach the ``may significantly restrict'' threshold that would require notice and hearings under ANILCA section 810(a).Paperwork Reduction Act of 1995 (PRA) This rule does not contain any new collections of information that require Office of Management and Budget (OMB) approval under the PRA (44 U.S.C 3501 et seq.). OMB has reviewed and approved the collections of information associated with the subsistence regulations at 36 CFR part 242 and 50 CFR part 100, and assigned OMB Control Number 1018-0075, with an expiration date of January 31. 2024. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.Regulatory Planning and Review (Executive Orders 12866 and 13563) Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant. Executive Order 13563 reaffirms the principles of E.O 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.Regulatory Flexibility Act The Regulatory Flexibility Act of 1980 (5 U.S.C 601 et seq.) requires preparation of flexibility analyses for rules that will have a significant effect on a substantial number of small entities, which include small businesses, organizations, or governmental jurisdictions. In general, the resources to be harvested under this rule are already being harvested and consumed by the local harvester and do not result in an additional dollar benefit to the economy. However, we estimate that two million pounds of meat are harvested by subsistence users annually and, if given an estimated dollar value of $3.00 per pound, this amount would equate to about $6 million in food value Statewide. Based upon the amounts and values cited above, the Departments certify that this rulemaking will not have a significant economic effect on a substantial number of small entities within the meaning of the Regulatory Flexibility Act.Small Business Regulatory Enforcement Fairness Act Under the Small Business Regulatory Enforcement Fairness Act (5 U.S.C 801 et seq.), this rule is not a major rule. It does not have an effect on the economy of $100 million or more, will not cause a major increase in costs or prices for consumers, and does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S -based enterprises to compete with foreign-based enterprises.Executive Order 12630 Title VIII of ANILCA requires the Secretaries to administer a subsistence priority on public ***lands***. The scope of this Program is limited by definition to certain public ***lands***. Likewise, these regulations have no potential takings of private property implications as defined by Executive Order 12630.Unfunded Mandates Reform Act The Secretaries have determined and certify pursuant to the Unfunded Mandates Reform Act, 2 U.S.C 1502 et seq., that this rulemaking will not impose a cost of $100 million or more in any given year on local or State governments or private entities. The implementation of this rule is by Federal agencies, and there is no cost imposed on any State or local entities or Tribal governments.Executive Order 12988 The Secretaries have determined that these regulations meet the applicable standards provided in sections 3(a) and 3(b)(2) of Executive Order 12988, regarding civil justice reform.Executive Order 13132 In accordance with Executive Order 13132, the rule does not have sufficient federalism implications to warrant the preparation of a federalism summary impact statement. Title VIII of ANILCA precludes the State from exercising subsistence management authority over fish and wildlife resources on Federal ***lands*** unless it meets certain requirements.Executive Order 13175 The Alaska National Interest ***Lands*** Conservation Act, Title VIII, does not provide specific rights to Tribes for the subsistence taking of wildlife, fish, and shellfish. However, the Board provided federally recognized Tribes and Alaska Native corporations opportunities to consult on this rule. Consultation with Alaska Native corporations are based on Public Law 108-199, div. H, Sec. 161, Jan. 23, 2004, 118 Stat. 452, as amended by Public Law 108-447, div. H, title V, Sec. 518, Dec. 8, 2004, 118 Stat. 3267, which provides that: ``The Director of the Office of Management and Budget and all Federal agencies shall hereafter consult with Alaska Native corporations on the same basis as Indian Tribes under Executive Order No. 13175.'' The Secretaries, through the Board, provided a variety of opportunities for consultation: commenting on proposed changes to the existing rule; engaging in dialogue at the Council meetings; engaging in dialogue at the Board's meetings; and providing input in[[Page 17717]]person, by mail, email, or phone at any time during the rulemaking process. On January 26, 2021, the Board provided federally recognized Tribes and Alaska Native Corporations a specific opportunity to consult on this rule prior to the start of its public regulatory meeting. federally recognized Tribes and Alaska Native Corporations were notified by mail and telephone and were given the opportunity to attend via teleconference.Executive Order 13211 This Executive Order requires agencies to prepare Statements of Energy Effects when undertaking certain actions. However, this rule is not a significant regulatory action under E.O 13211, affecting energy supply, distribution, or use, and no Statement of Energy Effects is required.Drafting Information Theo Matuskowitz drafted these regulations under the guidance of Sue Detwiler of the Office of Subsistence Management, Alaska Regional Office, U.S Fish and Wildlife Service, Anchorage, Alaska. Additional assistance was provided by Paul McKee, Alaska State Office, Bureau of ***Land*** Management; Dr. Joshua Ream, Alaska Regional Office, National Park Service; Dr. Glenn Chen, Alaska Regional Office, Bureau of Indian Affairs; Vince Mathews, Alaska Regional Office, U.S Fish and Wildlife Service; and Gregory Risdahl, Alaska Regional Office, USDA ***Forest*** Service.List of Subjects36 CFR Part 242 Administrative practice and procedure, Alaska, Fish, National ***forests***, Public ***lands***, Reporting and recordkeeping requirements, Wildlife.50 CFR Part 100 Administrative practice and procedure, Alaska, Fish, National ***forests***, Public ***lands***, Reporting and recordkeeping requirements, Wildlife.Regulation Promulgation For the reasons set out in the preamble, the Federal Subsistence Board amends title 36, part 242, and title 50, part 100, of the Code of Federal Regulations, as set forth below.PART \_--SUBSISTENCE MANAGEMENT REGULATIONS FOR PUBLIC ***LANDS*** IN ALASKA01. The authority citation for both 36 CFR part 242 and 50 CFR part 100 continues to read as follows: Authority: 16 U.S.C 3, 472, 551, 668dd, 3101-3126; 18 U.S.C 3551-3586; 43 U.S.C 1733.Subpart C--Board Determinations02. Amend Sec. \_\_.23 by revising paragraph (a) to read as follows:Sec. \_\_.23 Rural determinations. (a) The Board has determined all communities and areas to be rural in accordance with Sec. 100.15 except the following: Fairbanks North Star Borough; Homer area--including Homer, Anchor Point, Kachemak City, and Fritz Creek; Juneau area--including Juneau, West Juneau, and Douglas; Kenai area--including Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch; Ketchikan area--including Ketchikan City, Clover Pass, North Tongass Highway, Ketchikan East, Mountain Point, Herring Cove, Saxman East, Pennock Island, and parts of Gravina Island; Municipality of Anchorage; Seward area--including Seward and Valdez, and Wasilla/Palmer area--including Wasilla, Palmer, Sutton, Big Lake, Houston, and Bodenberg Butte.\* \* \* \* \*Subpart D--Subsistence Taking of Fish and Wildlife03. Amend Sec. \_\_.27 by revising paragraphs (e)(3), (4), (5), (10), and (11) to read as follows:Sec. \_\_.27 Subsistence taking of fish.\* \* \* \* \* (e) \* \* \* (3) Yukon-Northern Area. The Yukon-Northern Area includes all waters of Alaska between the latitude of Point Romanof and the latitude of the westernmost point of the Naskonat Peninsula, including those waters draining into the Bering Sea, and all waters of Alaska north of the latitude of the westernmost tip of Point Hope and west of 141[deg] West longitude, including those waters draining into the Arctic Ocean and the Chukchi Sea. (i) Unless otherwise restricted in this section, you may take fish in the Yukon-Northern Area at any time. In those locations where subsistence fishing permits are required, only one subsistence fishing permit will be issued to each household per year. You may subsistence fish for salmon with rod and reel in the Yukon River drainage 24 hours per day, 7 days per week, unless rod and reel are specifically otherwise restricted in this paragraph (e)(3). (ii) For the Yukon River drainage, Federal subsistence fishing schedules, openings, closings, and fishing methods are the same as those issued for the subsistence taking of fish under Alaska Statutes (AS 16.05.060), unless superseded by a Federal special action. (iii) In the following locations, you may take salmon during the open weekly fishing periods of the State commercial salmon fishing season and may not take them for 24 hours before the opening of the State commercial salmon fishing season: (A) In District 4, excluding the Koyukuk River drainage; (B) In Subdistricts 4B and 4C from June 15 through September 30, salmon may be taken from 6 p.m Sunday until 6 p.m Tuesday and from 6 p.m Wednesday until 6 p.m Friday; (C) In District 6, excluding the Kantishna River drainage, salmon may be taken from 6 p.m Friday until 6 p.m Wednesday. (iv) During any State commercial salmon fishing season closure of greater than 5 days in duration, you may not take salmon during the following periods in the following districts: (A) In District 4, excluding the Koyukuk River drainage, salmon may not be taken from 6 p.m Friday until 6 p.m Sunday; (B) In District 5, excluding the Tozitna River drainage and Subdistrict 5D, salmon may not be taken from 6 p.m Sunday until 6 p.m Tuesday. (v) Except as provided in this section, and except as may be provided by the terms of a subsistence fishing permit, you may take fish other than salmon at any time. (vi) In Districts 1, 2, 3, and Subdistrict 4A, excluding the Koyukuk and Innoko River drainages, you may not take salmon for subsistence purposes during the 24 hours immediately before the opening of the State commercial salmon fishing season. (vii) In Districts 1, 2, and 3: (A) After the opening of the State commercial salmon fishing season through July 15, you may not take salmon for subsistence for 18 hours immediately before, during, and for 12 hours after each State commercial salmon fishing period; (B) After July 15, you may not take salmon for subsistence for 12 hours immediately before, during, and for 12 hours after each State commercial salmon fishing period. (viii) In Subdistrict 4A after the opening of the State commercial salmon fishing season, you may not take salmon for subsistence for 12 hours immediately before, during, and for 12 hours after each State commercial salmon fishing period; however, you may take Chinook salmon during the[[Page 17718]]State commercial fishing season, with drift gillnet gear only, from 6 p.m Sunday until 6 p.m Tuesday and from 6 p.m Wednesday until 6 p.m Friday. (ix) You may not subsistence fish in the following drainages located north of the main Yukon River: (A) Kanuti River upstream from a point 5 miles downstream of the State highway crossing; (B) Bonanza Creek; (C) Jim River including Prospect and Douglas Creeks. (x) You may not subsistence fish in the Delta River. (xi) In Beaver Creek downstream from the confluence of Moose Creek, a gillnet with mesh size not to exceed 3-inches stretch-measure may be used from June 15 through September 15. You may subsistence fish for all non-salmon species but may not ***target*** salmon during this time period (retention of salmon taken incidentally to non-salmon directed fisheries is allowed). From the mouth of Nome Creek downstream to the confluence of Moose Creek, only rod and reel may be used. From the mouth of Nome Creek downstream to the confluence of O'Brien Creek, the daily harvest and possession limit is 5 grayling; from the mouth of O'Brien Creek downstream to the confluence of Moose Creek, the daily harvest and possession limit is 10 grayling. The Nome Creek drainage of Beaver Creek is closed to subsistence fishing for grayling. (xii) You may take salmon only by gillnet, beach seine, dip net, fish wheel, or rod and reel, subject to the restrictions set forth in this section. (A) In the Yukon River drainage, you may not take salmon for subsistence fishing using gillnets with stretched mesh larger than 7.5 inches. (B) In Subdistrict 5D you may take salmon once the mid-range of the Canadian interim management escapement goal and the total allowable catch goal are projected to be achieved. (C) Salmon may be harvested by dip net at any time, except during times of conservation when the Federal in-season manager may announce restrictions on time, areas, and species. (xiii) In District 4, if you are a commercial fisherman, you may not take salmon for subsistence purposes during the State commercial salmon fishing season using gillnets with stretched-mesh larger than 6 inches after a date specified by ADF&G emergency order issued between July 10 and July 31. (xiv) In Districts 5 and 6, you may not take salmon for subsistence purposes by drift gillnets. (xv) In District 4 salmon may be taken by drift gillnet not more than 150 feet in length unless restricted by special action or as modified by regulations in this section. (xvi) Unless otherwise specified in this section, you may take fish other than salmon by set gillnet, drift gillnet, beach seine, fish wheel, long line, fyke net, dip net, jigging gear, spear, lead, or rod and reel, subject to the following restrictions, which also apply to subsistence salmon fishing: (A) During the open weekly fishing periods of the State commercial salmon fishing season, if you are a commercial fisherman, you may not operate more than one type of gear at a time, for commercial, personal use, and subsistence purposes. (B) You may not use an aggregate length of set gillnet in excess of 150 fathoms, and each drift gillnet may not exceed 50 fathoms in length. (C) In Districts 4, 5, and 6, you may not set subsistence fishing gear within 200 feet of other fishing gear operating for commercial, personal, or subsistence use except that, at the site approximately 1 mile upstream from Ruby on the south bank of the Yukon River between ADF&G regulatory markers containing the area known locally as the ``Slide,'' you may set subsistence fishing gear within 200 feet of other operating commercial or subsistence fishing gear, and in District 4, from Old Paradise Village upstream to a point 4 miles upstream from Anvik, there is no minimum distance requirement between fish wheels. (D) During the State commercial salmon fishing season, within the Yukon River and the Tanana River below the confluence of the Wood River, you may use drift gillnets and fish wheels only during open subsistence salmon fishing periods. (E) In Birch Creek, gillnet mesh size may not exceed 3-inches stretch-measure from June 15 through September 15. (F) In Racetrack Slough on the Koyukuk River and in the sloughs of the Huslia River drainage, from when each river is free of ice through June 15, the offshore end of the set gillnet may not be closer than 20 feet from the opposite bank except that sloughs 40 feet or less in width may have \3\4width coverage with set gillnet, unless closed by Federal special action. (xvii) In District 4, from September 21 through May 15, you may use jigging gear from shore ice. (xviii) You must possess a subsistence fishing permit for the following locations: (A) For the Yukon River drainage from the mouth of Hess Creek to the mouth of the Dall River; (B) For the Yukon River drainage from the upstream mouth of 22 Mile Slough to the U.S -Canada border; (C) Only for salmon in the Tanana River drainage above the mouth of the Wood River. (xix) Only one subsistence fishing permit will be issued to each household per year. (xx) In Districts 1, 2, and 3, from June 1 through July 15. If ADF&G has announced that Chinook salmon can be sold in the commercial fisheries, you may not possess Chinook salmon taken for subsistence purposes unless both tips (lobes) of the tail fin have been removed before the person conceals the salmon from plain view or transfers the salmon from the fishing site. (xxi) In the Yukon River drainage, Chinook salmon must be used primarily for human consumption and may not be ***targeted*** for dog food. Dried Chinook salmon may not be used for dog food anywhere in the Yukon River drainage. Whole fish unfit for human consumption (due to disease, deterioration, and deformities), scraps, and small fish (16 inches or less) may be fed to dogs. Also, whole Chinook salmon caught incidentally during a subsistence chum salmon fishery in the following time periods and locations may be fed to dogs: (A) After July 10 in the Koyukuk River drainage; (B) After August 10, in Subdistrict 5D, upstream of Circle City. (4) Kuskokwim Area. The Kuskokwim Area consists of all waters of Alaska between the latitude of the westernmost point of Naskonat Peninsula and the latitude of the southernmost tip of Cape Newenham, including the waters of Alaska surrounding Nunivak and St. Matthew Islands and those waters draining into the Bering Sea. (i) Unless otherwise restricted in this section, you may take fish in the Kuskokwim Area at any time without a subsistence fishing permit. (ii) For the Kuskokwim area, Federal subsistence fishing schedules, openings, closings, and fishing methods are the same as those issued for the subsistence taking of fish under Alaska Statutes (AS 16.05.060), except the use of gillnets with 6-inch or less mesh size is allowed before June 1 in the Kuskokwim River drainage, unless superseded by a Federal special action. (iii) In Districts 4 and 5, from June 1 through September 8, you may not take salmon for 16 hours before or during and for 6 hours after each State open[[Page 17719]]commercial salmon fishing period in each district. (iv) In District 2, and anywhere in tributaries that flow into the Kuskokwim River within that district, you may subsistence fish for salmon with rod and reel 24 hours per day, 7 days per week, unless rod and reel are specifically restricted by this paragraph (e)(4). (v) You may not take subsistence fish by nets in the Goodnews River east of a line between ADF&G regulatory markers placed near the mouth of the Ufigag River and an ADF&G regulatory marker placed near the mouth of the Tunulik River 16 hours before or during and for 6 hours after each State open commercial salmon fishing period. (vi) You may not take subsistence fish by nets in the Kanektok River upstream of ADF&G regulatory markers placed near the mouth 16 hours before or during and for 6 hours after each State open commercial salmon fishing period. (vii) You may not take subsistence fish by nets in the Arolik River upstream of ADF&G regulatory markers placed near the mouth 16 hours before or during and for 6 hours after each State open commercial salmon fishing period. (viii) You may only take salmon by gillnet, beach seine, fish wheel, dip net, or rod and reel subject to the restrictions set out in this section, except that you may also take salmon by spear in the Kanektok, and Arolik River drainages, and in the drainage of Goodnews Bay. (ix) You may not use an aggregate length of set gillnets or drift gillnets in excess of 50 fathoms for taking salmon. (x) You may take fish other than salmon by set gillnet, drift gillnet, beach seine, fish wheel, pot, long line, fyke net, dip net, jigging gear, spear, lead, handline, or rod and reel. (xi) You must attach to the bank each subsistence set gillnet operated in tributaries of the Kuskokwim River and fish it substantially perpendicular to the bank and in a substantially straight line. (xii) Within a tributary to the Kuskokwim River in that portion of the Kuskokwim River drainage from the north end of Eek Island upstream to the mouth of the Kolmakoff River, you may not set or operate any part of a set gillnet within 150 feet of any part of another set gillnet. (xiii) The maximum depth of gillnets is as follows: (A) Gillnets with 6-inch or smaller stretched-mesh may not be more than 45 meshes in depth; (B) Gillnets with greater than 6-inch stretched-mesh may not be more than 35 meshes in depth. (xiv) You may not use subsistence set and drift gillnets exceeding 15 fathoms in length in Whitefish Lake in the Ophir Creek drainage. You may not operate more than one subsistence set or drift gillnet at a time in Whitefish Lake in the Ophir Creek drainage. You must check the net at least once every 24 hours. (xv) You may take rainbow trout only in accordance with the following restrictions: (A) You may take rainbow trout only by the use of gillnets, dip nets, fyke nets, handline, spear, rod and reel, or jigging through the ice; (B) You may not use gillnets, dip nets, or fyke nets for ***targeting*** rainbow trout from March 15 through June 15; (C) If you take rainbow trout incidentally in other subsistence net fisheries and through the ice, you may retain them for subsistence purposes; (D) There are no harvest limits with handline, spear, rod and reel, or jigging. (xvi) All tributaries not expressly closed by Federal special action, or as modified by regulations in this section, remain open to the use of gillnets more than 100 yards upstream from their confluence with the Kuskokwim River. (5) Bristol Bay Area. The Bristol Bay Area includes all waters of Bristol Bay, including drainages enclosed by a line from Cape Newenham to Cape Menshikof. (i) Unless restricted in this section, or unless under the terms of a subsistence fishing permit, you may take fish at any time in the Bristol Bay area. (ii) You may not take fish from waters within 300 feet of a stream mouth used by salmon. (iii) You may not subsistence fish with nets in the Tazimina River and within one-fourth mile of the terminus of those waters during the period from September 1 through June 14. (iv) Unless otherwise specified, you may take salmon by set gillnet only. (A) You may also take salmon by spear in the Togiak River, excluding its tributaries. (B) You may also use drift gillnets not greater than 10 fathoms in length to take salmon in the Togiak River in the first 2 river miles upstream from the mouth of the Togiak River to the ADF&G regulatory markers. (C) You may also take salmon without a permit in Sixmile Lake and its tributaries within and adjacent to the exterior boundaries of Lake Clark National Park and Preserve unless otherwise prohibited, and Lake Clark and its tributaries, by snagging (by handline or rod and reel), using a spear, bow and arrow, rod and reel, or capturing by bare hand. (D) You may also take salmon by beach seines not exceeding 25 fathoms in length in Lake Clark, excluding its tributaries. (E) You may also take fish (except rainbow trout) with a fyke net and lead in tributaries of Lake Clark and the tributaries of Sixmile Lake within and adjacent to the exterior boundaries of Lake Clark National Park and Preserve unless otherwise prohibited. (1) You may use a fyke net and lead only with a permit issued by the Federal in-season manager. (2) All fyke nets and leads must be attended at all times while in use. (3) All materials used to construct the fyke net and lead must be made of wood and be removed from the water when the fyke net and lead is no longer in use. (v) The maximum lengths for set gillnets used to take salmon are as follows: (A) You may not use set gillnets exceeding 10 fathoms in length in the Egegik River; (B) In the remaining waters of the area, you may not use set gillnets exceeding 25 fathoms in length. (vi) You may not operate any part of a set gillnet within 300 feet of any part of another set gillnet. (vii) You must stake and buoy each set gillnet. Instead of having the identifying information on a keg or buoy attached to the gillnet, you may plainly and legibly inscribe your first initial, last name, and subsistence permit number on a sign at or near the set gillnet. (viii) You may not operate or assist in operating subsistence salmon net gear while simultaneously operating or assisting in operating commercial salmon net gear. (ix) You may take fish other than salmon, herring, and capelin by gear listed in this part unless restricted under the terms of a subsistence fishing permit. (x) You may take salmon only under authority of a State subsistence salmon permit (permits are issued by ADF&G) except when using a Federal permit for fyke net and lead. (xi) Only one State subsistence fishing permit for salmon and one Federal permit for use of a fyke net and lead for all fish (except rainbow trout) may be issued to each household per year. (xii) In the Togiak River drainage: (A) You may not possess coho salmon taken under the authority of a subsistence fishing permit unless both lobes of the caudal fin (tail) or the dorsal fin have been removed. (B) You may not possess salmon taken with a drift gillnet under the authority of a subsistence fishing permit unless[[Page 17720]]both lobes of the caudal fin (tail) or the dorsal fin have been removed. (xiii) You may take rainbow trout only by rod and reel or jigging gear. Rainbow trout daily harvest and possession limits are two per day/two in possession with no size limit from April 10 through October 31 and five per day/five in possession with no size limit from November 1 through April 9. (xiv) If you take rainbow trout incidentally in other subsistence net fisheries, or through the ice, you may retain them for subsistence purposes.\* \* \* \* \* (10) Cook Inlet Area. The Cook Inlet Area includes all waters of Alaska enclosed by a line extending east from Cape Douglas (58[deg]51.10' N Lat.) and a line extending south from Cape Fairfield (148[deg]50.25' W Long.). (i) General area regulations. (A) Unless restricted by regulations in this section, or unless restricted under the terms of a subsistence fishing permit, you may take fish at any time in the Cook Inlet Area. (B) If you take rainbow or steelhead trout incidentally in subsistence net fisheries, you may retain them for subsistence purposes, unless otherwise prohibited or provided for in this section. With jigging gear through the ice or rod-and-reel gear in open waters, there is an annual limit of two rainbow or steelhead trout 20 inches or longer, taken from Kenai Peninsula fresh waters. (C) Under the authority of a Federal subsistence fishing permit, you may take only salmon, trout, Dolly Varden, and other char. Permits will be issued by the in-season manager or designated representative and will be valid for that regulatory year, except as otherwise provided for in this section, or as stated under the permit conditions, unless the season is closed or restricted by a special action. (D) All fish taken under the authority of a Federal subsistence fishing permit must be marked and recorded prior to leaving the fishing site. (1) The fishing site includes the particular Federal public waters and/or adjacent shoreline from which the fish were harvested. (2) Marking means ***removing*** the dorsal fin. (E) You may not take grayling or burbot for subsistence purposes. (F) You may take smelt with dip nets in fresh water only from April 1 through June 15. There are no harvest or possession limits for smelt. (G) You may take whitefish in the Tyone River drainage using gillnets. (H) You may take fish by gear listed in this section unless restricted by other regulations in this section or under the terms of a Federal subsistence fishing permit (as may be modified by regulations in this section). (I) Seasons, harvest and possession limits, and methods and means for take are the same as for the taking of those species under Alaska sport fishing regulations (5 AAC 56 and 5 AAC 57) unless modified herein or by issuance of a Federal special action. (J) Applicable harvest provisions are as follows: Table 1 to Paragraph (e)(10)------------------------------------------------------------------------ Location Methods and means Permit type------------------------------------------------------------------------Kasilof River Drainage...... Kasilof River dip Household Annual net or rod and reel Permit. for salmon; Kasilof River fish wheel for salmon; Kasilof River gillnet for salmon.Kenai River Drainage........ Kenai River dip net Household Annual or rod and reel for Permit. salmon; Kenai River gillnet for salmon.Kasilof River Drainage...... Tustumena Lake rod General Subsistence and reel for Fishing Permit salmon; Kasilof (Daily/Possession River drainage rod Limits). and reel for resident species.Kenai River Drainage........ Kenai River rod and General Subsistence reel only for Fishing Permit salmon; Kenai River (Daily/Possession and tributaries Limits). under ice jigging and rod and reel for resident species.Tustumena Lake.............. Tustumena Lake under Tustumena Lake ice fishery. Winter Permit.------------------------------------------------------------------------ (1) Harvest limits may not be accumulated. (2) Each household may harvest its annual salmon limits in one or more days. (3) All salmon harvested as part of a household annual limit must be reported to the Federal in-season manager within 72 hours of leaving the fishing site. (4) For Ninilchik residents, the household annual limits for Chinook salmon in the Kasilof River and for late-run Chinook salmon in the Kenai River are combined. (ii) Seasons, harvest limits, and methods and means for Kasilof River fisheries. Household annual limits for salmon in Kasilof River fisheries are as follows: Table 2 to Paragraph (e)(10)------------------------------------------------------------------------ Additional Number of fish allowed Species fish allowed for each for each household permit holder member------------------------------------------------------------------------Sockeye................................. 25 5Chinook................................. 10 2Coho.................................... 10 2Pink.................................... 10 2------------------------------------------------------------------------ (A) Kasilof River dip net or rod and reel; salmon. (1) Residents of Ninilchik may take sockeye, Chinook, coho, and pink salmon through a dip net or rod and reel fishery on the upper mainstem of the Kasilof River from a Federal regulatory marker on the river below the outlet of Tustumena Lake downstream to a marker on the river approximately 2.8 miles below the Tustumena Lake boat ramp. (2) Residents using rod-and-reel gear may fish with up to two baited single or treble hooks. (3) Other species incidentally caught during the dip net and rod and reel fishery may be retained for subsistence uses, including up to 200 rainbow/steelhead trout taken through August 15. After 200 rainbow/steelhead trout have been taken in this fishery or after August 15, all rainbow/steelhead trout must be released unless otherwise provided for in this section. (4) Harvest seasons are as follows: Table 3 to Paragraph (e)(10)------------------------------------------------------------------------ Species Season------------------------------------------------------------------------Sockeye salmon............................ June 16-August 15.Chinook salmon............................ June 16-August 15.Coho salmon............................... June 16-October 31.Pink salmon............................... June 16-October 31.------------------------------------------------------------------------[[Page 17721]] (B) Kasilof River fish wheel; salmon. (1) Residents of Ninilchik may harvest sockeye, Chinook, coho, and pink salmon through a fish wheel fishery in the Federal public waters of the upper mainstem of the Kasilof River. (2) Residents of Ninilchik may retain other species incidentally caught in the Kasilof River fish wheel except for rainbow or steelhead trout, which must be released and returned unharmed to the water. (3) Only one fish wheel may be operated on the Kasilof River. The fish wheel must: Have a live box, be monitored when fishing, be stopped from fishing when it is not being monitored or used, and be installed and operated in compliance with any regulations and restrictions for its use within the Kenai National Wildlife Refuge. (4) One registration permit will be available and will be awarded by the Federal in-season fishery manager, in consultation with the Kenai National Wildlife Refuge manager, based on the merits of the operational plan. The registration permit will be issued to an organization that, as the fish wheel owner, will be responsible for its construction, installation, operation, use, and ***removal*** in consultation with the Federal fishery manager. The owner may not rent or lease the fish wheel for personal gain. As part of the permit, the organization must: (i) Prior to the season. Provide a written operational plan to the Federal fishery manager including a description of how fishing time and fish will be offered and distributed among households and residents of Ninilchik. (ii) During the season. Mark the fish wheel with a wood, metal, or plastic plate that is at least 12 inches high by 12 inches wide, permanently affixed, and plainly visible and that contains the following information in letters and numerals at least 1 inch high: Registration permit number; organization's name and address; and primary contact person name and telephone number. (iii) After the season. Provide written documentation of required evaluation information to the Federal fishery manager including, but not limited to, persons or households operating the gear, hours of operation, and number of each species caught and retained or released. (5) People operating the fish wheel must: (i) Have in possession a valid Federal subsistence fishing permit and remain onsite to monitor the fish wheel and ***remove*** all fish at least every hour. (ii) In addition, any person operating the fish wheel who is not the owner must attach to the fish wheel an additional wood, metal, or plastic plate that is at least 12 inches high by 12 inches wide, is plainly visible, and contains the person's fishing permit number, name, and address in letters and numerals at least 1 inch high. (6) The organization owning the fish wheel may operate the fish wheel for subsistence purposes on behalf of residents of Ninilchik by requesting a subsistence fishing permit that: (i) Identifies a person who will be responsible for operating the fish wheel; and (ii) Includes provisions for recording daily catches, the household to whom the catch was given, and other information determined to be necessary for effective resource management by the Federal fishery manager. (7) Fishing is allowed from June 16 through October 31 on the Kasilof River unless closed or otherwise restricted by Federal special action. (C) Kasilof River gillnet; salmon. (1) Residents of Ninilchik may harvest sockeye, Chinook, coho, and pink salmon in the Federal public waters of the upper mainstem of the Kasilof River from a Federal regulatory marker on the river below the outlet of Tustumena Lake downstream to the Tustumena Lake boat launch with a single gillnet from June 16 through August 15. (2) Only one community gillnet may be operated on the Kasilof River. (i) The gillnet may not: Be over 10 fathoms in length, be larger than 5.25-inch mesh, and obstruct more than half of the river width with stationary fishing gear. (ii) Subsistence stationary gillnet gear may not be set within 200 feet of other subsistence stationary gear. (iii) The gillnet may be operated as a set gillnet in a fixed location, as a pole-net system drifted through an area while wading, or as a drift net from a boat. (3) One registration permit will be available and will be issued by the Federal in-season fishery manager, in consultation with the Kenai National Wildlife Refuge manager, to the Ninilchik Traditional Council. As the community gillnet owner, the Ninilchik Traditional Council will be responsible for its use and ***removal*** in consultation with the Federal in-season manager. As part of the permit, after the season, the Ninilchik Traditional Council must provide written documentation of required evaluation information to the Federal fishery manager including, but not limited to: (i) Persons or households operating the gear; (ii) Hours of operation; and (iii) Number of each species caught and retained or released. (4) The community gillnet is subject to compliance with applicable Kenai National Wildlife Refuge regulations and restrictions. (5) The Ninilchik Traditional Council may operate the net for subsistence purposes on behalf of residents of Ninilchik by requesting a subsistence fishing permit that: (i) Identifies a person who will be responsible for fishing the gillnet; and (ii) Includes provisions for recording daily catches within 72 hours, the household to whom the catch was given, and other information determined to be necessary for effective resource management by the Federal in-season manager. (6) Residents of Ninilchik may retain other species incidentally caught in the Kasilof River community gillnet fishery. The gillnet fishery will be closed when the retention of rainbow or steelhead trout has been restricted under Federal subsistence regulations. (D) Tustumena Lake rod and reel; salmon. (1) In addition to the dip net and rod and reel fishery on the upper mainstem of the Kasilof River described under paragraph (e)(10)(ii)(A)(1) of this section, residents of Ninilchik may also take coho and pink salmon through a rod and reel fishery in Tustumena Lake. Fishing is allowed with up to two baited single or treble hooks. (2) Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these species under Alaska sport fishing regulations (5 AAC 56), except for the following harvest and possession limits: Table 4 to Paragraph (e)(10)------------------------------------------------------------------------ Species Size Limits------------------------------------------------------------------------Coho salmon................... 16 inches and 4 per day and 4 in longer. possession.Pink salmon................... 16 inches and 6 per day and 6 in longer. possession.------------------------------------------------------------------------[[Page 17722]] (E) Kasilof drainage rod and reel; resident species. Resident fish species including lake trout, rainbow or steelhead trout, and Dolly Varden or Arctic char may be harvested by rod and reel in federally managed waters of the Kasilof River drainage the entire year as follows: Table 5 to Paragraph (e)(10)------------------------------------------------------------------------ Species Specifications Limits------------------------------------------------------------------------Lake trout.................. Fish 20 inches and 4 per day and 4 in longer. possession. Fish less than 20 15 per day and 15 in inches in length. possession.Dolly Varden and Arctic char In flowing waters... 4 per day and 4 in possession. In lakes and ponds.. 10 per day and 10 in possession.Rainbow or steelhead trout.. In flowing waters... 2 per day and 2 in possession. In lakes and ponds.. 5 per day and 5 in possession.------------------------------------------------------------------------ (F) Tustumena Lake under ice fishery; resident species. (1) You may fish in Tustumena Lake with a gillnet under the ice, or with jigging gear used through the ice. The gillnet may not be longer than 10 fathoms. (2) Harvest limits are as follows: Table 6 to Paragraph (e)(10)------------------------------------------------------------------------ Additional Methods Limits provisions------------------------------------------------------------------------Jigging gear through the ice Household annual Household limits are limit of 30 fish in included in the any combination of overall total lake trout, rainbow annual harvest trout, and Dolly quota. Varden or Arctic char.Gillnet under the ice....... Total annual harvest The Federal in- quota of 200 lake season manager will trout, 200 rainbow issue a closure for trout, and 500 this fishery once Dolly Varden or any of these quotas Arctic char. has been met.------------------------------------------------------------------------ (3) You may harvest fish under the ice only in Tustumena Lake. Gillnets are not allowed within a \1/4\ mile radius of the mouth of any tributary to Tustumena Lake, or the outlet of Tustumena Lake. (4) A permit is required. The permit will be issued by the Federal in-season manager or designated representative and will be valid for the winter season unless the season is closed by special action. (i) The permittee must report the following information: The number of each species caught; the number of each species retained; the length, depth (number of meshes deep), and mesh size of gillnet fished; the fishing site; and the total hours fished. (ii) The gillnet must be checked at least once in every 48-hour period. (iii) For unattended gear, the permittee's name and address must be plainly and legibly inscribed on a stake at one end of the gillnet. (5) Incidentally caught fish may be retained and must be recorded on the permit before transporting fish from the fishing site. (6) Failure to return the completed harvest permit by May 31 may result in issuance of a violation notice and/or denial of a future subsistence permit. (iii) Seasons, harvest limits, and methods and means for Kenai River fisheries. Household annual limits for salmon in Kenai River fisheries are as follows: Table 7 to Paragraph (e)(10)---------------------------------------------------------------------------------------------------------------- Additional Number of fish allowed Species fish allowed for each Additional provisions for each household permit holder member----------------------------------------------------------------------------------------------------------------Sockeye salmon............................. 25 5 Chum salmon that are retained are to be included within the annual limit for sockeye salmon.Chinook salmon-- (July 1 through July 15).. 2 1 For the Kenai River community gillnet fishery described under paragraph (e)(10)(iii)(B) of this section.Chinook salmon-- (July 16 through August 10 2 ................................... 31).Coho salmon................................ 20 5 ...................................Pink salmon................................ 15 5 ...................................---------------------------------------------------------------------------------------------------------------- (A) Kenai River dip net or rod and reel; salmon. (1) You may take only sockeye salmon through a dip net or rod and reel fishery at one specified site on the Russian River. (i) For the Russian River fishing site, incidentally caught fish may be retained for subsistence uses, except for Chinook salmon, coho salmon, rainbow trout, and Dolly Varden, which must be released. (ii) At the Russian River Falls site, dip netting is allowed from a Federal regulatory marker near the upstream end of the fish ladder at Russian River Falls downstream to a Federal regulatory marker approximately 600 yards below Russian River Falls. Residents using rod and reel gear at this fishery site may not fish with bait at any time. (2) You may take sockeye, Chinook, coho, and pink salmon through a dip net or rod and reel fishery at two[[Page 17723]]specified sites on the Kenai River below Skilak Lake and as provided in this section. (i) For both Kenai River fishing sites below Skilak Lake, incidentally caught fish may be retained for subsistence uses, except for Chinook salmon prior to July 16 (unless otherwise provided for in this section), rainbow trout 18 inches or longer, and Dolly Varden 18 inches or longer, which must be released. (ii) At the Kenai River Moose Range Meadows site, dip netting is allowed only from a boat from a Federal regulatory marker on the Kenai River at about river mile 29 downstream approximately 2.5 miles to another marker on the Kenai River at about river mile 26.5 Residents using rod and reel gear at this fishery site may fish from boats or from shore with up to two baited single or treble hooks June 15 through August 31. (iii) At the Kenai River mile 48 site, dip netting is allowed while either standing in the river or from a boat, from Federal regulatory markers on both sides of the Kenai River at about river mile 48 (approximately 2 miles below the outlet of Skilak Lake) downstream approximately 2.5 miles to a marker on the Kenai River at about river mile 45.5 Residents using rod and reel gear at this fishery site may fish from boats or from shore with up to two baited single or treble hooks June 15 through August 31. (3) Fishing seasons are as follows: Table 8 to Paragraph (e)(10)------------------------------------------------------------------------ Species Season Location------------------------------------------------------------------------Sockeye salmon.............. June 15-August 15... All three sites.Chinook salmon.............. July 16-September 30 Kenai River sites only.Pink salmon................. July 16-September 30 Kenai River sites only.Coho salmon................. July 16-September 30 Kenai River sites only.------------------------------------------------------------------------ (B) Kenai River gillnet; salmon. (1) Residents of Ninilchik may harvest sockeye, Chinook, coho, and pink salmon in the Moose Range Meadows area of the Federal public waters of the Kenai River with a single gillnet to be managed and operated by the Ninilchik Traditional Council. (2) Fishing will be allowed July 1 through August 15 and September 10-30 on the Kenai River unless closed or otherwise restricted by Federal special action. The following conditions apply to harvest in the Kenai River community gillnet fishery: (i) Salmon taken in this fishery will be included as household annual limits of participating households. (ii) The Ninilchik Traditional Council will report all harvested fish within 72 hours of leaving the gillnet location. (iii) Additional harvest restrictions for this fishery are as follows: Table 9 to Paragraph (e)(10)---------------------------------------------------------------------------------------------------------------- Species Period Harvest Fishery limits----------------------------------------------------------------------------------------------------------------Sockeye salmon.................... July 1-August 15 and September 10-30.Chinook salmon less than 46 inches July 1-15............ Fish may be retained if Fishery will close until in length or greater than 55 the most current July 16 once 50 Chinook inches in length. preseason forecast from salmon have been the State of Alaska retained or released. Department of Fish and Game projects the in- river run to be within or above the optimal escapement goal range for early-run Chinook salmon; otherwise, live fish must be released.Chinook salmon.................... July 16-August 15.... .......................... Fishery will close prior to August 15 if 200 Chinook salmon have been retained or released between July 16 and that date. Fishery will reopen September 10-30 for species available at that time.Pink salmon....................... July 16-August 15 and September 10-30.Coho salmon....................... July 16-August 15 and September 10-30.Incidentally caught rainbow trout ..................... All live fish must be Fishery will close for and Dolly Varden. released. Fish that die the season once 100 in net may be retained. rainbow trout or 150 Dolly Varden have been released or retained.---------------------------------------------------------------------------------------------------------------- (iv) Chinook salmon less than 20 inches in length may be retained and do not count towards retained or released totals. (v) Other incidentally caught species may be retained; however, all incidental fish mortalities, except for Chinook salmon less than 20 inches in length, count towards released or retained totals specified in this section. (3) Only one community gillnet may be operated on the Kenai River. (i) The gillnet may not: Be over 10 fathoms in length to take salmon; be larger than 5.25-inch mesh; and obstruct more than half of the river width with stationary fishing gear. (ii) Subsistence stationary gillnet gear may not be set within 200 feet of other subsistence stationary gear. (4) One registration permit will be available and will be issued by the Federal in-season manager, in consultation with the Kenai National Wildlife Refuge manager, to the Ninilchik Traditional Council. As the[[Page 17724]]community gillnet owner, the Ninilchik Traditional Council will be responsible for its use and ***removal*** in consultation with the Federal in-season manager. As part of the permit, the Ninilchik Traditional Council must provide post-season written documentation of required evaluation information to the Federal in-season manager including, but not limited to: (i) Persons or households operating the gear; (ii) Hours of operation; and (iii) Number of each species caught and retained or released. (5) The Ninilchik Traditional Council may operate the net for subsistence purposes on behalf of residents of Ninilchik by requesting a subsistence fishing permit that: (i) Identifies a person who will be responsible for fishing the gillnet; and (ii) Includes provisions for recording daily catches, the household to whom the catch was given, and other information determined to be necessary for effective resource management by the Federal in-season manager. (C) Kenai River rod and reel only; salmon. (1) For federally managed waters of the Kenai River and its tributaries, you may take sockeye, Chinook, coho, pink, and chum salmon through a separate rod and reel fishery in the Kenai River drainage. (2) Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these salmon species under State of Alaska fishing regulations (5 AAC 56, 5 AAC 57 and 5 AAC 77.540), except for the following harvest and possession limits: Table 10 to Paragraph (e)(10)------------------------------------------------------------------------ Species Size Limits------------------------------------------------------------------------Chinook salmon-- (January 1 Less than 46 2 per day and 2 in through July 15). inches or 55 possession. inches and longer.Chinook salmon-- (July 16 20 inches and 2 per day and 2 in through August 31). longer. possession.All other salmon.............. 16 inches and 6 per day and 6 in longer. possession, of which no more than 4 per day and 4 in possession may be Coho salmon, except for the Sanctuary Area and Russian River where no more than 2 per day and 2 in possession may be Coho salmon.------------------------------------------------------------------------ (i) In the Kenai River below Skilak Lake, fishing is allowed with up to two baited single or treble hooks June 15 through August 31. (ii) Annual harvest limits for any combination of Chinook salmon are four for each permit holder. (iii) Incidentally caught fish, other than salmon, are subject to regulations found in paragraph (e)(10)(iii)(D) of this section. (D) Kenai River and tributaries under ice jigging and rod and reel; resident species. (1) For federally managed waters of the Kenai River and its tributaries below Skilak Lake outlet at river mile 50, you may take resident fish species including lake trout, rainbow trout, and Dolly Varden or Arctic char with jigging gear through the ice or rod and reel gear in open waters. Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these resident species under State of Alaska fishing regulations (5 AAC 56, 5 AAC 57, and 5 AAC 77.540), except for the following harvest and possession limits: Table 11 to Paragraph (e)(10)------------------------------------------------------------------------ Species Specifications Limits------------------------------------------------------------------------Lake trout.................... 20 inches or 4 per day and 4 in longer. possession. Less than 20 15 per day and 15 in inches. possession.Dolly Varden or Arctic char... In flowing waters For fish less than 18 inches, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one may be 20 inches or longer, may be harvested daily.Rainbow or steelhead trout.... In flowing waters For fish less than 18 inches in length, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one fish 20 inches or longer may be harvested daily.------------------------------------------------------------------------ (2) For federally managed waters of the upper Kenai River and its tributaries above Skilak Lake outlet at river mile 50, you may take resident fish species including lake trout, rainbow trout, and Dolly Varden or Arctic char with jigging gear through the ice or rod and reel gear in open waters. Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these resident species under Alaska fishing regulations (5 AAC 56, 5 AAC 57, 5 AAC 77.540), except for the following harvest and possession limits: Table 12 to Paragraph (e)(10)------------------------------------------------------------------------ Species Specifications Limits------------------------------------------------------------------------Lake trout.................... 20 inches or 4 per day and 4 in longer. possession. Less than 20 15 per day and 15 in inches. possession. From Hidden Lake. 2 per day and 2 in possession regardless of length.Dolly Varden or Arctic char... In flowing waters For fish less than 16 inches in length, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one fish 20 inches or longer may be harvested daily.[[Page 17725]] Rainbow or steelhead trout.... In flowing waters For fish less than 16 inches in length, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one fish 20 inches or longer may be harvested daily.------------------------------------------------------------------------ (11) Prince William Sound Area. The Prince William Sound Area includes all waters and drainages of Alaska between the longitude of Cape Fairfield and the longitude of Cape Suckling. (i) You may take fish, other than rainbow/steelhead trout, in the Prince William Sound Area only under authority of a subsistence fishing permit, except that a permit is not required to take eulachon. You make not take rainbow/steelhead trout, except as otherwise provided for in this paragraph (e)(11). (A) In the Prince William Sound Area within Chugach National ***Forest*** and in the Copper River drainage downstream of Haley Creek, you may accumulate Federal subsistence fishing harvest limits with harvest limits under State of Alaska sport fishing regulations provided that accumulation of fishing harvest limits does not occur during the same day. (B) You may accumulate harvest limits of salmon authorized for the Copper River drainage upstream from Haley Creek with harvest limits for salmon authorized under State of Alaska sport fishing regulations. (ii) You may take fish by gear listed in paragraph (b)(1) of this section unless restricted in this section or under the terms of a subsistence fishing permit. (iii) If you catch rainbow/steelhead trout incidentally in other subsistence net fisheries, you may retain them for subsistence purposes, unless restricted in this section. (iv) In the Copper River drainage, you may take salmon only in the waters of the Upper Copper River District, or in the vicinity of the Native Village of Batzulnetas. (v) In the Upper Copper River District, you may take salmon only by fish wheels, rod and reel, or dip nets. (vi) Rainbow/steelhead trout and other freshwater fish caught incidentally to salmon by fish wheel in the Upper Copper River District may be retained. (vii) Freshwater fish other than rainbow/steelhead trout caught incidentally to salmon by dip net in the Upper Copper River District may be retained. Rainbow/steelhead trout caught incidentally to salmon by dip net in the Upper Copper River District must be released unharmed to the water. (viii) You may not possess salmon taken under the authority of an Upper Copper River District subsistence fishing permit, or rainbow/steelhead trout caught incidentally to salmon by fish wheel, unless the anal fin has been immediately removed from the fish. You must immediately record all retained fish on the subsistence permit. Immediately means prior to concealing the fish from plain view or transporting the fish more than 50 feet from where the fish was removed from the water. (ix) You may take salmon in the Upper Copper River District from May 15 through September 30 only. (x) The total annual harvest limit for subsistence salmon fishing permits in combination for the Glennallen Subdistrict and the Chitina Subdistrict is as follows: (A) For a household with 1 person, 30 salmon, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel. (B) For a household with 2 persons, 60 salmon, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel, plus 10 salmon for each additional person in a household over 2 persons, except that the household's limit for Chinook salmon taken by dip net or rod and reel does not increase. (C) Upon request, permits for additional salmon will be issued for no more than a total of 200 salmon for a permit issued to a household with 1 person, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel, or no more than a total of 500 salmon for a permit issued to a household with 2 or more persons, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel. (xi) The following apply to Upper Copper River District subsistence salmon fishing permits: (A) Only one subsistence fishing permit per subdistrict will be issued to each household per year. If a household has been issued permits for both subdistricts in the same year, both permits must be in your possession and readily available for inspection while fishing or transporting subsistence-taken fish in either subdistrict. A qualified household may also be issued a Batzulnetas salmon fishery permit in the same year. (B) Multiple types of gear may be specified on a permit, although only one unit of gear per person may be operated at any one time. (C) You must return your permit no later than October 31 of the year in which the permit is issued, or you may be denied a permit for the following year. (D) A fish wheel may be operated only by one permit holder at one time; that permit holder must have the fish wheel marked as required by paragraph (e)(11)(xii)(B) or (e)(11)(xiii)(E) of this section and during fishing operations. (E) Only the permit holder and the authorized member(s) of the household listed on the subsistence permit may take salmon. (F) You must personally operate your fish wheel or dip net. (G) You may not loan or transfer a subsistence fish wheel or dip net permit except as permitted. (H) While you are fishing from a boat or other watercraft, you may not use any device that indicates bathymetry and/or fish locations, e.g , fish finders. These devices do not have to be removed or uninstalled from a boat or watercraft. (xii) If you are a fish wheel owner: (A) You must register your fish wheel with ADF&G or the Federal Subsistence Board. (B) Your registration number and a wood, metal, or plastic plate at least 12 inches high by 12 inches wide bearing either your name and address, or your Alaska driver's license number, or your Alaska State identification card number in letters and numerals at least 1 inch high, must be permanently affixed and plainly visible on the fish wheel when the fish wheel is in the water. (C) Only the current year's registration number may be affixed to the fish wheel; you must ***remove*** any other registration number from the fish wheel. (D) You are responsible for the fish wheel; you must ***remove*** the fish wheel from the water at the end of the permit period. (E) You may not rent, lease, or otherwise use your fish wheel used for subsistence fishing for personal gain. (xiii) If you are operating a fish wheel: (A) You may operate only one fish wheel at any one time.[[Page 17726]] (B) You may not set or operate a fish wheel within 75 feet of another fish wheel. (C) You must check your fish wheel at least once every 10 hours and ***remove*** all fish. (D) No fish wheel may have more than two baskets. (E) If you are a permittee other than the owner, you must attach an additional wood, metal, or plastic plate at least 12 inches high by 12 inches wide, bearing your name and address in letters and numerals at least 1 inch high, to the fish wheel so that the name and address are plainly visible. (xiv) A subsistence fishing permit may be issued to a village council, or other similarly qualified organization whose members operate fish wheels for subsistence purposes in the Upper Copper River District, to operate fish wheels on behalf of members of its village or organization. The following additional provisions apply to subsistence fishing permits issued under this paragraph (e)(11)(xiv): (A) The permit will list all households and household members for whom the fish wheel is being operated. The permit will identify a person who will be responsible for the fish wheel and will be the same person as is listed on the fish wheel described in paragraph (e)(11)(xiii)(E) of this section. (B) The allowable harvest may not exceed the combined seasonal limits for the households listed on the permit; the permittee will notify the ADF&G or Federal Subsistence Board when households are added to the list, and the seasonal limit may be adjusted accordingly. (C) Members of households listed on a permit issued to a village council or other similarly qualified organization are not eligible for a separate household subsistence fishing permit for the Upper Copper River District. (D) The permit will include provisions for recording daily catches for each fish wheel; location and number of fish wheels; full legal name of the individual responsible for the lawful operation of each fish wheel as described in paragraph (e)(11)(xiii)(E) of this section; and other information determined to be necessary for effective resource management. (xv) You may take salmon in the vicinity of the former Native village of Batzulnetas only under the authority of a Batzulnetas subsistence salmon fishing permit available from the National Park Service under the following conditions: (A) You may take salmon only in those waters of the Copper River between National Park Service regulatory markers located near the mouth of Tanada Creek and approximately one-half mile downstream from that mouth and in Tanada Creek between National Park Service regulatory markers identifying the open waters of the creek. (B) You may use only fish wheels, dip nets, and rod and reel on the Copper River and only dip nets, spears, fyke nets, and rod and reel in Tanada Creek. One fyke net and associated lead may be used in Tanada Creek upstream of the National Park Service weir. (C) You may take salmon only from May 15 through September 30 or until the season is closed by special action. (D) You may retain Chinook salmon taken in a fish wheel in the Copper River. You must return to the water unharmed any Chinook salmon caught in Tanada Creek. (E) You must return the permit to the National Park Service no later than October 15 of the year the permit was issued. (F) You may only use a fyke net after consultation with the in-season manager. You must be present when the fyke net is actively fishing. You may take no more than 1,000 sockeye salmon in Tanada Creek with a fyke net. (xvi) You may take pink salmon for subsistence purposes from fresh water with a dip net from May 15 through September 30, 7 days per week, with no harvest or possession limits in the following areas: (A) Green Island, Knight Island, Chenega Island, Bainbridge Island, Evans Island, Elrington Island, Latouche Island, and adjacent islands, and the mainland waters from the outer point of Granite Bay located in Knight Island Passage to Cape Fairfield; (B) Waters north of a line from Porcupine Point to Granite Point, and south of a line from Point Lowe to Tongue Point. (xvii) In the Chugach National ***Forest*** portion of the Prince William Sound Area, you must possess a Federal subsistence fishing permit to take salmon, trout, whitefish, grayling, Dolly Varden, or char. Permits are available from the Cordova Ranger District. (A) Salmon harvest is not allowed in Eyak Lake and its tributaries, Copper River and its tributaries, and Eyak River upstream from the Copper River Highway bridge. (B) You must record on your subsistence permit the number of subsistence fish taken. You must record all harvested fish prior to leaving the fishing site, and return the permit by the due date marked on the permit. (C) You must ***remove*** both lobes of the caudal (tail) fin from subsistence-caught salmon before leaving the fishing site. (D) You may take salmon by rod and reel, dip net, spear, and gaff year round. (E) For a household with 1 person, 15 salmon (other than pink) may be taken, and 5 cutthroat trout, with only 2 over 20 inches, may be taken; for pink salmon, see the conditions of the permit. (F) For a household with 2 persons, 30 salmon (other than pink) may be taken, plus an additional 10 salmon for each additional person in a household over 2 persons, and 5 cutthroat trout, with only 2 over 20 inches per each household member with a maximum household limit of 30 cutthroat trout may be taken; for pink salmon, see the conditions of the permit. (G) You may take Dolly Varden, Arctic char, whitefish, and grayling with rod and reel and spear year round and with a gillnet from January 1-April 1. The maximum incidental gillnet harvest of trout is 10. (H) You may take cutthroat trout with rod and reel and spear from June 15 to April 14th and with a gillnet from January 1 to April 1. (I) You may not retain rainbow/steelhead trout for subsistence unless taken incidentally in a subsistence gillnet fishery. Rainbow/steelhead trout must be immediately released from a dip net without harm.\* \* \* \* \*Sue Detwiler,Assistant Regional Director, U.S Fish and Wildlife Service.Gregory Risdahl,Subsistence Program Leader, USDA-***Forest*** Service.[FR Doc. 2021-07016 Filed 4-5-21; 8:45 am]BILLING CODE 3411-15-P; 4333-15-P

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[***Federal Register: Subsistence Management Regulations for Public Lands in Alaska-2021-2022 and 2022-2023 Subsistence Taking of Fish Regulations Pages 17713 - 17726 [FR DOC #2021-07016]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62CS-TMN1-F0YC-N13R-00000-00&context=1516831)

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF AGRICULTUREForest Service36 CFR Part 242DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 100[Docket No. FWS-R7-SM-2019-0092; FXFR13350700640-212-FF07J00000; FBMS#4500151540]RIN 1018-BE36Subsistence Management Regulations for Public ***Lands*** in Alaska--2021-2022 and 2022-2023 Subsistence Taking of Fish RegulationsAGENCY: ***Forest*** Service, ***Agriculture***; Fish and Wildlife Service, Interior.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: This final rule revises regulations for seasons, harvest limits, methods, and means related to taking of fish for subsistence uses in Alaska during the 2021-2022 and 2022-2023 regulatory years. The Federal Subsistence Board (Board) completes the biennial process of revising subsistence hunting and trapping regulations in even-numbered years and subsistence fishing and shellfish regulations in odd-numbered years; public proposal and review processes take place during the preceding year. The Board also addresses customary and traditional use and rural determinations during the applicable biennial cycle. This rule also revises rural determinations.DATES: This rule is effective April 6, 2021.ADDRESSES: The Board meeting transcripts are available for review at the Office of Subsistence Management, 1011 East Tudor Road, Mail Stop 121, Anchorage, AK 99503, or on the Office of Subsistence Management website ([*https://www.doi.gov/subsistence*](https://www.doi.gov/subsistence)). The comments received in response to the proposed rule are available on [*www.regulations.gov*](http://www.regulations.gov) in Docket No. FWS-R7-SM-2019-0092.FOR FURTHER INFORMATION CONTACT: Chair, Federal Subsistence Board, c/o U.S Fish and Wildlife Service, Attention: Sue Detwiler, Office of Subsistence Management; (907) 786-3888 or [*subsistence@fws.gov*](mailto:subsistence@fws.gov) For questions specific to National ***Forest*** System ***lands***, contact Gregory Risdahl, Subsistence Program Leader, U.S Department of ***Agriculture*** (USDA), ***Forest*** Service, Alaska Region; (907) 302-7354 or [*gregory.risdahl@usda.gov.SUPPLEMENTARY*](mailto:gregory.risdahl@usda.gov.SUPPLEMENTARY) INFORMATION:Background Under Title VIII of the Alaska National Interest ***Lands*** Conservation Act (ANILCA) (16 U.S.C 3111-3126), the Secretary of the Interior and the Secretary of ***Agriculture*** (Secretaries) jointly implement the Federal Subsistence Management Program. This program provides a preference for take of fish and wildlife resources for subsistence uses on Federal public ***lands*** and waters in Alaska. The Secretaries published temporary regulations to carry out this program in the Federal Register on June 29, 1990 (55 FR 27114), and published final regulations in the Federal Register on May 29, 1992 (57 FR 22940). The Program managers have subsequently amended these regulations a number of times. Because this program is a joint effort between Interior and ***Agriculture***, these regulations are located in two titles of the Code of Federal Regulations (CFR): Title 36, ``Parks, ***Forests***, and Public Property,'' and Title 50, ``Wildlife and Fisheries,'' at 36 CFR 242.1-242.28 and 50 CFR 100.1-100.28, respectively. The regulations contain subparts as follows: Subpart A, General Provisions; Subpart B, Program Structure; Subpart C, Board Determinations; and Subpart D, Subsistence Taking of Fish and Wildlife. Consistent with subpart B of these regulations, the Secretaries established a Federal Subsistence Board to administer the Federal Subsistence Management Program. The Board comprises: A Chair appointed by the Secretary of the Interior with concurrence of the Secretary of ***Agriculture***; The Alaska Regional Director, U.S Fish and Wildlife Service; The Alaska Regional Director, National Park Service; The Alaska State Director, Bureau of ***Land*** Management; The Alaska Regional Director, Bureau of Indian Affairs; The Alaska Regional ***Forester***, USDA ***Forest*** Service; and Two public members appointed by the Secretary of the Interior with concurrence of the Secretary of ***Agriculture***. Through the Board, these agencies participate in the development of regulations for subparts C and D, which, among other things, set forth program eligibility and specific harvest seasons and limits. In administering the program, the Secretaries divided Alaska into 10 subsistence resource regions, each of[[Page 17714]]which is represented by a Federal Subsistence Regional Advisory Council (Council). The Councils provide a forum for rural residents with personal knowledge of local conditions and resource requirements to have a meaningful role in the subsistence management of fish and wildlife on Federal public ***lands*** in Alaska. The Council members represent varied geographical, cultural, and user interests within each region. The Board addresses customary and traditional use determinations during the applicable biennial cycle. Section \_\_.24 (customary and traditional use determinations) was originally published in the Federal Register on May 29, 1992 (57 FR 22940). The regulations at 36 CFR 242.4 and 50 CFR 100.4 define ``customary and traditional use'' as ``a long-established, consistent pattern of use, incorporating beliefs and customs which have been transmitted from generation to generation. . . .'' Since 1992, the Board has made a number of customary and traditional use determinations at the request of affected subsistence users. Those modifications for fish and shellfish, along with some administrative corrections, were published in the Federal Register as follows: Modifications to Sec. \_\_.24------------------------------------------------------------------------ Rule made changes to Federal Register citation Date of the following publication provisions of \_\_.24------------------------------------------------------------------------59 FR 27462................... May 27, 1994..... Wildlife and Fish/ Shellfish.59 FR 51855................... October 13, 1994. Wildlife and Fish/ Shellfish.60 FR 10317................... February 24, 1995 Wildlife and Fish/ Shellfish.61 FR 39698................... July 30, 1996.... Wildlife and Fish/ Shellfish.62 FR 29016................... May 29, 1997..... Wildlife and Fish/ Shellfish.63 FR 35332................... June 29, 1998.... Wildlife and Fish/ Shellfish.63 FR 46148................... August 28, 1998.. Wildlife and Fish/ Shellfish.64 FR 1276.................... January 8, 1999.. Fish/Shellfish.66 FR 10142................... February 13, 2001 Fish/Shellfish.67 FR 5890.................... February 7, 2002. Fish/Shellfish.68 FR 7276.................... February 12, 2003 Fish/Shellfish.69 FR 5018.................... February 3, 2004. Fish/Shellfish.70 FR 13377................... March 21, 2005... Fish/Shellfish.71 FR 15569................... March 29, 2006... Fish/Shellfish.72 FR 12676................... March 16, 2007... Fish/Shellfish.72 FR 73426................... December 27, 2007 Wildlife/Fish.74 FR 14049................... March 30, 2009... Fish/Shellfish.76 FR 12564................... March 8, 2011.... Fish/Shellfish.77 FR 35482................... June 13, 2012.... Wildlife.79 FR 35232................... June 19, 2014.... Wildlife.81 FR 52528................... August 8, 2016... Wildlife.83 FR 3079.................... January 23, 2018. Fish.83 FR 50758................... October 9, 2018.. Wildlife.84 FR 39744................... August 12, 2019.. Fish.85 FR 74796................... November 23, 2020 Wildlife.------------------------------------------------------------------------Current Rule The Departments published a proposed rule, Subsistence Management Regulations for Public ***Lands*** in Alaska--2021-22 and 2022-23 Subsistence Taking of Fish Regulations, on February 19, 2020 (85 FR 9430), to amend the fish section of subparts C and D of 36 CFR part 242 and 50 CFR part 100. The proposed rule opened a comment period, which closed on April 20, 2020. The Departments advertised the proposed rule by mail, email, web page, social media, radio, and newspaper, and comments were submitted via [*www.regulations.gov*](http://www.regulations.gov) to Docket No. FWS-R7-SM-2019-0092. During that period, the Councils met and, in addition to other Council business, received suggestions for proposals from the public. The Board received a total of 13 proposals for changes to subpart D. In addition, 12 fisheries closure reviews were presented for comment as required by Board policy that specifies a 3-year review of all closures. Comments were also requested on a subpart C proposal addressing rural determination. After the comment period closed, the Board prepared a booklet describing the proposals and distributed it to the public. The proposals were also available online. The public then had an additional 70 days in which to comment on the proposed regulatory changes, which ended on July 2, 2020. The 10 Councils met again, received public comments, and formulated their recommendations to the Board on proposals for their respective regions. The Councils had a substantial role in reviewing the proposed rule and making recommendations for the final rule. Moreover, a Council Chair, or a designated representative, presented each Councils' recommendations at the Board's public meeting of January 26-29, 2021. These final regulations reflect Board review and consideration of Council recommendations, Tribal and Alaska Native corporation consultations, and public comments. The public received extensive opportunity to review and comment on all changes. Of the 14 valid proposals and 12 fishery closure reviews, 16 were on the Board's non-consensus agenda and 10 were on the consensus agenda. The consensus agenda is made up of proposals for which there is agreement among the affected Councils, a majority of the Interagency Staff Committee members, and the Alaska Department of Fish and Game concerning a proposed regulatory action. Anyone may request that the Board ***remove*** a proposal from the consensus agenda and place it on the non-consensus agenda. The Board votes en masse on the consensus agenda after deliberation and action on all other proposals. Of the proposals on the consensus agenda, the Board adopted eight and rejected two. Analysis and justification for the action taken on each proposal on the consensus agenda are available for review at the Office of Subsistence Management, 1011 East Tudor Road,[[Page 17715]]Mail Stop 121, Anchorage, AK 99503, or on the Office of Subsistence Management website ([*https://www.doi.gov/subsistence*](https://www.doi.gov/subsistence)). Of the proposals on the non-consensus agenda, the Board adopted one; adopted one with modification; rejected six; and deferred eight.Summary of Non-Consensus Proposals Not Adopted by the Board The Board rejected six non-consensus proposals and deferred eight. The rejected proposals were recommended for rejection by the majority of the affected Councils or as noted below.Yukon-Northern Area The Board voted to maintain a closure to the take of all fish on the Jim River drainage, with the expectation that the affected Councils will submit a special action and followup proposal to establish a season and harvest limits. The affected Councils recommended a modification to establish a season with harvest limits; however, this would have gone beyond the scope of the closure review and would not have allowed for the public review process or Tribal consultations regarding a new season and harvest limits. The Board voted to maintain a closure to the take of Arctic Grayling on Nome Creek in the Yukon River drainage, with the expectation that the affected Councils will submit a special action and followup proposal to establish a season and harvest limits. At the Board's meeting, new data was presented that was not available to the Councils during their original discussions and recommendations to the Board. The Council Chairs supported this action.Kuskokwim Area The Board rejected a proposal that would have reduced the required distance between set nets. This action was to prevent overcrowding in the fishing area and was supported by both affected Councils.Aleutian Islands, Alaska Peninsula and Chignik, and Kodiak Areas The Board deferred seven fishery closure reviews, which are in the Kodiak/Aleutians Regional Advisory Council region, to allow for the Council to have additional time to meet with remote communities and have further discussions and allow for additional public input. These closure reviews will be addressed during the next fisheries cycle.Prince William Sound Area The Board deferred a proposal to establish a dip net fishery on the lower Copper River to allow conflicting users groups an opportunity to meet and attempt to reach a compromise. The Board rejected a proposal to require harvest reports to be submitted within 3 days. This proposal was deemed as an undue burden on subsistence users and was supported by both affected Councils. The Board rejected a proposal that would have prohibited the use of mono-filament and multifilament mesh dip nets during specified times along the upper Copper River. This proposal was deemed as an undue burden on subsistence users and was supported by both affected Councils. The Board rejected a proposal that would have prohibited fishing with dip nets from boats or watercraft along the upper Copper River. This action would have reduced opportunity for subsistence users and was supported by one Council and opposed by another.Summary of Non-Consensus Proposals Adopted by the Board The Board adopted one proposal and one proposal with modification on the non-consensus agenda. The modification was suggested by the affected Council and developed during the analysis process. All of the adopted proposals were recommended for adoption by at least one of the Councils as noted below.Prince William Sound Area The Board adopted a proposal to prohibit the use of bathymetry and or fish locator devices while fishing on the upper Copper River. This regulation does not require the ***removal*** or uninstallation of these devices from the boat or watercraft. This action was supported by one Council and opposed by another.Southcentral Region The Board adopted with modification a proposal that determined the community (Census Designated Place) of Moose Pass as rural. The Board modified this determination to also include the Census Designated Places of Crown Point and Primrose. This action was supported by the affected Council. These final regulations reflect Board review and consideration of Council recommendations, Tribal and Alaska Native corporation consultations, and public comments. While all public comments received on the proposed rule were considered, some were outside the scope of this rulemaking action. Because this rule concerns public ***lands*** managed by an agency or agencies in both the Departments of ***Agriculture*** and the Interior, identical text will be incorporated into 36 CFR part 242 and 50 CFR part 100.Conformance With Statutory and Regulatory AuthoritiesAdministrative Procedure Act Compliance The Board has provided extensive opportunity for public input and involvement in compliance with Administrative Procedure Act requirements, including publishing a proposed rule in the Federal Register, participation in multiple Council meetings, additional public review and comment on all proposals for regulatory change, and opportunity for additional public comment during the Board meeting prior to deliberation. Additionally, an administrative mechanism exists (and has been used by the public) to request reconsideration of the Board's decision on any particular proposal for regulatory change (36 CFR 242.20 and 50 CFR 100.20). Therefore, the Board believes that sufficient public notice and opportunity for involvement have been given to affected persons regarding Board decisions. In the more than 30 years that the Program has been operating, no benefit to the public has been demonstrated by delaying the effective date of the subsistence regulations. A lapse in regulatory control could affect the continued viability of fish or wildlife populations and future subsistence opportunities for rural Alaskans, and would generally fail to serve the overall public interest. Therefore, the Board finds good cause pursuant to 5 U.S.C 553(d)(3) to make this rule effective upon the date set forth in DATES to ensure continued operation of the subsistence program.National Environmental Policy Act Compliance A Draft Environmental Impact Statement that described four alternatives for developing a Federal Subsistence Management Program was distributed for public comment on October 7, 1991. The Final Environmental Impact Statement (FEIS) was published on February 28, 1992. The Record of Decision (ROD) on Subsistence Management for Federal Public ***Lands*** in Alaska was signed April 6, 1992. The selected alternative in the FEIS (Alternative IV) defined the administrative framework of an annual regulatory cycle for subsistence regulations.[[Page 17716]] A 1997 environmental assessment dealt with the expansion of Federal jurisdiction over fisheries and is available at the office listed under FOR FURTHER INFORMATION CONTACT. The Secretary of the Interior, with concurrence of the Secretary of ***Agriculture***, determined that expansion of Federal jurisdiction does not constitute a major Federal action significantly affecting the human environment and, therefore, signed a Finding of No Significant Impact.Section 810 of ANILCA An ANILCA section 810 analysis was completed as part of the FEIS process on the Federal Subsistence Management Program. The intent of all Federal subsistence regulations is to accord subsistence uses of fish and wildlife on public ***lands*** a priority over the taking of fish and wildlife on such ***lands*** for other purposes, unless restriction is necessary to conserve healthy fish and wildlife populations. The final section 810 analysis determination appeared in the April 6, 1992, ROD and concluded that the Program, under Alternative IV with an annual process for setting subsistence regulations, may have some local impacts on subsistence uses, but will not likely restrict subsistence uses significantly. During the subsequent environmental assessment process for extending fisheries jurisdiction, an evaluation of the effects of this rule was conducted in accordance with section 810. That evaluation also supported the Secretaries' determination that the rule will not reach the ``may significantly restrict'' threshold that would require notice and hearings under ANILCA section 810(a).Paperwork Reduction Act of 1995 (PRA) This rule does not contain any new collections of information that require Office of Management and Budget (OMB) approval under the PRA (44 U.S.C 3501 et seq.). OMB has reviewed and approved the collections of information associated with the subsistence regulations at 36 CFR part 242 and 50 CFR part 100, and assigned OMB Control Number 1018-0075, with an expiration date of January 31. 2024. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.Regulatory Planning and Review (Executive Orders 12866 and 13563) Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant. Executive Order 13563 reaffirms the principles of E.O 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.Regulatory Flexibility Act The Regulatory Flexibility Act of 1980 (5 U.S.C 601 et seq.) requires preparation of flexibility analyses for rules that will have a significant effect on a substantial number of small entities, which include small businesses, organizations, or governmental jurisdictions. In general, the resources to be harvested under this rule are already being harvested and consumed by the local harvester and do not result in an additional dollar benefit to the economy. However, we estimate that two million pounds of meat are harvested by subsistence users annually and, if given an estimated dollar value of $3.00 per pound, this amount would equate to about $6 million in food value Statewide. Based upon the amounts and values cited above, the Departments certify that this rulemaking will not have a significant economic effect on a substantial number of small entities within the meaning of the Regulatory Flexibility Act.Small Business Regulatory Enforcement Fairness Act Under the Small Business Regulatory Enforcement Fairness Act (5 U.S.C 801 et seq.), this rule is not a major rule. It does not have an effect on the economy of $100 million or more, will not cause a major increase in costs or prices for consumers, and does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S -based enterprises to compete with foreign-based enterprises.Executive Order 12630 Title VIII of ANILCA requires the Secretaries to administer a subsistence priority on public ***lands***. The scope of this Program is limited by definition to certain public ***lands***. Likewise, these regulations have no potential takings of private property implications as defined by Executive Order 12630.Unfunded Mandates Reform Act The Secretaries have determined and certify pursuant to the Unfunded Mandates Reform Act, 2 U.S.C 1502 et seq., that this rulemaking will not impose a cost of $100 million or more in any given year on local or State governments or private entities. The implementation of this rule is by Federal agencies, and there is no cost imposed on any State or local entities or Tribal governments.Executive Order 12988 The Secretaries have determined that these regulations meet the applicable standards provided in sections 3(a) and 3(b)(2) of Executive Order 12988, regarding civil justice reform.Executive Order 13132 In accordance with Executive Order 13132, the rule does not have sufficient federalism implications to warrant the preparation of a federalism summary impact statement. Title VIII of ANILCA precludes the State from exercising subsistence management authority over fish and wildlife resources on Federal ***lands*** unless it meets certain requirements.Executive Order 13175 The Alaska National Interest ***Lands*** Conservation Act, Title VIII, does not provide specific rights to Tribes for the subsistence taking of wildlife, fish, and shellfish. However, the Board provided federally recognized Tribes and Alaska Native corporations opportunities to consult on this rule. Consultation with Alaska Native corporations are based on Public Law 108-199, div. H, Sec. 161, Jan. 23, 2004, 118 Stat. 452, as amended by Public Law 108-447, div. H, title V, Sec. 518, Dec. 8, 2004, 118 Stat. 3267, which provides that: ``The Director of the Office of Management and Budget and all Federal agencies shall hereafter consult with Alaska Native corporations on the same basis as Indian Tribes under Executive Order No. 13175.'' The Secretaries, through the Board, provided a variety of opportunities for consultation: commenting on proposed changes to the existing rule; engaging in dialogue at the Council meetings; engaging in dialogue at the Board's meetings; and providing input in[[Page 17717]]person, by mail, email, or phone at any time during the rulemaking process. On January 26, 2021, the Board provided federally recognized Tribes and Alaska Native Corporations a specific opportunity to consult on this rule prior to the start of its public regulatory meeting. federally recognized Tribes and Alaska Native Corporations were notified by mail and telephone and were given the opportunity to attend via teleconference.Executive Order 13211 This Executive Order requires agencies to prepare Statements of Energy Effects when undertaking certain actions. However, this rule is not a significant regulatory action under E.O 13211, affecting energy supply, distribution, or use, and no Statement of Energy Effects is required.Drafting Information Theo Matuskowitz drafted these regulations under the guidance of Sue Detwiler of the Office of Subsistence Management, Alaska Regional Office, U.S Fish and Wildlife Service, Anchorage, Alaska. Additional assistance was provided by Paul McKee, Alaska State Office, Bureau of ***Land*** Management; Dr. Joshua Ream, Alaska Regional Office, National Park Service; Dr. Glenn Chen, Alaska Regional Office, Bureau of Indian Affairs; Vince Mathews, Alaska Regional Office, U.S Fish and Wildlife Service; and Gregory Risdahl, Alaska Regional Office, USDA ***Forest*** Service.List of Subjects36 CFR Part 242 Administrative practice and procedure, Alaska, Fish, National ***forests***, Public ***lands***, Reporting and recordkeeping requirements, Wildlife.50 CFR Part 100 Administrative practice and procedure, Alaska, Fish, National ***forests***, Public ***lands***, Reporting and recordkeeping requirements, Wildlife.Regulation Promulgation For the reasons set out in the preamble, the Federal Subsistence Board amends title 36, part 242, and title 50, part 100, of the Code of Federal Regulations, as set forth below.PART \_--SUBSISTENCE MANAGEMENT REGULATIONS FOR PUBLIC ***LANDS*** IN ALASKA01. The authority citation for both 36 CFR part 242 and 50 CFR part 100 continues to read as follows: Authority: 16 U.S.C 3, 472, 551, 668dd, 3101-3126; 18 U.S.C 3551-3586; 43 U.S.C 1733.Subpart C--Board Determinations02. Amend Sec. \_\_.23 by revising paragraph (a) to read as follows:Sec. \_\_.23 Rural determinations. (a) The Board has determined all communities and areas to be rural in accordance with Sec. 100.15 except the following: Fairbanks North Star Borough; Homer area--including Homer, Anchor Point, Kachemak City, and Fritz Creek; Juneau area--including Juneau, West Juneau, and Douglas; Kenai area--including Kenai, Soldotna, Sterling, Nikiski, Salamatof, Kalifornsky, Kasilof, and Clam Gulch; Ketchikan area--including Ketchikan City, Clover Pass, North Tongass Highway, Ketchikan East, Mountain Point, Herring Cove, Saxman East, Pennock Island, and parts of Gravina Island; Municipality of Anchorage; Seward area--including Seward and Valdez, and Wasilla/Palmer area--including Wasilla, Palmer, Sutton, Big Lake, Houston, and Bodenberg Butte.\* \* \* \* \*Subpart D--Subsistence Taking of Fish and Wildlife03. Amend Sec. \_\_.27 by revising paragraphs (e)(3), (4), (5), (10), and (11) to read as follows:Sec. \_\_.27 Subsistence taking of fish.\* \* \* \* \* (e) \* \* \* (3) Yukon-Northern Area. The Yukon-Northern Area includes all waters of Alaska between the latitude of Point Romanof and the latitude of the westernmost point of the Naskonat Peninsula, including those waters draining into the Bering Sea, and all waters of Alaska north of the latitude of the westernmost tip of Point Hope and west of 141[deg] West longitude, including those waters draining into the Arctic Ocean and the Chukchi Sea. (i) Unless otherwise restricted in this section, you may take fish in the Yukon-Northern Area at any time. In those locations where subsistence fishing permits are required, only one subsistence fishing permit will be issued to each household per year. You may subsistence fish for salmon with rod and reel in the Yukon River drainage 24 hours per day, 7 days per week, unless rod and reel are specifically otherwise restricted in this paragraph (e)(3). (ii) For the Yukon River drainage, Federal subsistence fishing schedules, openings, closings, and fishing methods are the same as those issued for the subsistence taking of fish under Alaska Statutes (AS 16.05.060), unless superseded by a Federal special action. (iii) In the following locations, you may take salmon during the open weekly fishing periods of the State commercial salmon fishing season and may not take them for 24 hours before the opening of the State commercial salmon fishing season: (A) In District 4, excluding the Koyukuk River drainage; (B) In Subdistricts 4B and 4C from June 15 through September 30, salmon may be taken from 6 p.m Sunday until 6 p.m Tuesday and from 6 p.m Wednesday until 6 p.m Friday; (C) In District 6, excluding the Kantishna River drainage, salmon may be taken from 6 p.m Friday until 6 p.m Wednesday. (iv) During any State commercial salmon fishing season closure of greater than 5 days in duration, you may not take salmon during the following periods in the following districts: (A) In District 4, excluding the Koyukuk River drainage, salmon may not be taken from 6 p.m Friday until 6 p.m Sunday; (B) In District 5, excluding the Tozitna River drainage and Subdistrict 5D, salmon may not be taken from 6 p.m Sunday until 6 p.m Tuesday. (v) Except as provided in this section, and except as may be provided by the terms of a subsistence fishing permit, you may take fish other than salmon at any time. (vi) In Districts 1, 2, 3, and Subdistrict 4A, excluding the Koyukuk and Innoko River drainages, you may not take salmon for subsistence purposes during the 24 hours immediately before the opening of the State commercial salmon fishing season. (vii) In Districts 1, 2, and 3: (A) After the opening of the State commercial salmon fishing season through July 15, you may not take salmon for subsistence for 18 hours immediately before, during, and for 12 hours after each State commercial salmon fishing period; (B) After July 15, you may not take salmon for subsistence for 12 hours immediately before, during, and for 12 hours after each State commercial salmon fishing period. (viii) In Subdistrict 4A after the opening of the State commercial salmon fishing season, you may not take salmon for subsistence for 12 hours immediately before, during, and for 12 hours after each State commercial salmon fishing period; however, you may take Chinook salmon during the[[Page 17718]]State commercial fishing season, with drift gillnet gear only, from 6 p.m Sunday until 6 p.m Tuesday and from 6 p.m Wednesday until 6 p.m Friday. (ix) You may not subsistence fish in the following drainages located north of the main Yukon River: (A) Kanuti River upstream from a point 5 miles downstream of the State highway crossing; (B) Bonanza Creek; (C) Jim River including Prospect and Douglas Creeks. (x) You may not subsistence fish in the Delta River. (xi) In Beaver Creek downstream from the confluence of Moose Creek, a gillnet with mesh size not to exceed 3-inches stretch-measure may be used from June 15 through September 15. You may subsistence fish for all non-salmon species but may not ***target*** salmon during this time period (retention of salmon taken incidentally to non-salmon directed fisheries is allowed). From the mouth of Nome Creek downstream to the confluence of Moose Creek, only rod and reel may be used. From the mouth of Nome Creek downstream to the confluence of O'Brien Creek, the daily harvest and possession limit is 5 grayling; from the mouth of O'Brien Creek downstream to the confluence of Moose Creek, the daily harvest and possession limit is 10 grayling. The Nome Creek drainage of Beaver Creek is closed to subsistence fishing for grayling. (xii) You may take salmon only by gillnet, beach seine, dip net, fish wheel, or rod and reel, subject to the restrictions set forth in this section. (A) In the Yukon River drainage, you may not take salmon for subsistence fishing using gillnets with stretched mesh larger than 7.5 inches. (B) In Subdistrict 5D you may take salmon once the mid-range of the Canadian interim management escapement goal and the total allowable catch goal are projected to be achieved. (C) Salmon may be harvested by dip net at any time, except during times of conservation when the Federal in-season manager may announce restrictions on time, areas, and species. (xiii) In District 4, if you are a commercial fisherman, you may not take salmon for subsistence purposes during the State commercial salmon fishing season using gillnets with stretched-mesh larger than 6 inches after a date specified by ADF&G emergency order issued between July 10 and July 31. (xiv) In Districts 5 and 6, you may not take salmon for subsistence purposes by drift gillnets. (xv) In District 4 salmon may be taken by drift gillnet not more than 150 feet in length unless restricted by special action or as modified by regulations in this section. (xvi) Unless otherwise specified in this section, you may take fish other than salmon by set gillnet, drift gillnet, beach seine, fish wheel, long line, fyke net, dip net, jigging gear, spear, lead, or rod and reel, subject to the following restrictions, which also apply to subsistence salmon fishing: (A) During the open weekly fishing periods of the State commercial salmon fishing season, if you are a commercial fisherman, you may not operate more than one type of gear at a time, for commercial, personal use, and subsistence purposes. (B) You may not use an aggregate length of set gillnet in excess of 150 fathoms, and each drift gillnet may not exceed 50 fathoms in length. (C) In Districts 4, 5, and 6, you may not set subsistence fishing gear within 200 feet of other fishing gear operating for commercial, personal, or subsistence use except that, at the site approximately 1 mile upstream from Ruby on the south bank of the Yukon River between ADF&G regulatory markers containing the area known locally as the ``Slide,'' you may set subsistence fishing gear within 200 feet of other operating commercial or subsistence fishing gear, and in District 4, from Old Paradise Village upstream to a point 4 miles upstream from Anvik, there is no minimum distance requirement between fish wheels. (D) During the State commercial salmon fishing season, within the Yukon River and the Tanana River below the confluence of the Wood River, you may use drift gillnets and fish wheels only during open subsistence salmon fishing periods. (E) In Birch Creek, gillnet mesh size may not exceed 3-inches stretch-measure from June 15 through September 15. (F) In Racetrack Slough on the Koyukuk River and in the sloughs of the Huslia River drainage, from when each river is free of ice through June 15, the offshore end of the set gillnet may not be closer than 20 feet from the opposite bank except that sloughs 40 feet or less in width may have \3\4width coverage with set gillnet, unless closed by Federal special action. (xvii) In District 4, from September 21 through May 15, you may use jigging gear from shore ice. (xviii) You must possess a subsistence fishing permit for the following locations: (A) For the Yukon River drainage from the mouth of Hess Creek to the mouth of the Dall River; (B) For the Yukon River drainage from the upstream mouth of 22 Mile Slough to the U.S -Canada border; (C) Only for salmon in the Tanana River drainage above the mouth of the Wood River. (xix) Only one subsistence fishing permit will be issued to each household per year. (xx) In Districts 1, 2, and 3, from June 1 through July 15. If ADF&G has announced that Chinook salmon can be sold in the commercial fisheries, you may not possess Chinook salmon taken for subsistence purposes unless both tips (lobes) of the tail fin have been removed before the person conceals the salmon from plain view or transfers the salmon from the fishing site. (xxi) In the Yukon River drainage, Chinook salmon must be used primarily for human consumption and may not be ***targeted*** for dog food. Dried Chinook salmon may not be used for dog food anywhere in the Yukon River drainage. Whole fish unfit for human consumption (due to disease, deterioration, and deformities), scraps, and small fish (16 inches or less) may be fed to dogs. Also, whole Chinook salmon caught incidentally during a subsistence chum salmon fishery in the following time periods and locations may be fed to dogs: (A) After July 10 in the Koyukuk River drainage; (B) After August 10, in Subdistrict 5D, upstream of Circle City. (4) Kuskokwim Area. The Kuskokwim Area consists of all waters of Alaska between the latitude of the westernmost point of Naskonat Peninsula and the latitude of the southernmost tip of Cape Newenham, including the waters of Alaska surrounding Nunivak and St. Matthew Islands and those waters draining into the Bering Sea. (i) Unless otherwise restricted in this section, you may take fish in the Kuskokwim Area at any time without a subsistence fishing permit. (ii) For the Kuskokwim area, Federal subsistence fishing schedules, openings, closings, and fishing methods are the same as those issued for the subsistence taking of fish under Alaska Statutes (AS 16.05.060), except the use of gillnets with 6-inch or less mesh size is allowed before June 1 in the Kuskokwim River drainage, unless superseded by a Federal special action. (iii) In Districts 4 and 5, from June 1 through September 8, you may not take salmon for 16 hours before or during and for 6 hours after each State open[[Page 17719]]commercial salmon fishing period in each district. (iv) In District 2, and anywhere in tributaries that flow into the Kuskokwim River within that district, you may subsistence fish for salmon with rod and reel 24 hours per day, 7 days per week, unless rod and reel are specifically restricted by this paragraph (e)(4). (v) You may not take subsistence fish by nets in the Goodnews River east of a line between ADF&G regulatory markers placed near the mouth of the Ufigag River and an ADF&G regulatory marker placed near the mouth of the Tunulik River 16 hours before or during and for 6 hours after each State open commercial salmon fishing period. (vi) You may not take subsistence fish by nets in the Kanektok River upstream of ADF&G regulatory markers placed near the mouth 16 hours before or during and for 6 hours after each State open commercial salmon fishing period. (vii) You may not take subsistence fish by nets in the Arolik River upstream of ADF&G regulatory markers placed near the mouth 16 hours before or during and for 6 hours after each State open commercial salmon fishing period. (viii) You may only take salmon by gillnet, beach seine, fish wheel, dip net, or rod and reel subject to the restrictions set out in this section, except that you may also take salmon by spear in the Kanektok, and Arolik River drainages, and in the drainage of Goodnews Bay. (ix) You may not use an aggregate length of set gillnets or drift gillnets in excess of 50 fathoms for taking salmon. (x) You may take fish other than salmon by set gillnet, drift gillnet, beach seine, fish wheel, pot, long line, fyke net, dip net, jigging gear, spear, lead, handline, or rod and reel. (xi) You must attach to the bank each subsistence set gillnet operated in tributaries of the Kuskokwim River and fish it substantially perpendicular to the bank and in a substantially straight line. (xii) Within a tributary to the Kuskokwim River in that portion of the Kuskokwim River drainage from the north end of Eek Island upstream to the mouth of the Kolmakoff River, you may not set or operate any part of a set gillnet within 150 feet of any part of another set gillnet. (xiii) The maximum depth of gillnets is as follows: (A) Gillnets with 6-inch or smaller stretched-mesh may not be more than 45 meshes in depth; (B) Gillnets with greater than 6-inch stretched-mesh may not be more than 35 meshes in depth. (xiv) You may not use subsistence set and drift gillnets exceeding 15 fathoms in length in Whitefish Lake in the Ophir Creek drainage. You may not operate more than one subsistence set or drift gillnet at a time in Whitefish Lake in the Ophir Creek drainage. You must check the net at least once every 24 hours. (xv) You may take rainbow trout only in accordance with the following restrictions: (A) You may take rainbow trout only by the use of gillnets, dip nets, fyke nets, handline, spear, rod and reel, or jigging through the ice; (B) You may not use gillnets, dip nets, or fyke nets for ***targeting*** rainbow trout from March 15 through June 15; (C) If you take rainbow trout incidentally in other subsistence net fisheries and through the ice, you may retain them for subsistence purposes; (D) There are no harvest limits with handline, spear, rod and reel, or jigging. (xvi) All tributaries not expressly closed by Federal special action, or as modified by regulations in this section, remain open to the use of gillnets more than 100 yards upstream from their confluence with the Kuskokwim River. (5) Bristol Bay Area. The Bristol Bay Area includes all waters of Bristol Bay, including drainages enclosed by a line from Cape Newenham to Cape Menshikof. (i) Unless restricted in this section, or unless under the terms of a subsistence fishing permit, you may take fish at any time in the Bristol Bay area. (ii) You may not take fish from waters within 300 feet of a stream mouth used by salmon. (iii) You may not subsistence fish with nets in the Tazimina River and within one-fourth mile of the terminus of those waters during the period from September 1 through June 14. (iv) Unless otherwise specified, you may take salmon by set gillnet only. (A) You may also take salmon by spear in the Togiak River, excluding its tributaries. (B) You may also use drift gillnets not greater than 10 fathoms in length to take salmon in the Togiak River in the first 2 river miles upstream from the mouth of the Togiak River to the ADF&G regulatory markers. (C) You may also take salmon without a permit in Sixmile Lake and its tributaries within and adjacent to the exterior boundaries of Lake Clark National Park and Preserve unless otherwise prohibited, and Lake Clark and its tributaries, by snagging (by handline or rod and reel), using a spear, bow and arrow, rod and reel, or capturing by bare hand. (D) You may also take salmon by beach seines not exceeding 25 fathoms in length in Lake Clark, excluding its tributaries. (E) You may also take fish (except rainbow trout) with a fyke net and lead in tributaries of Lake Clark and the tributaries of Sixmile Lake within and adjacent to the exterior boundaries of Lake Clark National Park and Preserve unless otherwise prohibited. (1) You may use a fyke net and lead only with a permit issued by the Federal in-season manager. (2) All fyke nets and leads must be attended at all times while in use. (3) All materials used to construct the fyke net and lead must be made of wood and be removed from the water when the fyke net and lead is no longer in use. (v) The maximum lengths for set gillnets used to take salmon are as follows: (A) You may not use set gillnets exceeding 10 fathoms in length in the Egegik River; (B) In the remaining waters of the area, you may not use set gillnets exceeding 25 fathoms in length. (vi) You may not operate any part of a set gillnet within 300 feet of any part of another set gillnet. (vii) You must stake and buoy each set gillnet. Instead of having the identifying information on a keg or buoy attached to the gillnet, you may plainly and legibly inscribe your first initial, last name, and subsistence permit number on a sign at or near the set gillnet. (viii) You may not operate or assist in operating subsistence salmon net gear while simultaneously operating or assisting in operating commercial salmon net gear. (ix) You may take fish other than salmon, herring, and capelin by gear listed in this part unless restricted under the terms of a subsistence fishing permit. (x) You may take salmon only under authority of a State subsistence salmon permit (permits are issued by ADF&G) except when using a Federal permit for fyke net and lead. (xi) Only one State subsistence fishing permit for salmon and one Federal permit for use of a fyke net and lead for all fish (except rainbow trout) may be issued to each household per year. (xii) In the Togiak River drainage: (A) You may not possess coho salmon taken under the authority of a subsistence fishing permit unless both lobes of the caudal fin (tail) or the dorsal fin have been removed. (B) You may not possess salmon taken with a drift gillnet under the authority of a subsistence fishing permit unless[[Page 17720]]both lobes of the caudal fin (tail) or the dorsal fin have been removed. (xiii) You may take rainbow trout only by rod and reel or jigging gear. Rainbow trout daily harvest and possession limits are two per day/two in possession with no size limit from April 10 through October 31 and five per day/five in possession with no size limit from November 1 through April 9. (xiv) If you take rainbow trout incidentally in other subsistence net fisheries, or through the ice, you may retain them for subsistence purposes.\* \* \* \* \* (10) Cook Inlet Area. The Cook Inlet Area includes all waters of Alaska enclosed by a line extending east from Cape Douglas (58[deg]51.10' N Lat.) and a line extending south from Cape Fairfield (148[deg]50.25' W Long.). (i) General area regulations. (A) Unless restricted by regulations in this section, or unless restricted under the terms of a subsistence fishing permit, you may take fish at any time in the Cook Inlet Area. (B) If you take rainbow or steelhead trout incidentally in subsistence net fisheries, you may retain them for subsistence purposes, unless otherwise prohibited or provided for in this section. With jigging gear through the ice or rod-and-reel gear in open waters, there is an annual limit of two rainbow or steelhead trout 20 inches or longer, taken from Kenai Peninsula fresh waters. (C) Under the authority of a Federal subsistence fishing permit, you may take only salmon, trout, Dolly Varden, and other char. Permits will be issued by the in-season manager or designated representative and will be valid for that regulatory year, except as otherwise provided for in this section, or as stated under the permit conditions, unless the season is closed or restricted by a special action. (D) All fish taken under the authority of a Federal subsistence fishing permit must be marked and recorded prior to leaving the fishing site. (1) The fishing site includes the particular Federal public waters and/or adjacent shoreline from which the fish were harvested. (2) Marking means ***removing*** the dorsal fin. (E) You may not take grayling or burbot for subsistence purposes. (F) You may take smelt with dip nets in fresh water only from April 1 through June 15. There are no harvest or possession limits for smelt. (G) You may take whitefish in the Tyone River drainage using gillnets. (H) You may take fish by gear listed in this section unless restricted by other regulations in this section or under the terms of a Federal subsistence fishing permit (as may be modified by regulations in this section). (I) Seasons, harvest and possession limits, and methods and means for take are the same as for the taking of those species under Alaska sport fishing regulations (5 AAC 56 and 5 AAC 57) unless modified herein or by issuance of a Federal special action. (J) Applicable harvest provisions are as follows: Table 1 to Paragraph (e)(10)------------------------------------------------------------------------ Location Methods and means Permit type------------------------------------------------------------------------Kasilof River Drainage...... Kasilof River dip Household Annual net or rod and reel Permit. for salmon; Kasilof River fish wheel for salmon; Kasilof River gillnet for salmon.Kenai River Drainage........ Kenai River dip net Household Annual or rod and reel for Permit. salmon; Kenai River gillnet for salmon.Kasilof River Drainage...... Tustumena Lake rod General Subsistence and reel for Fishing Permit salmon; Kasilof (Daily/Possession River drainage rod Limits). and reel for resident species.Kenai River Drainage........ Kenai River rod and General Subsistence reel only for Fishing Permit salmon; Kenai River (Daily/Possession and tributaries Limits). under ice jigging and rod and reel for resident species.Tustumena Lake.............. Tustumena Lake under Tustumena Lake ice fishery. Winter Permit.------------------------------------------------------------------------ (1) Harvest limits may not be accumulated. (2) Each household may harvest its annual salmon limits in one or more days. (3) All salmon harvested as part of a household annual limit must be reported to the Federal in-season manager within 72 hours of leaving the fishing site. (4) For Ninilchik residents, the household annual limits for Chinook salmon in the Kasilof River and for late-run Chinook salmon in the Kenai River are combined. (ii) Seasons, harvest limits, and methods and means for Kasilof River fisheries. Household annual limits for salmon in Kasilof River fisheries are as follows: Table 2 to Paragraph (e)(10)------------------------------------------------------------------------ Additional Number of fish allowed Species fish allowed for each for each household permit holder member------------------------------------------------------------------------Sockeye................................. 25 5Chinook................................. 10 2Coho.................................... 10 2Pink.................................... 10 2------------------------------------------------------------------------ (A) Kasilof River dip net or rod and reel; salmon. (1) Residents of Ninilchik may take sockeye, Chinook, coho, and pink salmon through a dip net or rod and reel fishery on the upper mainstem of the Kasilof River from a Federal regulatory marker on the river below the outlet of Tustumena Lake downstream to a marker on the river approximately 2.8 miles below the Tustumena Lake boat ramp. (2) Residents using rod-and-reel gear may fish with up to two baited single or treble hooks. (3) Other species incidentally caught during the dip net and rod and reel fishery may be retained for subsistence uses, including up to 200 rainbow/steelhead trout taken through August 15. After 200 rainbow/steelhead trout have been taken in this fishery or after August 15, all rainbow/steelhead trout must be released unless otherwise provided for in this section. (4) Harvest seasons are as follows: Table 3 to Paragraph (e)(10)------------------------------------------------------------------------ Species Season------------------------------------------------------------------------Sockeye salmon............................ June 16-August 15.Chinook salmon............................ June 16-August 15.Coho salmon............................... June 16-October 31.Pink salmon............................... June 16-October 31.------------------------------------------------------------------------[[Page 17721]] (B) Kasilof River fish wheel; salmon. (1) Residents of Ninilchik may harvest sockeye, Chinook, coho, and pink salmon through a fish wheel fishery in the Federal public waters of the upper mainstem of the Kasilof River. (2) Residents of Ninilchik may retain other species incidentally caught in the Kasilof River fish wheel except for rainbow or steelhead trout, which must be released and returned unharmed to the water. (3) Only one fish wheel may be operated on the Kasilof River. The fish wheel must: Have a live box, be monitored when fishing, be stopped from fishing when it is not being monitored or used, and be installed and operated in compliance with any regulations and restrictions for its use within the Kenai National Wildlife Refuge. (4) One registration permit will be available and will be awarded by the Federal in-season fishery manager, in consultation with the Kenai National Wildlife Refuge manager, based on the merits of the operational plan. The registration permit will be issued to an organization that, as the fish wheel owner, will be responsible for its construction, installation, operation, use, and ***removal*** in consultation with the Federal fishery manager. The owner may not rent or lease the fish wheel for personal gain. As part of the permit, the organization must: (i) Prior to the season. Provide a written operational plan to the Federal fishery manager including a description of how fishing time and fish will be offered and distributed among households and residents of Ninilchik. (ii) During the season. Mark the fish wheel with a wood, metal, or plastic plate that is at least 12 inches high by 12 inches wide, permanently affixed, and plainly visible and that contains the following information in letters and numerals at least 1 inch high: Registration permit number; organization's name and address; and primary contact person name and telephone number. (iii) After the season. Provide written documentation of required evaluation information to the Federal fishery manager including, but not limited to, persons or households operating the gear, hours of operation, and number of each species caught and retained or released. (5) People operating the fish wheel must: (i) Have in possession a valid Federal subsistence fishing permit and remain onsite to monitor the fish wheel and ***remove*** all fish at least every hour. (ii) In addition, any person operating the fish wheel who is not the owner must attach to the fish wheel an additional wood, metal, or plastic plate that is at least 12 inches high by 12 inches wide, is plainly visible, and contains the person's fishing permit number, name, and address in letters and numerals at least 1 inch high. (6) The organization owning the fish wheel may operate the fish wheel for subsistence purposes on behalf of residents of Ninilchik by requesting a subsistence fishing permit that: (i) Identifies a person who will be responsible for operating the fish wheel; and (ii) Includes provisions for recording daily catches, the household to whom the catch was given, and other information determined to be necessary for effective resource management by the Federal fishery manager. (7) Fishing is allowed from June 16 through October 31 on the Kasilof River unless closed or otherwise restricted by Federal special action. (C) Kasilof River gillnet; salmon. (1) Residents of Ninilchik may harvest sockeye, Chinook, coho, and pink salmon in the Federal public waters of the upper mainstem of the Kasilof River from a Federal regulatory marker on the river below the outlet of Tustumena Lake downstream to the Tustumena Lake boat launch with a single gillnet from June 16 through August 15. (2) Only one community gillnet may be operated on the Kasilof River. (i) The gillnet may not: Be over 10 fathoms in length, be larger than 5.25-inch mesh, and obstruct more than half of the river width with stationary fishing gear. (ii) Subsistence stationary gillnet gear may not be set within 200 feet of other subsistence stationary gear. (iii) The gillnet may be operated as a set gillnet in a fixed location, as a pole-net system drifted through an area while wading, or as a drift net from a boat. (3) One registration permit will be available and will be issued by the Federal in-season fishery manager, in consultation with the Kenai National Wildlife Refuge manager, to the Ninilchik Traditional Council. As the community gillnet owner, the Ninilchik Traditional Council will be responsible for its use and ***removal*** in consultation with the Federal in-season manager. As part of the permit, after the season, the Ninilchik Traditional Council must provide written documentation of required evaluation information to the Federal fishery manager including, but not limited to: (i) Persons or households operating the gear; (ii) Hours of operation; and (iii) Number of each species caught and retained or released. (4) The community gillnet is subject to compliance with applicable Kenai National Wildlife Refuge regulations and restrictions. (5) The Ninilchik Traditional Council may operate the net for subsistence purposes on behalf of residents of Ninilchik by requesting a subsistence fishing permit that: (i) Identifies a person who will be responsible for fishing the gillnet; and (ii) Includes provisions for recording daily catches within 72 hours, the household to whom the catch was given, and other information determined to be necessary for effective resource management by the Federal in-season manager. (6) Residents of Ninilchik may retain other species incidentally caught in the Kasilof River community gillnet fishery. The gillnet fishery will be closed when the retention of rainbow or steelhead trout has been restricted under Federal subsistence regulations. (D) Tustumena Lake rod and reel; salmon. (1) In addition to the dip net and rod and reel fishery on the upper mainstem of the Kasilof River described under paragraph (e)(10)(ii)(A)(1) of this section, residents of Ninilchik may also take coho and pink salmon through a rod and reel fishery in Tustumena Lake. Fishing is allowed with up to two baited single or treble hooks. (2) Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these species under Alaska sport fishing regulations (5 AAC 56), except for the following harvest and possession limits: Table 4 to Paragraph (e)(10)------------------------------------------------------------------------ Species Size Limits------------------------------------------------------------------------Coho salmon................... 16 inches and 4 per day and 4 in longer. possession.Pink salmon................... 16 inches and 6 per day and 6 in longer. possession.------------------------------------------------------------------------[[Page 17722]] (E) Kasilof drainage rod and reel; resident species. Resident fish species including lake trout, rainbow or steelhead trout, and Dolly Varden or Arctic char may be harvested by rod and reel in federally managed waters of the Kasilof River drainage the entire year as follows: Table 5 to Paragraph (e)(10)------------------------------------------------------------------------ Species Specifications Limits------------------------------------------------------------------------Lake trout.................. Fish 20 inches and 4 per day and 4 in longer. possession. Fish less than 20 15 per day and 15 in inches in length. possession.Dolly Varden and Arctic char In flowing waters... 4 per day and 4 in possession. In lakes and ponds.. 10 per day and 10 in possession.Rainbow or steelhead trout.. In flowing waters... 2 per day and 2 in possession. In lakes and ponds.. 5 per day and 5 in possession.------------------------------------------------------------------------ (F) Tustumena Lake under ice fishery; resident species. (1) You may fish in Tustumena Lake with a gillnet under the ice, or with jigging gear used through the ice. The gillnet may not be longer than 10 fathoms. (2) Harvest limits are as follows: Table 6 to Paragraph (e)(10)------------------------------------------------------------------------ Additional Methods Limits provisions------------------------------------------------------------------------Jigging gear through the ice Household annual Household limits are limit of 30 fish in included in the any combination of overall total lake trout, rainbow annual harvest trout, and Dolly quota. Varden or Arctic char.Gillnet under the ice....... Total annual harvest The Federal in- quota of 200 lake season manager will trout, 200 rainbow issue a closure for trout, and 500 this fishery once Dolly Varden or any of these quotas Arctic char. has been met.------------------------------------------------------------------------ (3) You may harvest fish under the ice only in Tustumena Lake. Gillnets are not allowed within a \1/4\ mile radius of the mouth of any tributary to Tustumena Lake, or the outlet of Tustumena Lake. (4) A permit is required. The permit will be issued by the Federal in-season manager or designated representative and will be valid for the winter season unless the season is closed by special action. (i) The permittee must report the following information: The number of each species caught; the number of each species retained; the length, depth (number of meshes deep), and mesh size of gillnet fished; the fishing site; and the total hours fished. (ii) The gillnet must be checked at least once in every 48-hour period. (iii) For unattended gear, the permittee's name and address must be plainly and legibly inscribed on a stake at one end of the gillnet. (5) Incidentally caught fish may be retained and must be recorded on the permit before transporting fish from the fishing site. (6) Failure to return the completed harvest permit by May 31 may result in issuance of a violation notice and/or denial of a future subsistence permit. (iii) Seasons, harvest limits, and methods and means for Kenai River fisheries. Household annual limits for salmon in Kenai River fisheries are as follows: Table 7 to Paragraph (e)(10)---------------------------------------------------------------------------------------------------------------- Additional Number of fish allowed Species fish allowed for each Additional provisions for each household permit holder member----------------------------------------------------------------------------------------------------------------Sockeye salmon............................. 25 5 Chum salmon that are retained are to be included within the annual limit for sockeye salmon.Chinook salmon-- (July 1 through July 15).. 2 1 For the Kenai River community gillnet fishery described under paragraph (e)(10)(iii)(B) of this section.Chinook salmon-- (July 16 through August 10 2 ................................... 31).Coho salmon................................ 20 5 ...................................Pink salmon................................ 15 5 ...................................---------------------------------------------------------------------------------------------------------------- (A) Kenai River dip net or rod and reel; salmon. (1) You may take only sockeye salmon through a dip net or rod and reel fishery at one specified site on the Russian River. (i) For the Russian River fishing site, incidentally caught fish may be retained for subsistence uses, except for Chinook salmon, coho salmon, rainbow trout, and Dolly Varden, which must be released. (ii) At the Russian River Falls site, dip netting is allowed from a Federal regulatory marker near the upstream end of the fish ladder at Russian River Falls downstream to a Federal regulatory marker approximately 600 yards below Russian River Falls. Residents using rod and reel gear at this fishery site may not fish with bait at any time. (2) You may take sockeye, Chinook, coho, and pink salmon through a dip net or rod and reel fishery at two[[Page 17723]]specified sites on the Kenai River below Skilak Lake and as provided in this section. (i) For both Kenai River fishing sites below Skilak Lake, incidentally caught fish may be retained for subsistence uses, except for Chinook salmon prior to July 16 (unless otherwise provided for in this section), rainbow trout 18 inches or longer, and Dolly Varden 18 inches or longer, which must be released. (ii) At the Kenai River Moose Range Meadows site, dip netting is allowed only from a boat from a Federal regulatory marker on the Kenai River at about river mile 29 downstream approximately 2.5 miles to another marker on the Kenai River at about river mile 26.5 Residents using rod and reel gear at this fishery site may fish from boats or from shore with up to two baited single or treble hooks June 15 through August 31. (iii) At the Kenai River mile 48 site, dip netting is allowed while either standing in the river or from a boat, from Federal regulatory markers on both sides of the Kenai River at about river mile 48 (approximately 2 miles below the outlet of Skilak Lake) downstream approximately 2.5 miles to a marker on the Kenai River at about river mile 45.5 Residents using rod and reel gear at this fishery site may fish from boats or from shore with up to two baited single or treble hooks June 15 through August 31. (3) Fishing seasons are as follows: Table 8 to Paragraph (e)(10)------------------------------------------------------------------------ Species Season Location------------------------------------------------------------------------Sockeye salmon.............. June 15-August 15... All three sites.Chinook salmon.............. July 16-September 30 Kenai River sites only.Pink salmon................. July 16-September 30 Kenai River sites only.Coho salmon................. July 16-September 30 Kenai River sites only.------------------------------------------------------------------------ (B) Kenai River gillnet; salmon. (1) Residents of Ninilchik may harvest sockeye, Chinook, coho, and pink salmon in the Moose Range Meadows area of the Federal public waters of the Kenai River with a single gillnet to be managed and operated by the Ninilchik Traditional Council. (2) Fishing will be allowed July 1 through August 15 and September 10-30 on the Kenai River unless closed or otherwise restricted by Federal special action. The following conditions apply to harvest in the Kenai River community gillnet fishery: (i) Salmon taken in this fishery will be included as household annual limits of participating households. (ii) The Ninilchik Traditional Council will report all harvested fish within 72 hours of leaving the gillnet location. (iii) Additional harvest restrictions for this fishery are as follows: Table 9 to Paragraph (e)(10)---------------------------------------------------------------------------------------------------------------- Species Period Harvest Fishery limits----------------------------------------------------------------------------------------------------------------Sockeye salmon.................... July 1-August 15 and September 10-30.Chinook salmon less than 46 inches July 1-15............ Fish may be retained if Fishery will close until in length or greater than 55 the most current July 16 once 50 Chinook inches in length. preseason forecast from salmon have been the State of Alaska retained or released. Department of Fish and Game projects the in- river run to be within or above the optimal escapement goal range for early-run Chinook salmon; otherwise, live fish must be released.Chinook salmon.................... July 16-August 15.... .......................... Fishery will close prior to August 15 if 200 Chinook salmon have been retained or released between July 16 and that date. Fishery will reopen September 10-30 for species available at that time.Pink salmon....................... July 16-August 15 and September 10-30.Coho salmon....................... July 16-August 15 and September 10-30.Incidentally caught rainbow trout ..................... All live fish must be Fishery will close for and Dolly Varden. released. Fish that die the season once 100 in net may be retained. rainbow trout or 150 Dolly Varden have been released or retained.---------------------------------------------------------------------------------------------------------------- (iv) Chinook salmon less than 20 inches in length may be retained and do not count towards retained or released totals. (v) Other incidentally caught species may be retained; however, all incidental fish mortalities, except for Chinook salmon less than 20 inches in length, count towards released or retained totals specified in this section. (3) Only one community gillnet may be operated on the Kenai River. (i) The gillnet may not: Be over 10 fathoms in length to take salmon; be larger than 5.25-inch mesh; and obstruct more than half of the river width with stationary fishing gear. (ii) Subsistence stationary gillnet gear may not be set within 200 feet of other subsistence stationary gear. (4) One registration permit will be available and will be issued by the Federal in-season manager, in consultation with the Kenai National Wildlife Refuge manager, to the Ninilchik Traditional Council. As the[[Page 17724]]community gillnet owner, the Ninilchik Traditional Council will be responsible for its use and ***removal*** in consultation with the Federal in-season manager. As part of the permit, the Ninilchik Traditional Council must provide post-season written documentation of required evaluation information to the Federal in-season manager including, but not limited to: (i) Persons or households operating the gear; (ii) Hours of operation; and (iii) Number of each species caught and retained or released. (5) The Ninilchik Traditional Council may operate the net for subsistence purposes on behalf of residents of Ninilchik by requesting a subsistence fishing permit that: (i) Identifies a person who will be responsible for fishing the gillnet; and (ii) Includes provisions for recording daily catches, the household to whom the catch was given, and other information determined to be necessary for effective resource management by the Federal in-season manager. (C) Kenai River rod and reel only; salmon. (1) For federally managed waters of the Kenai River and its tributaries, you may take sockeye, Chinook, coho, pink, and chum salmon through a separate rod and reel fishery in the Kenai River drainage. (2) Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these salmon species under State of Alaska fishing regulations (5 AAC 56, 5 AAC 57 and 5 AAC 77.540), except for the following harvest and possession limits: Table 10 to Paragraph (e)(10)------------------------------------------------------------------------ Species Size Limits------------------------------------------------------------------------Chinook salmon-- (January 1 Less than 46 2 per day and 2 in through July 15). inches or 55 possession. inches and longer.Chinook salmon-- (July 16 20 inches and 2 per day and 2 in through August 31). longer. possession.All other salmon.............. 16 inches and 6 per day and 6 in longer. possession, of which no more than 4 per day and 4 in possession may be Coho salmon, except for the Sanctuary Area and Russian River where no more than 2 per day and 2 in possession may be Coho salmon.------------------------------------------------------------------------ (i) In the Kenai River below Skilak Lake, fishing is allowed with up to two baited single or treble hooks June 15 through August 31. (ii) Annual harvest limits for any combination of Chinook salmon are four for each permit holder. (iii) Incidentally caught fish, other than salmon, are subject to regulations found in paragraph (e)(10)(iii)(D) of this section. (D) Kenai River and tributaries under ice jigging and rod and reel; resident species. (1) For federally managed waters of the Kenai River and its tributaries below Skilak Lake outlet at river mile 50, you may take resident fish species including lake trout, rainbow trout, and Dolly Varden or Arctic char with jigging gear through the ice or rod and reel gear in open waters. Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these resident species under State of Alaska fishing regulations (5 AAC 56, 5 AAC 57, and 5 AAC 77.540), except for the following harvest and possession limits: Table 11 to Paragraph (e)(10)------------------------------------------------------------------------ Species Specifications Limits------------------------------------------------------------------------Lake trout.................... 20 inches or 4 per day and 4 in longer. possession. Less than 20 15 per day and 15 in inches. possession.Dolly Varden or Arctic char... In flowing waters For fish less than 18 inches, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one may be 20 inches or longer, may be harvested daily.Rainbow or steelhead trout.... In flowing waters For fish less than 18 inches in length, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one fish 20 inches or longer may be harvested daily.------------------------------------------------------------------------ (2) For federally managed waters of the upper Kenai River and its tributaries above Skilak Lake outlet at river mile 50, you may take resident fish species including lake trout, rainbow trout, and Dolly Varden or Arctic char with jigging gear through the ice or rod and reel gear in open waters. Seasons, areas, harvest and possession limits, and methods and means for take are the same as for the taking of these resident species under Alaska fishing regulations (5 AAC 56, 5 AAC 57, 5 AAC 77.540), except for the following harvest and possession limits: Table 12 to Paragraph (e)(10)------------------------------------------------------------------------ Species Specifications Limits------------------------------------------------------------------------Lake trout.................... 20 inches or 4 per day and 4 in longer. possession. Less than 20 15 per day and 15 in inches. possession. From Hidden Lake. 2 per day and 2 in possession regardless of length.Dolly Varden or Arctic char... In flowing waters For fish less than 16 inches in length, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one fish 20 inches or longer may be harvested daily.[[Page 17725]] Rainbow or steelhead trout.... In flowing waters For fish less than 16 inches in length, 1 per day and 1 in possession. In lakes and 2 per day and 2 in ponds. possession, of which only one fish 20 inches or longer may be harvested daily.------------------------------------------------------------------------ (11) Prince William Sound Area. The Prince William Sound Area includes all waters and drainages of Alaska between the longitude of Cape Fairfield and the longitude of Cape Suckling. (i) You may take fish, other than rainbow/steelhead trout, in the Prince William Sound Area only under authority of a subsistence fishing permit, except that a permit is not required to take eulachon. You make not take rainbow/steelhead trout, except as otherwise provided for in this paragraph (e)(11). (A) In the Prince William Sound Area within Chugach National ***Forest*** and in the Copper River drainage downstream of Haley Creek, you may accumulate Federal subsistence fishing harvest limits with harvest limits under State of Alaska sport fishing regulations provided that accumulation of fishing harvest limits does not occur during the same day. (B) You may accumulate harvest limits of salmon authorized for the Copper River drainage upstream from Haley Creek with harvest limits for salmon authorized under State of Alaska sport fishing regulations. (ii) You may take fish by gear listed in paragraph (b)(1) of this section unless restricted in this section or under the terms of a subsistence fishing permit. (iii) If you catch rainbow/steelhead trout incidentally in other subsistence net fisheries, you may retain them for subsistence purposes, unless restricted in this section. (iv) In the Copper River drainage, you may take salmon only in the waters of the Upper Copper River District, or in the vicinity of the Native Village of Batzulnetas. (v) In the Upper Copper River District, you may take salmon only by fish wheels, rod and reel, or dip nets. (vi) Rainbow/steelhead trout and other freshwater fish caught incidentally to salmon by fish wheel in the Upper Copper River District may be retained. (vii) Freshwater fish other than rainbow/steelhead trout caught incidentally to salmon by dip net in the Upper Copper River District may be retained. Rainbow/steelhead trout caught incidentally to salmon by dip net in the Upper Copper River District must be released unharmed to the water. (viii) You may not possess salmon taken under the authority of an Upper Copper River District subsistence fishing permit, or rainbow/steelhead trout caught incidentally to salmon by fish wheel, unless the anal fin has been immediately removed from the fish. You must immediately record all retained fish on the subsistence permit. Immediately means prior to concealing the fish from plain view or transporting the fish more than 50 feet from where the fish was removed from the water. (ix) You may take salmon in the Upper Copper River District from May 15 through September 30 only. (x) The total annual harvest limit for subsistence salmon fishing permits in combination for the Glennallen Subdistrict and the Chitina Subdistrict is as follows: (A) For a household with 1 person, 30 salmon, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel. (B) For a household with 2 persons, 60 salmon, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel, plus 10 salmon for each additional person in a household over 2 persons, except that the household's limit for Chinook salmon taken by dip net or rod and reel does not increase. (C) Upon request, permits for additional salmon will be issued for no more than a total of 200 salmon for a permit issued to a household with 1 person, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel, or no more than a total of 500 salmon for a permit issued to a household with 2 or more persons, of which no more than 5 may be Chinook salmon taken by dip net and no more than 5 Chinook taken by rod and reel. (xi) The following apply to Upper Copper River District subsistence salmon fishing permits: (A) Only one subsistence fishing permit per subdistrict will be issued to each household per year. If a household has been issued permits for both subdistricts in the same year, both permits must be in your possession and readily available for inspection while fishing or transporting subsistence-taken fish in either subdistrict. A qualified household may also be issued a Batzulnetas salmon fishery permit in the same year. (B) Multiple types of gear may be specified on a permit, although only one unit of gear per person may be operated at any one time. (C) You must return your permit no later than October 31 of the year in which the permit is issued, or you may be denied a permit for the following year. (D) A fish wheel may be operated only by one permit holder at one time; that permit holder must have the fish wheel marked as required by paragraph (e)(11)(xii)(B) or (e)(11)(xiii)(E) of this section and during fishing operations. (E) Only the permit holder and the authorized member(s) of the household listed on the subsistence permit may take salmon. (F) You must personally operate your fish wheel or dip net. (G) You may not loan or transfer a subsistence fish wheel or dip net permit except as permitted. (H) While you are fishing from a boat or other watercraft, you may not use any device that indicates bathymetry and/or fish locations, e.g , fish finders. These devices do not have to be removed or uninstalled from a boat or watercraft. (xii) If you are a fish wheel owner: (A) You must register your fish wheel with ADF&G or the Federal Subsistence Board. (B) Your registration number and a wood, metal, or plastic plate at least 12 inches high by 12 inches wide bearing either your name and address, or your Alaska driver's license number, or your Alaska State identification card number in letters and numerals at least 1 inch high, must be permanently affixed and plainly visible on the fish wheel when the fish wheel is in the water. (C) Only the current year's registration number may be affixed to the fish wheel; you must ***remove*** any other registration number from the fish wheel. (D) You are responsible for the fish wheel; you must ***remove*** the fish wheel from the water at the end of the permit period. (E) You may not rent, lease, or otherwise use your fish wheel used for subsistence fishing for personal gain. (xiii) If you are operating a fish wheel: (A) You may operate only one fish wheel at any one time.[[Page 17726]] (B) You may not set or operate a fish wheel within 75 feet of another fish wheel. (C) You must check your fish wheel at least once every 10 hours and ***remove*** all fish. (D) No fish wheel may have more than two baskets. (E) If you are a permittee other than the owner, you must attach an additional wood, metal, or plastic plate at least 12 inches high by 12 inches wide, bearing your name and address in letters and numerals at least 1 inch high, to the fish wheel so that the name and address are plainly visible. (xiv) A subsistence fishing permit may be issued to a village council, or other similarly qualified organization whose members operate fish wheels for subsistence purposes in the Upper Copper River District, to operate fish wheels on behalf of members of its village or organization. The following additional provisions apply to subsistence fishing permits issued under this paragraph (e)(11)(xiv): (A) The permit will list all households and household members for whom the fish wheel is being operated. The permit will identify a person who will be responsible for the fish wheel and will be the same person as is listed on the fish wheel described in paragraph (e)(11)(xiii)(E) of this section. (B) The allowable harvest may not exceed the combined seasonal limits for the households listed on the permit; the permittee will notify the ADF&G or Federal Subsistence Board when households are added to the list, and the seasonal limit may be adjusted accordingly. (C) Members of households listed on a permit issued to a village council or other similarly qualified organization are not eligible for a separate household subsistence fishing permit for the Upper Copper River District. (D) The permit will include provisions for recording daily catches for each fish wheel; location and number of fish wheels; full legal name of the individual responsible for the lawful operation of each fish wheel as described in paragraph (e)(11)(xiii)(E) of this section; and other information determined to be necessary for effective resource management. (xv) You may take salmon in the vicinity of the former Native village of Batzulnetas only under the authority of a Batzulnetas subsistence salmon fishing permit available from the National Park Service under the following conditions: (A) You may take salmon only in those waters of the Copper River between National Park Service regulatory markers located near the mouth of Tanada Creek and approximately one-half mile downstream from that mouth and in Tanada Creek between National Park Service regulatory markers identifying the open waters of the creek. (B) You may use only fish wheels, dip nets, and rod and reel on the Copper River and only dip nets, spears, fyke nets, and rod and reel in Tanada Creek. One fyke net and associated lead may be used in Tanada Creek upstream of the National Park Service weir. (C) You may take salmon only from May 15 through September 30 or until the season is closed by special action. (D) You may retain Chinook salmon taken in a fish wheel in the Copper River. You must return to the water unharmed any Chinook salmon caught in Tanada Creek. (E) You must return the permit to the National Park Service no later than October 15 of the year the permit was issued. (F) You may only use a fyke net after consultation with the in-season manager. You must be present when the fyke net is actively fishing. You may take no more than 1,000 sockeye salmon in Tanada Creek with a fyke net. (xvi) You may take pink salmon for subsistence purposes from fresh water with a dip net from May 15 through September 30, 7 days per week, with no harvest or possession limits in the following areas: (A) Green Island, Knight Island, Chenega Island, Bainbridge Island, Evans Island, Elrington Island, Latouche Island, and adjacent islands, and the mainland waters from the outer point of Granite Bay located in Knight Island Passage to Cape Fairfield; (B) Waters north of a line from Porcupine Point to Granite Point, and south of a line from Point Lowe to Tongue Point. (xvii) In the Chugach National ***Forest*** portion of the Prince William Sound Area, you must possess a Federal subsistence fishing permit to take salmon, trout, whitefish, grayling, Dolly Varden, or char. Permits are available from the Cordova Ranger District. (A) Salmon harvest is not allowed in Eyak Lake and its tributaries, Copper River and its tributaries, and Eyak River upstream from the Copper River Highway bridge. (B) You must record on your subsistence permit the number of subsistence fish taken. You must record all harvested fish prior to leaving the fishing site, and return the permit by the due date marked on the permit. (C) You must ***remove*** both lobes of the caudal (tail) fin from subsistence-caught salmon before leaving the fishing site. (D) You may take salmon by rod and reel, dip net, spear, and gaff year round. (E) For a household with 1 person, 15 salmon (other than pink) may be taken, and 5 cutthroat trout, with only 2 over 20 inches, may be taken; for pink salmon, see the conditions of the permit. (F) For a household with 2 persons, 30 salmon (other than pink) may be taken, plus an additional 10 salmon for each additional person in a household over 2 persons, and 5 cutthroat trout, with only 2 over 20 inches per each household member with a maximum household limit of 30 cutthroat trout may be taken; for pink salmon, see the conditions of the permit. (G) You may take Dolly Varden, Arctic char, whitefish, and grayling with rod and reel and spear year round and with a gillnet from January 1-April 1. The maximum incidental gillnet harvest of trout is 10. (H) You may take cutthroat trout with rod and reel and spear from June 15 to April 14th and with a gillnet from January 1 to April 1. (I) You may not retain rainbow/steelhead trout for subsistence unless taken incidentally in a subsistence gillnet fishery. Rainbow/steelhead trout must be immediately released from a dip net without harm.\* \* \* \* \*Sue Detwiler,Assistant Regional Director, U.S Fish and Wildlife Service.Gregory Risdahl,Subsistence Program Leader, USDA-***Forest*** Service.[FR Doc. 2021-07016 Filed 4-5-21; 8:45 am]BILLING CODE 3411-15-P; 4333-15-P

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[***ZERO AMBITION; IN THE FIGHT AGAINST CLIMATE CHANGE***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62SD-YW51-DY2B-S0NB-00000-00&context=1516831)

Forbes Polska (English)

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**Section:** PHENOMENON ON THE ROAD TO ZERO-CARBON; Pg. 28; No. 6

**Length:** 2423 words

**Byline:** Magdalena Krukowska

**Highlight:** Major economies have finally set out the pace at which they will move towards zero carbon. This is good news. The worse news is that they themselves don't know how to achieve it. And the bad news is that climate catastrophe cannot be avoided unless we change our lifestyles

**Body**

Ryan Shearman, founder of the New York-based company Aether, confided to Vogue magazine that he dreams of becoming the modern-day king of diamonds. Only that he, unlike the original one - Cecil Rhodes, who became one of the lucre of the 19th century world thanks to the exploitation of South African mines - obtains precious stones from... the air. Specifically, carbon dioxide.

The process begins by capturing CO2 from the atmosphere. The gas undergoes a chemical reaction in which it is subjected to high pressure and extremely high temperatures. All this is done by solar, wind or hydraulic power, and the finished diamond is created in just one month. Aether sells its jewels at prices ranging from 7 thousand dollars for a ring to about 40 thousand for earrings. It even has a competitor already - the British company Skydiamond founded by Dale Vince, who claims to have spent five years researching how to make "the world's first zero impact diamonds. "

WHEN THESE IDEAS WERE CONSIDERED TO BE A LITTLE PROSPECTIVE FREAK. Why produce something out of thin air when it can still be easily extracted cheaply from mines? Such an approach, however, is quickly becoming obsolete. The trend so far is mainly towards conventional fossil fuels, but it does show the direction in which consciousness and economic calculation are heading.

At a summit called by Joe Biden on April 22, Earth Day, the United States pledged to reduce greenhouse gas ***emissions*** by 50 to 52 percent by 2030 and, following the lead of the European Union, to achieve complete climate neutrality by 2050. Canada, Japan, the United Kingdom and even China have presented their paths to reduce ***emissions*** and want to be carbon neutral by 2060. This is followed by huge funds from the budgets for supporting climate protection projects. Specifically, USD 2 trillion in the US, and in the EU - 30% of the EUR 1.8 trillion budget of the Multiannual Financial Framework 2021-2027, or the pandemic reconstruction fund worth almost EUR 800 billion. This is the money that everyone looking for a place for themselves on the new, green market is counting on.

First, however, we had to make an examination of conscience. Countries were reluctant to do it. They were even less eager to do penance. When, at the end of the 1960s, NASA published the first photographs of the Earth as seen from space, this image was to bring about a breakthrough in the consciousness of society. We were supposed to finally understand that we have a responsibility for a planet, alone in the vast universe, which is our only home. However, it was mainly the environmental movements that were aware of this. Even though scientists increasingly agreed that the climate was warming. And that man is responsible for it.

This process, as Thomas L. Friedman explains in his book "Hot, Flat and Crowded", was accelerated by globalization and population growth, because the demand for energy and food increased many times over. While the rich countries of the West continued to consume huge amounts of electricity and raw materials, the big developing countries gradually sat down at the table of the middle class. 2004 turned out to be a watershed year, according to Larry Goldstein, a former expert at the Energy Policy Research Foundation, because the oil price shock of that year was for the first time the result not of armed conflict and geopolitical games but of a surge in demand from China. The world understood that fossil fuels were slowly running out, becoming not only more expensive but also politically and climatically toxic.

The red light was Hurricane Katrina, which hit New Orleans in 2005 and gave a sample of what the effects of unchecked climate change might look like. In the same year, the report of the International Panel on Climate Change (IPCC) was released and its conclusion was unequivocal. Without a drastic reduction in CO2 ***emissions***, climate change is likely to have "rapid and irreversible" effects on the air, oceans, glaciers, ***land*** and animals and plants. And further increases in CO2 ***emissions*** at the projected rate will lead to a warming of 4-5°C by 2100 compared to the pre-industrial era, threatening humanity with extinction. Not to mention economic catastrophe.

Despite the prevailing pandemonium and crisis, the authors of this year's report of the World Economic Forum "The Global Risks Report" identified the lack of action on climate change as the most important risk in a long-term perspective.

- There is no vaccine against climate risks, so post-pandemic recovery plans should focus on growth, aligned with the content of sustainable development programs, which in turn will facilitate the recovery of economies - adds Peter Giger, head of risk at Zurich Insurance Group.

The first attempt to address this risk globally was the ratification of the Kyoto Protocol in 2005. Its main objective was to reduce greenhouse gas ***emissions*** by 5 per cent between 2008 and 2012 compared to 1990 levels. Admittedly, most of the 141 countries theoretically achieved the adopted goals, but firstly the base was low, and secondly the highly developed countries, mainly the EU as a whole, worked for the developing countries. And most importantly, the biggest polluter at the time, the USA, never signed the Protocol.

For years, the biggest driver in the drive to reduce ***emissions*** was the European Union, whose key tool to achieve this goal was the carbon dioxide ***emissions*** trading scheme (ETS for short), established in 2005. It still covers over three quarters of the international trade in ***emission*** rights, which emerged as a result of the Kyoto agreement. Within a set ceiling, companies are given or bought allowances. Many companies have also taken advantage of the so-called Clean Development Mechanism, which allows them to invest in pollution-reduction projects in other countries or regions to earn ***emission*** credits. Developing countries received additional capital for the development of renewable energy projects or reclamation of mining areas. As Naomi Klein argues in "This Changes Everything. Capitalism vs. climate ", the system has also attracted a large group of "crooks and fraudsters", who use it to "compensate" for the ***emissions*** of the biggest polluters by buying up ***forested*** ***land*** in poor countries of Africa or South America or planting trees where they threaten local ecosystems.

In effect, between 1/3 and 2/3 of the carbon credits bought under the ETS did not reflect real reductions in carbon ***emissions***. It was also common to deliberately increase ***emissions*** of harmful greenhouse gases so that they could later be charged for reducing them. Moreover, so many allowances were issued that after the economic crisis in 2008, when production and consumption fell, the market was flooded with them. There was no incentive to move away from dirty energy or to buy carbon credits. It was only a year ago that the EU withdrew excess allowances, which caused their prices to skyrocket. This caused their prices to skyrocket, driving up the cost of electricity, especially in countries like Poland. And so although greenhouse gas ***emissions*** in the EU alone fell by almost a quarter by 2019, globally they continued to rise. In 2019 they reached their historical high, most of which was due to the burning of fossil fuels. China, the US, the EU, the UK and India are responsible for more than half of these ***emissions***. And there is no indication that this will change, as the brief drop in 2020 was a temporary pandemic effect.

The forced ***emission*** reduction system covers mainly power plants and heavy industry, which - roughly speaking - are responsible for 1/3 of greenhouse gas ***emissions***. Apart from these, there is construction, ***agriculture***, waste and transport. The latter is growing along with the increase in world GDP. And on current trends, by 2050 it will consume from 60 to 220 percent of the entire so-called "carbon budget ", which in scientific scenarios would ensure maintenance of the average temperature increase at a "safe" level of 1.5 ° C above the level of the pre-industrial era. Meanwhile, only aviation ***emissions*** are covered by the ETS, but only for flights within the European Economic Area.

The magic 1.5°C limit was agreed five years ago under the Paris Agreement. So was the goal of reducing greenhouse gas ***emissions*** to net zero by around mid-century. More and more countries, institutions and companies are declaring it. The list includes not only the EU, USA or China, but also Microsoft or Google. It is difficult to find a corporation which does not boast in its social responsibility reports that it is on the road to zero-***emissions***. They commission specialized foundations to plant trees or buy green energy.

Meanwhile, according to a report published in April by the European Commission's Joint Research Centre, although many countries are declaring increasingly ambitious goals for reducing greenhouse gas ***emissions***, they are barely at the initial stage to reduce ***emissions*** by less than 1% by 2030 compared to 2010 levels. While the Intergovernmental Panel on Climate Change says that in order to stop the temperature from rising to 1.5 degrees Celsius, ***emissions*** should be reduced by 45 percent by then... In addition, scientists have detected a gap of about 5.5 billion tons of CO2, equal to the amount emitted annually by the U.S., between the amount of warming ***emissions*** that countries report and the amount that actually reaches the atmosphere.

- While this is mainly due to differences between the measurement methods that countries report under the 2015 Paris Agreement and those used in international models, it shows that we can't even count how much we are emitting, says Giacomo Grassi, the study's author.

Moreover, the details of net-zero declarations can vary widely. Some apply only to carbon ***emissions***, as in the case of China, while others include other greenhouse gases such as methane and industrial gases. The United States has not specified which greenhouse gases it will limit at all. Companies choose the ***emissions*** associated with their operations, while others take into account ***emissions*** from the entire supply chain. Some reduce them directly, for example by changing production methods, while others offset part of their ***emissions*** through the offsetting mentioned earlier. That's why, even before the April summit called by President Joe Biden, Greta Thunberg tweeted: "Mind the gap!" The point was that leaders should not deceive citizens or themselves about gas ***emissions***, and should not use gimmicks to count them.

- Even if we can fool others and even ourselves, we cannot fool nature or the laws of physics. The ***emissions*** are still there, whether we count them or not," says the activist.

Why do scientists insist that aiming for zero ***emissions*** is so important? Because about 1/5 of the carbon dioxide emitted today will still be in the air in 10 thousand years. So there is no scenario in which we keep adding to the atmosphere, even a little, and the world stops heating up. Moreover, as Bill Gates argues in his book "How to save the world from climate catastrophe ", there is no realistic path to zero, assuming abandoning fossil fuels or refraining from all other activities that in effect lead to ***emissions***. For example, the production of cement, the use of artificial fertilisers or methane leaks from burning gas in power stations. On the contrary, in a zero carbon future we will still be responsible for some ***emissions***, only we will have ways to ***remove*** the emitted gas. "Zero" is therefore just a symbol.

- One thing is certain: a fall in ***emissions*** of barely 50 percent will not stop the rise in temperature, but only slow it down. It will postpone the climate catastrophe, but not prevent it - stresses Gates.

There is another reason why the policy of neutrality is so important. It's about who will be the leader in an economy that is running out of existing growth fuels. That is why, after years of being a brake on the process, the USA joined the zero-***emission*** race. They found out that in the competition on the market of clean technologies they lose not only with Europe but also with China. However, neither scientists nor politicians or investors have any doubts that even the largest funds invested in their development will not help save the climate in the face of growing global consumption, production and transport. The fact that even the greatest supporters of sustainable development are in a difficult situation is evidenced by the fact that the EU Eurocrats have allowed gas and nuclear power as "green" energy sources.

It is not possible to meet the growing demand from renewable sources overnight. As underlined by the authors of the latest report "***Emissions*** Gap" of the UN Environmental Programme, barely 10% of the richest part of mankind is responsible for almost half of the world's ***emissions***. Two-thirds of ***emissions*** are generated by households. Oxfam has calculated that the super-rich (the top 0.1 percent of income) have a carbon footprint several hundred times higher than the average for the poorest half of humanity. To stop global warming at no more than 1.5°C, the richest 1 percent of people would have to reduce their ***emissions*** at least 30 times! And it's not just the carbon footprint of their flights or the houses they build for them, but also the meat grown on soya grown in the cleared Amazon rainforest. Or the food produced for them, wasted every day in plastic packaging.

- Without changing habits and lifestyles, there is no way to save the planet - conclude the authors of the UN report. In this context actually Shearman's invention does not seem so strange.

TEN PERCENT. Of the richest part of humanity is responsible for almost half of the CO2 ***emissions*** into the atmosphere (UN data)

24 PROC. C02 ***emissions*** are generated globally by transport. Air transport alone accounts for 2% of ***emissions***

AND ***EMISSIONS*** CONTINUE TO RISE

Although ***targets*** have been set to reduce CO2 ***emissions***, they are still rising. They won't stop until all countries move to a zero-carbon path. CO2 ***emissions*** (in gigatonnes)

TEMPERATURE WILL RISE ANYWAY

Scenarios for global average temperature rise to 2100

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**Graphic**

PHOTO: ERNESTO GONZALES

Hurricane Katrina, which hit New Orleans hard in 2005, showed a sample of what the effects of climate change could look like

Without drastic cuts in CO2 ***emissions***, global warming will have irreversible effects

PHOTO: GETTY IMAGES (2)

Complete abandonment of fossil fuels is the only way to avoid catastrophe

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[***A framework for national scenarios with varying emission reductions***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2B1-JCWX-C2S0-00000-00&context=1516831)

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**Body**

Main

The Paris Agreement defines a long-term temperature goal for international climate policy: “holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels”. While this global goal defines the fundamental direction of international climate policy, its achievement critically depends on national actions and policy-making at the national level. As part of the Agreement, countries are required to submit Nationally Determined Contributions (NDCs) outlining their GHG ***emissions*** reduction efforts at the national scale. Within the Paris Agreement, there are several mechanisms to ensure that national actions align with the global goals; first, Parties are required to regularly report on their progress towards implementing their NDCs. These reports form part of the so-called Global Stocktake; that is, an assessment of the sum of the national contributions. Second, countries are also required to submit long-term strategies (LTSs) to the UNFCCC (also called mid-century strategies). Some countries have already submitted them, and others are preparing to do so (as of September 2020). Third, the Paris Agreement contains provisions to increase efforts over time, through what has been dubbed the ratchet mechanism.

In summary, one objective of the Agreement is to have national actions aligned with long-term goals, with routine checks and revisions of short- to medium-term national goals and policies.

Model-based climate and ***emissions*** scenarios are pivotal instruments for determining whether proposed actions are in line with the long-term goals,. In the Fifth Assessment Report of the IPCC (AR5), over a thousand scenarios were summarized in the database, assessed and classified by both assumption and mitigation levels. The Special Report on 1.5 °C was also accompanied by a large set of global scenarios that depict ***emissions*** pathways through the twenty-first century,. Many global model scenarios have been developed under specific model intercomparison projects (MIPs) by sharing scenario implementation protocols that prescribe the characteristics of the scenarios (for example carbon budgets, technological availability). This allows systematic assessment of a set of research questions and robust insights into climate change mitigation–.

In a similar way to the role of global ***emissions*** scenarios in international negotiations, national scenarios have widely contributed to national policy-making. In several countries and regions this is done by national modelling teams, but results are largely disseminated in governmental reports or as internal information, and only occasionally shared in academic papers–. Taking Japan as an example: a task force was established to determine the 2020 ***emission*** ***target*** in 2008, and its recommendations were published in a book (only available in Japanese), while there was no official scenario assessment for the NDCs submission. MIPs exist not only at the national level (for the United States, China, Brazil and Japan–), but also for specific regions such as the EU, Asia and Latin America. There have been a few attempts to collect national scenarios such as in the Linking Climate and Development Policies—Leveraging International Networks and Knowledge Sharing project (CD-LINKS,, which also includes individual national scenarios–), the Climate Policy Assessment and Mitigation Modeling to Integrate National and Global Transition Pathways (COMMIT; [*https://themasites.pbl.nl/commit/*](https://themasites.pbl.nl/commit/)) project and The Deep Decarbonization Pathways Project (DDPP),. Moreover, various studies have assessed NDC implications, from sectoral perspectives– to the broader context of the UN Sustainable Development Goals–. It should also be noted that many countries do not have publicly available national energy or ***emissions*** scenarios.

Some major emitting countries rely on the scientific basis of existing national scenarios for national climate policy-making,, whereas many others do not. Furthermore, the ***emissions*** reduction ***targets*** of national scenarios are either determined by their own countries’ interpretation of global goals (such as taking 2 °C-consistent pathways and judging these by themselves) or are derived from global scenarios, such as those based on either cost-optimal scenarios or effort sharing schemes (left column in Table ). Recent efforts made by national MIPs (for example, CD-LINKS) have shared a scenario protocol across countries based on global IAM results, but these allow only an assessment of specific conditions (for example, cost-optimal and global uniform carbon prices). Moreover, the modelling capability and the main strategies of GHG ***emissions*** reduction can be diverse across nations. Consequently, the level of ***emissions*** mitigation in national scenarios varies, which implies challenges for comparing mitigation costs and the degree of energy system changes across countries and scenarios. Apart from scenarios, real national ***emissions*** ***targets*** for both the near term and long term have often changed and will continue to do so in the future under various political and social circumstances. If only scenarios under specific, but limited, ***emissions*** reduction ***targets*** are available, the national scenarios quickly become outdated and irrelevant (see ‘Complexity in the assessment of national scenarios’).

Summary of the characteristics of global and national scenarios

|  | **Global scenarios** | **National scenarios** |
| --- | --- | --- |
| Producers | IAMs | National energy/IAMs |
| Main users of the research outcomes | The IPCC, UNEP, UNFCCC, international and national policymakers | National policymakers, private companies, stakeholders and the IPCC |
| Main study ***target*** | Global climate goals and the associated implications for the climate, energy, the economy, ***land***-use and so on | Individual national climate goals/***targets*** and their implications for energy, the economy, ***land***-use and so on |
| Scenario implementation | Individual studies or standardized modelling protocols implemented by multiple models | Some standardization in projects, but mostly specific and varied |
| Community organization | Well established in the Integrated Assessment Modeling Consortium (IAMC) | Partially organized in different communities, often as part of a modelling framework (such as The Energy Technology Systems Analysis Program, but also to an extent in the IAMC) |

Given this current situation, what if there were a standardized scenario framework that covers a wide range of ***emissions*** ***targets*** under the same reduction ***targets*** that are shared and implemented by many countries? For example, suppose that there were publicly available scenarios to reduce national ***emissions*** by 80% or 100% (not cumulative ***emissions***) in 2050 for dozens of countries. What would the benefits for national policy-making of such a scientific basis standardized scenario framework be? There are at least four key benefits. First, it would reveal the dynamics of each nation’s energy, ***land***-use and ***agricultural*** systems, as well as economic implications, if the selected countries were to reduce ***emissions*** by similar levels. For example, a Japanese energy model comparison study was conducted, which found that even under the 80% reduction ***target*** in 2050, Japan would still have relatively high industrial sector energy demands because of its large dependency on heavy industry and limited renewable energy sources due to the small area of the country in comparison with the EU and the United States. This kind of assessment would become available on a broader scale. Second, transparent publication in the scientific literature of the scenarios, the simulation models and how the scenarios were generated would contribute to ensuring that the scientific basis and quality of models and scenarios are maintained, to some extent, although this happens more frequently than before. This is critical for evidence-informed policy-making. Third, this might allow a direct comparison of the challenges that countries are facing in achieving ***emissions*** reduction ***targets***, which would be valuable when assessing the forthcoming national long-term climate ***targets*** from the perspective of social transition. Fourth, this would allow climate policymakers to compare each country’s ***emissions*** ***targets*** and assess whether their own national ***targets*** are compatible with other countries’ multiple reduction ***target*** possibilities or sufficient to reach the global long-term goals. Ultimately, policymakers may want to update the national ***targets***; these are already supposed to undergo routine review as part of the Global Stocktake under the Paris Agreement. Although individual nations would have their own interests and priorities and the standardized simple scenario may not be sufficient to assess the national climate policies, such scenarios could at least be an entry point to communication with policymakers in many countries. From there, each country could build their own specialized and customized scenarios. We summarized the global and national modelling and scenarios circumstances in Table .

Here we present the issues with current national scenarios, propose a systematic and standardized scenario framework and demonstrate the implementation of such a framework for a few selected countries. Our proposal could ultimately contribute to the establishment of a central national scenario datahub for further national scenario assessments, similar to what has already been done for global scenarios (Table ). We then discuss the complexity and expected criteria of national scenarios.

Complexity in the assessment of national scenarios

For short- to medium-term perspectives focusing on the next ten years, national policies and policy options, as well as stakeholder interests, are the primary concerns. In contrast, from a long-term perspective, a simple, comparable and systematic approach has clear benefits, facilitating a reassessment of the option space. It should be recognized that there are many determinants that are relevant for the specification of national ***emissions*** pathways, such as (1) global climate ***targets*** in the context of international commitments; (2) how to select global pathways in line with global long-term goals (for example, multi-IAMs uncertainty and physical climate science uncertainty); (3) selection of effort sharing schemes; (4) economic development stages in individual countries; and (5) other societal and development priorities that may be critical factors in determining the challenges of ***emissions*** reductions. The ***emissions*** reduction levels and challenges to achieving them naturally vary across countries and scenarios, and there is no need to have identical reduction levels across countries. The current NDCs, which are based on each nation’s voluntary actions, are in many cases ambiguous, leading to significant uncertainty regarding the actual level of ***emission*** reduction ***targets***. This may or may not be because nations would prefer to keep some flexibility in the interpretation of their ***target*** statements, resulting in a degree of flexibility significant enough to change long-term global implications. Either way, this would imply that, in principle, it is inevitable to have some degree of uncertainty in the actual national ***targets***, and we should eventually develop strategies to cope with such uncertainties (more explanation for each source of uncertainty is given in Supplementary Note ).

Expected criteria for upcoming national scenarios

Given the above-mentioned uncertainties, here we discuss the expected characteristics of the national scenarios, as listed below:

Cross-national comparability

Compatibility and cohesion with global climate goals

Policy relevance

Ability to address critical national ***target*** uncertainties

Simple implementation without ambiguities in the interpretation of the modelling protocol

The comparability, which enables exploration of the relative stringency of national ***targets***, is particularly beneficial for assessing national scenarios. One possible way to achieve this is fixed reduction rates across countries (for example, 80% reduction compared with a base year). The implications for the energy, ***land***-use and economic transitions can reveal the associated challenges. Regarding the cohesion with global ***emissions*** pathways, global ***emissions*** scenarios with the climate goal specifications (for example, 2 °C and 1.5 °C) in conjunction with effort sharing assumptions can bridge national and global scenarios. There can be considerable variation in national ***emissions*** pathways derived from the combination of effort sharing and global pathways, but we will show how our proposed framework can easily be mapped with global scenarios. For scenarios to be policy-relevant, the ***emission*** reduction levels should not be far from the ***targets*** laid out in forthcoming national LTSs. Exploring multiple mitigation levels has the advantage of identifying potential ambiguities in forthcoming LTSs, as well as enabling sensitivity analyses around the eventual LTS chosen. For example, supposing that the LTS for a country does not specify the GHG coverage but instead declares a 50% reduction ***target*** in 2050, multiple scenarios would be mapped with full Kyoto gases (CO2, CH4, N2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF6)) cases and CO2-only cases. A similar approach can be applied to other ambiguities. Finally, the simplicity of a modelling protocol that avoids ambiguities in its interpretation and the ease of implementing scenarios are of key importance to (1) allow such exercises to be performed in a decentralized manner, and (2) keep the barrier to joining such an effort as low as possible. The simplicity would facilitate updating of these scenario exercises on a regular basis, which will be discussed in the next section in more detail.

Proposal for a systematic national scenario framework

We thus propose a systematic and standardized approach for national scenarios that appropriately covers plausible future ranges of mitigation pathways and enables comparison across countries. Here we refer to this framework as national long-term pathways (NLPs), which comprises a set of national scenarios explained below. The role of NLPs could resemble Representative Concentration Pathways (RCPs) in formulating the ambition and range of climate ***targets***. Following earlier works, we use the term ‘scenario’ to describe a plausible, comprehensive, integrated and consistent description of how the future might unfold, whereas the term ‘pathway’ is used for a set of scenarios. This NLPs approach permits hedging against future national ***target*** uncertainties by not specifying a single ***emissions*** reduction ***target***, but instead exploring multiple systematic scenarios associated with percentages of ***emissions*** reductions in 2050, the commonly considered ***target*** year for LTS, as a default set.

We classify two kinds of scenario. One is the so-called baseline, which excludes climate change mitigation policy but can include implemented and planned policies, as was done in earlier literature. Other socioeconomic assumptions are up to the individual modeller’s choice, but we encourage avoidance of unusual specific assumptions such as without carbon capture and storage (CCS) and low energy demands. Although this modeller’s choice might sometimes make the assessment and interpretation of the results difficult because socioeconomic backgrounds can differ among countries, there is an advantage in being able to skip a process to discuss what socioeconomic assumptions should be used and reach an agreement. More importantly, globally standardized socioeconomic scenarios such as the Shared Socioeconomic Pathways (SSPs) would not be most appropriate for individual countries, and thus the selection and assumption of socioeconomic conditions would depend on each country. If the national modellers cannot access national socioeconomic perspectives, the use of globally standardized SSPs would be recommended. The second kind of scenario is climate scenarios that ***target*** between 10% and 100% ***emissions*** reduction in 2050 compared with base year ***emissions***, with 10% intervals covering the space between them. This can also be mapped with intensity ***targets***, such as carbon intensity with gross domestic product (GDP) assumptions. For 2030, NDC ***targets*** can be adopted, but these may have variations associated with conditional/unconditional ***targets***. Considering the current political situation, in which many countries are announcing carbon neutrality ***targets*** for different years that are not always 2050, our proposed ***emissions*** pathways can be easily extrapolated linearly beyond 2050 and can be assessed from the timing of zero ***emissions*** and the required transition towards that goal. If a model is unable to obtain feasible solutions for specific scenarios because ***emissions*** reductions are too strict, this information would also be reported. Energy-related CO2 ***emissions*** are the default ***emissions*** coverage. As we will discuss later, although there can be multiple options in the coverage of species and sectors (for example, full GHGs, including ***land*** sector), we chose specific ***emissions*** as defined above for two main reasons. First, energy-related CO2 ***emissions*** are the major source of ***emissions*** in most countries at present. Second, national modelling concerned with climate change mitigation policy is, in many cases, initiated from energy modelling, and considering developing countries whose modelling capability is relatively low, limiting the scope of coverage would be effective to enhance participation. Incorporation of other CO2 and non-CO2 ***emissions*** is not limited, because they are critical elements that determine the total GHG ***emissions***. It is also important to design a holistic human system from energy, ***land***-use and economic perspectives. The reduction percentages are relative to the specific base year (for example, 2010) for which the national ***emissions*** inventory is available for most countries and can thus exclude unnecessary uncertainties in the current NDCs. In this way, the NLPs proposal meets the criteria stated above, with comparability across countries, compatibility and cohesion with global climate goals, policy relevance and a relatively simple implementation protocol, and a strategy to address uncertainties.

There should be flexibility in this proposal regarding at least the following two points. First, there are several options for ***emissions*** gas coverage. Full Kyoto GHGs would yield the best coverage, but sectoral and gas coverages can vary. For the gas coverage, this could include only CO2 or three major GHGs (CO2, CH4 and N2O). The sectoral coverage would be either full-sector or energy-related ***emissions*** only. This coverage should be considered depending on the availability of the information, composition of gases (for example, Brazil could have a large portion of ***emissions*** from the ***land***-use sector) and modelling capability for each country. For non-CO2 ***emissions***, the global warming potential (GWP), which is the heat absorbed by GHGs in the atmosphere as a multiple of the heat that would be absorbed by the same mass of CO2, should be standardized and a GWP100 metric should be used, as applied by UNFCCC and IPCC as the default choice in their reporting. Second, the reduction levels can be changed depending on country. For example, baseline ***emissions*** would not be increased for developed countries, whereas most developing countries can have much higher ***emissions*** in the future than now and starting the reduction percentage from 0% could still be deemed ambitious. For developed countries, more granularity might be needed for the range of deep reductions, and thus 5% intervals between 70% and 100% could be also attractive. The base year can also be flexible if needed (further flexibility options are given in Supplementary Table ).

We also propose to routinely and periodically run this systematic scenario framework. In the global IAM community, there are series of almost routine-basis MIPs (for example, the Energy Modeling Forum (EMF)), which now have a large influence on global climate policies. In contrast, national scenarios are not yet so well established and can derive much more benefit from a scenario generation routine. There are multiple options for the routine intervals, such as every five years, every IPCC assessment cycle or according to international political milestones (for example, every Global Stocktake). The pros and cons of these choices can be considered later, but here we emphasize the advantages of having a regular scenario exercise under a similar protocol. First, the research community would be able to routinely provide policy-relevant information, tracing the model development history and tracking how the scenarios have changed over the period. Second, these regular exercises would allow individual countries’ researchers to anticipate the forthcoming exercises and prepare a plan for model development, as well as take advantage of funding opportunities. In particular, this would be useful for developing countries where the energy models/IAMs are not yet fully developed. Note that it might be challenging to maintain completely harmonized protocols over time as political circumstances change (for example, the NDC process and its updates). The need for the routine exercise can also be extended to the global integrated assessment modelling community; the climate modelling community has such an experimental design, namely the Diagnostic, Evaluation and Characterization of Klima (DECK), under the umbrella of the Coupled Model Intercomparison Project (CMIP).

Keeping the scenario protocol simple is important and would enable modellers to implement the scenarios at regular intervals. In the meantime, in theory, tens of scenario variations depending on socioeconomic, technological availability/cost and policy assumptions could be developed. For example, SSPs in the global modelling community allow us to explore the variation of future socioeconomic assumptions. Concerning variations in technological availability and cost, there are well-known examples in the global study carried out under EMF27 and the Assessment of Climate Change Mitigation Pathways and Evaluation of the Robustness of Mitigation Cost Estimates (AMPERE) projects, (for example, non-CCS scenarios). Furthermore, there are similar national or regional implementations–. These scenario variations can be added to the standard set as supplementary (extended) scenarios in a similar way to those proposed in the SSPs.

Regarding the relationships with policymakers, there are at least three main roles. First, for those countries that have not yet developed national scenarios, NLPs can provide opportunities to generate national scenarios, which would create dialogue between modellers and policymakers. Second, regardless of the existence of the national scenarios, comparable multinational scenarios can provide meaningful insights for each national policymaker, because national climate policy cannot be independent of the international context. These two benefits are valid for both the short and long term. Third, although it would be valuable to continue routine-based standardized scenario-making, more customization of the scenarios for each country might be needed in terms of socioeconomic assumptions and some specific national interests in the long term (for example, no more nuclear power in Japan). NLPs would then become an entry point for shifting from the standardized and systematic approach to creating such individual and unique national scenarios. Eventually, NLPs would provide a platform to maintain the national scenario modelling community that can enhance a dialogue among modellers and policymakers in a similar manner to CMIP.

Demonstration of the proposal scenario design

To explore how this newly proposed scenario set can be used, we have implemented the framework in selected Asian countries that have a large diversity in economic development stages, economy size and energy consumption patterns: China, India, Japan, Korea, Thailand and Vietnam. Each country individually runs national models, which means that countries do not change international market conditions. For scenario quantifications, we used the Asia-Pacific Integrated Model (AIM), which has been extensively applied in global and national climate change mitigation studies (Methods).

We first focus on an assessment of a single country: in this case, Japan (Fig. ). The ***emissions*** in the baseline scenario are almost unchanged throughout the period, whereas climate mitigation scenarios, named CM30 to CM100, meet the NDC ***emission*** reduction ***target*** of 26% in 2030 and hit incremental 10% reductions levels as prescribed in the protocol in 2050 (Fig. ). Then, we compare projected ***emissions*** in 2050 with the global ***emissions*** pathways in conjunction with effort sharing schemes (Fig. ; Methods). As we consider the multiscenario uncertainties of global IAM ***emissions*** pathways for 1.5 °C and 2 °C climate stabilization, at the national level, there is a large range of ***emissions*** levels associated with various effort sharing schemes (Fig. ). Here we also illustrate ***emissions*** ***target*** space with the long-term national goal for 2050, which in the case of Japan is an 80% reduction, but there is a range because the reference year and the GHG coverage are unspecified.

Illustrative example of the interpretation of the NLPs using Japan as a case study.

a, Global ***emissions*** pathways under the scenarios indicated. b, National ***emissions*** pathways. c, ***Emissions*** in 2050 with a goal of 2 °C (left) or 1.5 °C (right) of warming considering global pathways (all available scenarios are considered), effort sharing schemes and the long-term national goal of an 80% reduction. The uncertainty range (red shaded area) is associated with an unspecified reference year and gas coverages. The dashed red lines are ***emissions*** in 2010, and grey dashed lines correspond to incremental 10% reduction levels from base year ***emissions***. d, Energy system implications represented by the primary energy supply and its composition in 2050. e,f, Policy cost implications in terms of carbon prices (e) and GDP loss rates (in terms of US$2005; f). AP, ability to pay; BAU, business-as-usual baseline scenario, ECPC, equal cumulative per capita ***emissions***; GDR, greenhouse development rights; GF, grandfathering, IEPC, immediate per capita convergence, PCC, per capita convergence.

Then the energy system and economic implications for each ***emission*** reduction level are presented, which depend on the ***emissions*** reduction ***target*** levels (Fig. ). For example, the total energy supply is almost constant under a 30–60% reduction, while the scenario with a 100% reduction in ***emissions*** implies a drop in supply by around half of the baseline. In other words, beyond 60–70% of ***emission*** reductions, a significant contribution of demand-side measures, including both energy efficiency improvements and behavioural change, are needed. Regarding the composition of energy sources, the contribution from low-carbon energy technology sources such as CCS and renewable energy sources gradually increase as reduction levels rise. The macroeconomic costs of mitigation increase considerably with more ambitious ***targets*** (Fig. ) and could rise to 3%, 4% and 4.5% of GDP losses with ***emission*** reduction ***targets*** of 80, 90 and 100% in 2050, respectively. Carbon prices are much more sensitive to reduction levels, increasing sharply to over US$5,000 tCO2−1 in a 100% reduction scenario, and to around US$2,000 tCO2−1 and US$1,000 tCO2−1 in 90 and 80% reduction scenarios, respectively. The carbon price would become extremely high under stringent reduction ***targets***, but this is due to the availability of negative ***emissions*** in Japan, where only a small area is left for energy crops and bioenergy combined with CCS. Below ***target*** reductions of 60%, prices are lower than US$200 tCO2−1 over the period. More indicators are presented in Supplementary Fig. for Japan and Supplementary Figs. – for other countries; several basic trends in many variables can be observed. There are gradual changes, with carbon price reductions in most cases, but it should be noted that there are some variables and countries for which convergences are apparent. For example, carbon prices and GDP losses in India and Vietnam display a trend that is due to the availability of CCS, including bioenergy combined with CCS. Once CCS becomes widely available, the carbon price is reduced. Final energy consumption in China, India and Vietnam therefore decreases along with the increasing rates of carbon price reduction in the 2020s and 2030s, but then converges in the 2040s. These results are due to the enhancement of electrification under mitigation, which offsets energy efficiency improvements.

Applying the framework to a country that submitted an LTS, the scenario outcomes could provide policymakers and analysts with an independent sensitivity around the LTS, which allows judgement of whether the ***targets*** are plausible or feasible from energy and economic perspectives. In addition, putting the LTS into the context of different equity principles sheds some light on the fairness of the ***target***. However, policymakers need to interpret the results of model estimates carefully because they include uncertainties. The socioeconomic conditions were prescribed as SSP2 in this case, but the implications would change substantially if other conditions were assumed. Population and GDP are such key socioeconomic drivers, but technological availability and national energy policies are also sources of uncertainty. For example, unavailability of CCS pushes the policy cost much higher, whereas low energy demand substantially mitigates the cost. Finally, periodic reviews and assessments of the LTS, and the forthcoming 2035 or 2040 ***emissions*** reduction ***targets***, will provide opportunities to revise and update the goals.

Regarding comparative assessments of multiple countries, in Fig. we show selected indicators: the mean annual rate of energy intensity change (Fig. ), carbon intensity change (Fig. ), share of low-carbon energy sources (Fig. ), electrification rates (which is the final energy consumption of electricity divided by the total final energy consumption; Fig. ), carbon prices (Fig. ) and GDP loss rates (Fig. ). These indicators were chosen because they are fundamentally critical variables for assessing climate change mitigation, and as the scale of the economies, energy consumption and ***emissions*** of the countries assessed in this demonstration vary substantially; indicators that take percentages or relative (rather than absolute) values are more suitable for this analysis. We also carried out a regression analysis to clarify the common characteristics and the extent to which the reduction ***target*** rates in 2050 would change each indicator with dummy parameters, as shown in the Methods; these results are summarized in Fig. and Supplementary Table .

Cross-national comparison of NLPs.

Six scenario indicators for 2050 are plotted against reduction ***targets***. a, Mean annual rate of energy intensity change. b, Mean annual rate of carbon intensity change. c, Share of low-carbon energy sources in the primary energy supply. d, Electrification rates in final energy consumption. e, Carbon prices. f, GDP loss rates. The solid lines indicate regression results using the derived slope, intercept and mean of dummy country results shown in Supplementary Table .

We see a strong correlation with ***emissions*** reduction rates for most indicators except the mean annual rate of energy intensity change. The mean annual rate of carbon intensity change indicates 0.025% improvements per incremental 1% of ***emissions*** reduction. In contrast, the response of the mean annual rate of energy intensity change to reduction levels varies across countries, and the regressed slope is statistically insignificant. Japan’s behaviour, in which energy intensity rises when increasing mitigation ambitions, is normal, whereas some other countries such as India, China and Vietnam seem to respond inversely. This is due to the requirement for negative ***emissions*** associated with bioenergy combined with CCS. This result would imply that improvements in carbon intensity are a common and effective strategy to reduce CO2 ***emissions***, whereas energy efficiency improvements do not always yield the expected reduction in ***emissions***. The share of low-carbon energy sources also shows a clear correlation with ***emissions*** reduction levels, and a 0.56% increase is expected per 1% of incremental ***emissions*** reduction. Electrification is a well-known and critical strategy for decarbonizing energy systems, and the regressed slope for change in electrification rates is 0.36%. Note that for Korea and Vietnam (Supplementary Figs. and ), the time series of electrification in some mitigation scenarios cross in 2030s. In the near term, with modest ***emissions*** constraints, the electricity generation cost increases, which lowers electricity consumption while gas consumption increases. In the long term, under tighter ***emissions*** constraints, electrification needs to be enhanced. Carbon prices vary substantially by country, while the slope of regression is statistically significant at US$12.50 tCO2−1. Finally, the GDP loss rates would increase by 0.055% per 1% of additional ***emissions*** reductions. GDP loss rates also show variation across countries; Vietnam shows relatively high GDP loss rates, over 10%, whereas Japan presents small values, less than 5% even in a 100% ***emissions*** reduction scenario. This variation comes from socioeconomic conditions such as the share of energy and food expenditures, which is largely influenced by abatement of non-CO2 ***emissions*** from the ***agricultural*** sector and the imposition of a carbon tax on them (if these are large, the relative influence on industrial structures and household consumption patterns would be large) and GDP per capita (if low, the carbon price intervention effects would be large), as well as assumptions on the availability of technology. It could be argued that this regression analysis would be affected by extreme country data. To test this, we conducted a sensitivity analysis to determine the robustness by withdrawing one country from the regression and then iterating the results for all countries. The results indicated that the carbon price and some other indicators were affected by the Japanese data (Supplementary Fig. ).

Note that this study uses single model results. The use of multiple models, including multiple types of model (for example, top-down and bottom-up, or computable general equilibrium (CGE) and energy system models) could lead to different results, which would enrich the implications of the study by introducing diversity in future prospects, and, in particular, might not indicate the clear relationships shown here.

Caveats to the proposal and discussion

We recognize that there are potential limitations to our proposal. First, policy relevance is the primary concern for this approach. This scenario set with its incremental 10% reduction levels might not exactly match the forthcoming LTS. As discussed, even if one of the scenario values of reduction rates hits a ***target***, there will still be uncertainty in the inventory of the base year and coverage of GHGs. Second, there need to be several model runs (around 10 or more). However, in contrast to existing large-scale global models, national models tend to have relatively small computational loads, which could allow a relatively large number of scenarios to be run. In this sense, it is crucial to maintain the simplicity of the scenario requirements, as the simple scenario protocol allows researchers to systematically deal with scenarios running in the programming codes. To manage these issues, we view this proposal as a default core standard set, to which supplementary scenarios can be added, such as using varying technological availability taking into account individual countries’ circumstances. Moreover, NDCs can be updated, and ambitious LTSs may motivate countries to achieve more reductions in the near term, which would pose the question of whether more variations should be added in near-term reduction ***targets***. Although such scenarios are excluded from this study, the updated NDC scenario could also be another set of supplementary scenarios. It is worth noting that such additional scenarios would have different roles from the above-proposed scenario set, and would require additional work to check and maintain the quality of results. Third, the protocol ignores possible interactions with the rest of the world. Increasing ambitions in one country might go hand in hand with actions in other countries. This could lead to impacts across countries. For example, fossil fuel prices could be low if many major countries decarbonized their economies. International price scenarios derived from global IAMs could be used as boundary conditions for national models, and in such a case, global models should also provide multilevel mitigation scenarios that could be prescribed by carbon budgets. Still, the most direct impacts of more ambitious ***targets*** are nearly always felt simply within each country—and thus should serve as a caveat in the light of proposed simplification. Future study will be needed to investigate cross-border impacts. Fourth, the proposed scenarios always come with the risk of being outdated at some point, which can be critical in some cases. For example, long-term strategies were supposed to be submitted by the year 2020, and our proposal may not be able to keep up with them. Another possibility is that some extreme economic, social and political events may completely change the relevant energy–economic system. The disaster at the Fukushima nuclear power plant was one such turning point, and the COVID-19 pandemic has the potential to be another. A financial crisis, in general, could also result in structural change, which may imply that additional scenarios may be needed to take these extreme (or simply outlier) events into account. However, this depends on individual events and national circumstances. It may not be possible to generalize, and specific scenarios will probably need to be generated to address such events.

Finally, the current proposal could be a first step towards systematic national scenarios, much as global scenarios are stored and utilized effectively now. Meanwhile, even if the scenarios are developed by many countries, building up a valuable database, there would still be the need for better communication with policymakers. This is obvious from global IAM exercises. Even though there have been efforts to create transparent models and socioeconomic assumptions behind scenarios, as well as making code open-source, consistent with the recent demand for transparency, there is still an increasing demand to explain scenarios to decision-makers. Furthermore, the misinterpretation of current scenarios is an ongoing problem; for example, in the lack of climate change impacts. Therefore, just developing national scenarios is not sufficient, and better translation and communication of the scenarios to the policymakers is still needed.

Community and capacity development

The development of national scenarios fundamentally requires the involvement of researchers from each country. Many countries, including developing countries, have national models, but there are also many countries still lacking national energy models or IAMs. Even if national models exist, a certain portion of models need to improve their systematic model output reporting and model validation (including diagnostics and documentation), and will require considerable work to reach state-of-the-art modelling representation. In many cases, global integrated assessment modelling activities and experiences accumulated in the IAMC ([*https://www.iamconsortium.org/scientific-working-groups/evaluation-and-diagnostics/*](https://www.iamconsortium.org/scientific-working-groups/evaluation-and-diagnostics/)) community should greatly help in the development of national modelling capacity,,–. Note that global models are themselves not always best; some national models have much more granularity in the representation of geographical and temporal resolutions, taking advantage of relatively smaller model coverage,. IAMC members have been actively involved in capacity development (for example, for Asian and Latin American capacity building activities, the National Institute for Environmental Studies Japan and Pacific Northwest National Laboratory have taken part in some exercises), and the IAMC itself sometimes coordinates these efforts. However, this proposed standardized scenario exercise could be a more meaningful and practical catalyst for enhancing capacity building activities within the climate mitigation modelling community.

Conclusions

In this Perspective, we propose a new systematic and standardized scenario framework for long-term national scenarios and discuss its rationale, advantages and possible disadvantages. We believe that this proposal is valid and useful for policy-making and building a research community. National climate change mitigation modelling and scenario implementations might inherently have had relatively little motivation for building up a research community and conducting cross-national comparisons in the past. However, political and societal conditions have changed over the past decade, and we believe that national countermeasures are now a necessity for combatting climate change. The climate policy circumstances and need for national modelling and scenarios are expected to continue for at least the next couple of decades until ***emissions*** drop to sufficiently low levels. This research community should, therefore, devote much more attention and resources to national scenarios that guide or enhance actual transformative movement of societies. We envisage that the proposed framework could be a great milestone for national climate policy research and that many countries and models would engage with it. Thus, we call for community-level activities that will let a wide range of researchers involved in national climate policy assessment consider dedicating efforts to these important new activities.

Methods

Overview

We carried out scenario analysis for selected Asian countries (China, India, Indonesia, Japan, Korea, Thailand and Vietnam) and implemented eight scenarios for each country. They all have different reduction rates relative to the base year of 2010. Vietnam and Thailand indicated conditional and unconditional ***target*** statements in their NDCs. We thus also simulated variations for these conditional statements. In scenario implementations, we considered planned national policies as much as possible. We used AIM/Hub (formerly AIM/CGE) for the proposed scenario design implementation and as the core tool of this study. It is a computable general equilibrium model and has been extensively applied to assessments of Asian national climate policies in past years–. In the scenario implementations, we used three major GHG gases (CO2, CH4 and N2O) for ***emission*** coverage, considering that the countries have relatively large ***emissions*** of non-CO2 gases. The reductions start from 30% in all countries because we took into account the fact that Japan’s baseline ***emissions*** have been quite stable over time and thus it may not be meaningful to see the lower reduction levels (such as 10%). Finally, a regression analysis was conducted on the scenario results. Note that the scenarios in this study excluded climate change impacts, because global ***emissions*** scenarios are needed for each national ***emission*** scenario to determine such impacts, which is an important factor for national policymakers to consider,–.

Simulation model and data

AIM/Hub is a 1-yr-step recursive-type dynamic general equilibrium model covering all regions of the world. The AIM/Hub model includes 42 industrial classifications. To assess bioenergy and ***land***-use competition, ***agricultural*** sectors are disaggregated. The details of the model structure and mathematical formulae have been described previously,. Version 2.2 of the AIM/Hub model was used, and the main revisions from the previous version are described below.

Production sectors were assumed to maximize profits using multinested constant elasticity substitution functions and input prices. For energy transformation sectors, to handle energy conversion efficiency appropriately in these sectors, input energy and value added were fixed coefficients of the output. Power generation values from several energy sources were combined with a logit function. This functional form was used to ensure energy balance, as it was not guaranteed by the constant elasticity substitution function. Electricity and bioenergy were produced by multiple sectors (for example, coal-fired, nuclear and solar, ***agricultural*** residue, energy crops and sugarcane), which were aggregated by the logit function so that energy production by individual sectors was balanced to match total generation. Household expenditures on each commodity were described with a linear expenditure system function. The parameters adopted in the linear expenditure system function were recursively updated in accordance with income elasticity assumptions. The savings ratio was endogenously determined to balance savings and investment, and capital formation for each good was assigned a fixed coefficient as an exogenous assumption. The Armington assumption was used for trade (using constant elasticity substitution and the constant elasticity of transformation function), and the current account was assumed to be balanced.

In addition to energy-related CO2, CO2 from other sources, CH4, N2O and fluorinated gases were treated as GHGs in the model. Energy-related ***emissions*** were associated with fossil fuel combustion. Non-energy-related CO2 ***emissions*** consisted of changes in ***land*** use and industrial processes. ***Emissions*** from changes in ***land*** use were derived from the change in ***forest*** area relative to the previous year multiplied by the carbon stock density, which was differentiated into agro-ecological zones. Non-energy-related ***emissions*** other than those associated with changes in ***land*** use were assumed to be proportional to the level of each activity (for example, based on output). CH4 ***emissions*** arise from a range of sources, mainly rice production, livestock, fossil fuel mining and waste management. N2O is emitted as a result of fertilizer application and livestock manure management, as well as by the chemical industry. Fluorinated gases are emitted mainly from refrigerants used in air conditioners and industrial cooling devices. Air pollutant gases (black carbon, CO, NH3, non-methane volatile organic compounds, NOx, organic carbon and SO2) are also associated with fuel combustion and activity levels. ***Emission*** factors change over time with the implementation of air pollutant ***removal*** technologies and other regulations.

The implementation of mitigation actions in the model was represented by constraints on CO2 ***emissions***. The carbon price was imposed on CO2 as well as other GHG types, such as CH4 and N2O, arising from every sector. The carbon price increased the price of fossil fuel-based goods when ***emissions*** were constrained and promoted energy savings and substitution away from fossil fuels to sources and transport methods with lower GHG ***emissions***. The carbon tax also functioned as an incentive to reduce non-energy-related ***emissions***. Gases other than CO2 were weighted on the basis of their global warming potential and summed as total GHG ***emissions***. Further parameter settings and changes under the future scenarios are documented in Fujimori et al..

The main revisions from version 2.0, which was used in SSP quantification, to version 2.2 are described in Fujimori et al., and the most relevant one for this study is the reflection of historical energy data (2005 to 2015). This methodology is the same as model integration with an energy system model, where we exogenously provided the final energy, transport energy share and power energy technological share, while the corresponding parameters in the production function and household consumption were endogenized. Consequently, the autonomous energy efficiency in energy consumption and logit share parameters used to determine the share of power generation by different technologies were calibrated during that period and then used for the future scenarios (for more methodological details, see Fujimori et al.). We used the IEA Energy Balances as the historical energy information.

National policies

We adopted current national policies that can be considered relevant for the scenarios as much as possible. The NDCs were all taken into account as ***emissions*** constraints for the year 2030. For all countries, population and GDP projections were based on the national perspective until either 2030 or 2035. Rates of SSP2 annual change were extrapolated afterwards. There are some vital energy and climate mitigation-related policies at national levels that were reflected as either model constraints or as reference information to serve as a check that the scenarios are not far from the corresponding national perspectives. For example, in China, the next five-year plan, to be implemented in 2021, is scheduled to be published in late 2020 to early 2021, and thus we decided not to use the latest available five-year plan but have incorporated the best available current energy information. Another example is Thailand, where the power development plan established by the Ministry of Environment– was used for model constraints. The full list of national policy information considered in this study is shown in Supplementary Table .

Effort sharing

To map the national scenarios with global goals, we used multiple effort sharing schemes shown by van den Berg et al.. For the global scenarios, we adopted the latest global scenarios from the IPCC Special Report on 1.5 °C database by taking minimum, median and maximum ranges of IAMs pathways categorized as 1.5 °C or 1.5 °C-consistent and 2 °C or 2 °C-consistent for 1.5 and 2 °C goals, respectively, regardless of the scale of global mean temperature overshoot.

Regression analysis of the scenario indicators

A regression analysis was carried out for the cross-country comparative assessment. The aim of this regression is to derive the general relationships which can be observed in multiple countries between each indicator and reduction levels. The equation applied is shown below.Where:

Yr,s is an individual six indicators (annual mean rate of energy intensity change, annual rate of mean carbon intensity change, share of low-carbon energy sources, electrification rate, carbon price and GDP loss rates) in country r and scenario s, Xr,s is the ***emissions*** reduction percentage relative to those of 2010. a, br and c represent estimated parameters and they are the slope of the reduction levels, dummy countries and intercept respectively; ε is an error term.

Online content

Any methods, additional references, Nature Research reporting summaries, source data, extended data, supplementary information, acknowledgements, peer review information; details of author contributions and competing interests; and statements of data and code availability are available at [*https://doi.org/10.1038/s41558-021-01048-z*](https://doi.org/10.1038/s41558-021-01048-z).

**Acknowledgements**

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**Notes**

Supplementary informationThe online version contains supplementary material available at [*https://doi.org/10.1038/s41558-021-01048-z.Peer*](https://doi.org/10.1038/s41558-021-01048-z.Peer) review informationNature Climate Change thanks Ritu Mathur, Roberto Schaeffer and the other, anonymous, reviewer(s) for their contribution to the peer review of this work.Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Load-Date:** May 3, 2023

**End of Document**



[***Plant diet may save 10 years of emissions***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60SS-BTN1-JCS0-D048-00000-00&context=1516831)

i-news

September 8, 2020

First Edition

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**Section:** NEWS; Pg. 16

**Length:** 159 words

**Byline:** Jane Clinton

**Body**

Switching meat for plant protein foods such as lentils, beans, and nuts could ***remove*** more than a decade of our carbon dioxide ***emissions*** from the atmosphere, according to new research.

In the study, scientists analysed and mapped areas where extensive production of animal-sourced food, which requires 83 per cent of the earth's ***agricultural*** ***land***, suppresses native vegetation, including ***forests***.

They highlighted places where changing what people grow and eat could free up space for ecosystems to regrow. The greatest potential for ***forest*** regrowth was found to be in the high- and uppermiddle-income countries where scaling back on "***land***-hungry meat and dairy" would have little impact on food security.

According to the study's authors, vegetation regrowth could ***remove*** between nine to 16 years of global fossil fuel missions, if demand for meat were to drastically reduce in the coming decades.

The study was published in the journal Nature Sustainability.

**Load-Date:** September 7, 2020

**End of Document**



[***Federal Register: Establishing the Wildland Fire Management Policy Committee Pages 6549 - 6552 [FR DOC #2021-01476]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61TS-VRM1-JDG9-Y4GC-00000-00&context=1516831)

Impact News Service

January 21, 2021 Thursday

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**Length:** 1671 words

**Body**

Washington: Office of the Federal Register has issued the following notice: Presidential Documents Federal Register / Vol. 86 , No. 12 / Thursday, January 21, 2021 / Presidential Documents[[Page 6549]] Executive Order 13976 of January 14, 2021 Establishing the Wildland Fire Management Policy Committee By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows: Section 1. Purpose. Federal wildland fire management lacks a single focal point of responsibility for policy leadership and accountability for cost controls. While executive departments and agencies (agencies) have implemented Executive Order 13855 of December 21, 2018 (Promoting Active Management of America's ***Forests***, Rangelands, and Other Federal ***Lands*** To Improve Conditions and Reduce Wildfire Risk), and similar Administration efforts, more must be done to continue to improve interagency coordination. In contrast to effective ground-level coordination with States, including at the National Interagency Fire Center on suppression activity and the Wildland Fire Leadership Council (WFLC) on Federal-State policy coordination, agencies do not adequately or effectively coordinate with each other at the policy level to reduce hazardous fuels and wildfire severity. This order will ensure that agencies effectively work together in coordinating Federal wildland fire management policy to improve funding allocations for hazardous fuel projects, performance measures for suppression operations and hazardous fuels mitigation, procurement, Federal-State cooperation and cost sharing, cross-jurisdictional post-wildfire rehabilitation, monitoring of electric transmission lines and other critical infrastructure, and other functions. Sec. 2. Policy. It is the policy of the United States to: (a) Improve coordination among agencies on wildland fire management policy, implementation, and oversight issues; (b) Reduce unnecessary duplication across the Federal Government by coordinating and consolidating existing wildland fire-related councils, working groups, and other formal cross-agency initiatives, as appropriate; (c) Efficiently and effectively manage preparedness resources, initial attack response, extended attack and large-fire support, post-wildfire rehabilitation, and hazardous fuels at a cross-boundary, landscape scale; (d) Promote integrated planning and procurement among agencies for Federal investments in wildland fire management infrastructure; (e) Support workforce development and efforts to recruit, train, and retain Federal wildland firefighters to efficiently and effectively respond to wildfire on public ***lands***, and to protect life, property, and community infrastructure; and (f) Coordinate Federal engagement with State, local, and tribal government entities, including Federal policy positions in the WFLC. Sec. 3. Interagency Wildland Fire Subcabinet. To promote efficient and effective coordination across agencies engaged in Federal wildland firefighting and to facilitate coordinated and strategic wildland fire management actions, an interagency Wildland Fire Management Policy Committee (to be known as the Wildland Fire Subcabinet) is hereby established.[[Page 6550]] (a) The Wildland Fire Subcabinet shall be co- chaired by the Secretary of ***Agriculture*** and Secretary of the Interior (Co-Chairs), and shall include the Secretary of Defense, the Secretary of Energy, the Secretary of Homeland Security, the Chairman of the Council on Environmental Quality (CEQ), the Director of the Office of Science and Technology Policy (OSTP), the Administrator of the Environmental Protection Agency (EPA), the Director of the National Economic Council (NEC), and the heads of such other agencies, or their designated representatives, as the Co-Chairs deem appropriate. (b) The Wildland Fire Subcabinet shall meet quarterly. Sec. 4. Reducing Inefficiencies and Duplication. Currently, several Federal wildfire-related councils, task forces, working groups, and other formal cross- agency initiatives (Federal interagency working groups) exist to address wildland fire management policy. Within 90 days of the date of this order, the Wildland Fire Subcabinet shall, to the extent practicable, identify all such Federal interagency working groups and provide recommendations to the Secretary of the Interior, the Secretary of ***Agriculture***, and the Director of the Office of Management and Budget (OMB) on coordinating and consolidating these Federal interagency working groups, as appropriate and consistent with applicable law. Sec. 5. Improving Wildland Fire Management Policy Coordination, Implementation, and Oversight. Within 180 days of the date of this order, the Wildland Fire Subcabinet shall develop, publish, and implement a strategic plan addressing the issues described in this section. To implement this strategic plan, the Wildland Fire Subcabinet shall develop specific measurable goals, performance ***targets***, and dashboard reporting for consideration by each Federal agency represented on the Wildland Fire Subcabinet, using common data standards at the wildfire and hazardous fuels program level. This strategic plan shall address the issues described below: (a) Effectively managing preparedness resources, initial attack response, extended attack and large-fire support, post-wildfire rehabilitation, and hazardous fuels at a cross-boundary, landscape scale; (b) Developing and adopting additional hazardous fuels performance measures that go beyond the traditional output reporting of total acreage for fuel ***removal*** to transparently demonstrate a strategic focus on projects that, by consensus agreement, pose the highest risks to life, property, and community infrastructure; (c) Developing and adopting additional wildland fire suppression operations performance measures for large wildfires, and for aviation asset deployment, that go beyond the traditional output reporting of acres burned, dollars spent, and gallons of retardant dropped to demonstrate strategic use of high-cost human capital, equipment, and aircraft as opposed to traditional reliance on overwhelming force; (d) Developing and adopting new technologies to bring to bear cutting-edge management of the wildland fire program to improve the safety, efficiency, and effectiveness of suppression operations; (e) Developing and adopting data-driven decision- making in order to support infrastructure, allowing for better integration of wildland fire research and development into ground-level suppression operations and hazardous fuel mitigation;[[Page 6551]] (f) Evaluating personnel policies to ensure that they allow for the year-round availability of a well- trained firefighting force at all levels, from apprentice to incident command, and the most efficient division of responsibility between line officers and incident commanders to support wildfire response and hazardous fuels reduction; (g) Strengthening government and industry collaboration with critical infrastructure owners and operators, including electric utilities, to better manage and mitigate risks, improve and invest in technology research and development, deploy technologies in concert with the private sector, exchange lessons learned in training and monitoring capabilities, and share operational practices; (h) Examining regulatory and other issues that negatively impact hazardous fuel reduction and post- wildfire rehabilitation program performance, including coordination across agencies on projects requiring compliance with the National Environmental Policy Act, 42 U.S.C 4321 et seq.; (i) Coordinating among Federal ***land*** managers to assure efficient and consistent approaches between agencies to review and approve utility vegetation management actions to improve or maintain the reliability of the grid or reduce wildfire risk; and (j) Developing a coordinated budget strategy that addresses the trade-offs between suppression, preparedness, post-wildfire rehabilitation, and fuels treatment to ensure a balanced commitment of resources and investment in areas at risk or affected by wildfire. Sec. 6. Report. Within 1 year of the date of this order, and annually thereafter, the Wildland Fire Subcabinet shall update the Chairman of CEQ, the Director of OMB, the Director of OSTP, and the Director of the NEC on the status of the strategic plan and the specific actions identified in this order. Sec. 7. Administration. The Department of ***Agriculture*** shall, to the extent permitted by law and subject to the availability of appropriations, provide administrative support as needed for the Wildland Fire Subcabinet to implement this order. The Departments of the Interior and ***Agriculture*** shall consult with WFLC, as appropriate, to effectively carry out the requirements of this order. Sec. 8. Federal Advisory Committee Act. The members of the Wildland Fire Subcabinet should, pursuant to and consistent with the Federal Advisory Committee Act, as amended (5 U.S.C App.), and in the interest of obtaining advice or recommendations for the Wildland Fire Subcabinet, use their advisory committees, as appropriate. Sec. 9. General Provisions. (a) Nothing in this order shall be construed to impair or otherwise affect:(i) the authority granted by law to an executive department or agency, or the head thereof; or(ii) the functions of the Director of the Office of Management and Budget relating to budgetary, administrative, or legislative proposals. (b) This order shall be implemented in a manner consistent with applicable law and subject to the availability of appropriations.[[Page 6552]] (c) This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person. (Presidential Sig.) THE WHITE HOUSE, January 14, 2021.[FR Doc. 2021-01476Filed 1-19-21; 11:15 am]Billing code 3295-F1-P

**Load-Date:** January 22, 2021

**End of Document**



[***How the EU plans to reshape its economy to limit climate change***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:634S-80M1-DXP9-9471-00000-00&context=1516831)

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July 14, 2021 Wednesday

**Length:** 1277 words

**Body**

Brussels has laid out the path to the EU becoming the world’s first economic bloc to hit net zero greenhouse gas ***emissions*** by 2050 in an att...

**End of Document**



[***USA: Biden wants to pay farmers to grow carbon-capturing crops. It’s complicated.***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:631Y-BCH1-F0YC-N44Y-00000-00&context=1516831)

Impact News Service

July 1, 2021 Thursday

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**Length:** 2055 words

**Body**

London: IEA Clean Coal Centre has issued the following press release:

Farmers are a crucial part of Biden’s plan to address climate change, but the economics behind paying them to capture greenhouse gases are complex.

President Joe Biden’s goal of paying farmers and ranchers to help battle climate change is running into the reality of how complicated and costly it will be. Six months into the administration, officials have yet to unveil their plan. That’s in part because it’s logistically complex and difficult to make the economics work: While corporations are eager to buy credits that pay farmers to pull carbon dioxide out of the air and into their soil, the credits aren’t yet lucrative enough to entice enough farmers to rethink how they grow crops to maximize capturing carbon.

“There’s a ton of hype and farmers are very interested in this, but if this gets screwed up it’s going to be a bad deal,” said Mitchell Hora, an Iowa farmer and founder of Continuum Ag, a soil health consulting company, who himself isn’t jumping into carbon markets yet.

Farmers are a key piece of Biden’s overall strategy to slash greenhouse gases across the U.S economy: American ***agriculture*** contributes about 9 percent of U.S ***emissions***, but in theory has the potential to more than offset its own footprint. Recent interest among farmers and buy-in from powerful food and ag industry groups are giving Biden a rare opportunity to enlist ***agriculture*** in his sweeping climate agenda. But the window for action may be limited as the new president’s political capital wanes and midterm elections draw closer.

Despite talk about positioning farms to save the planet, the number of acres currently engaged in these carbon programs is minuscule, according to a POLITICO examination of existing markets. There are also numerous technical challenges to scaling up to a point where such efforts could meaningfully cut greenhouse gases in the atmosphere.

Those challenges haven’t stopped lawmakers from pushing for voluntary programs to involve farmers, rather than urging mandatory limits on ***emissions*** or other regulations that would be political nonstarters. The Senate last week overwhelmingly approved a bill to support these new voluntary markets — a rare bipartisan move on climate legislation.

The momentum behind ***agricultural*** carbon offsets goes beyond Capitol Hill. The CME Group, which operates major ***agricultural*** commodity trading platforms, announced it will soon launch a futures market for “nature based” offsets, including projects on farm and ***forest*** ***land***.

Even as the Biden administration figures out how to help scale up carbon farming, officials have made clear that any participation for farmers will be strictly voluntary, which is essential for keeping the ***agriculture*** industry on board. Environmental scientists, however, are increasingly warning against relying too heavily on carbon offsets rather than cracking down on the pollution driving global warming.

“If your bathtub is overflowing, you should probably turn off the faucet first before you look for a sponge,” said Jonathan Foley, executive director of Project Drawdown, a nonprofit focused on climate solutions. “I don’t know why we are reaching for the sponge more than we are turning off or turning down the faucet. It’s not going to work. ”

The big opportunityThe push to turn American farmland into a massive carbon sponge has been steadily winning over the ***agriculture*** industry, which is eager to find new revenue and avoid future regulation. In theory, the country’s ***agricultural*** soils have the potential to sequester up to 10 percent of the country’s greenhouse gas ***emissions*** each year, according to some estimates. That scale can only be realized if hundreds of millions of acres of farmland are managed with more climate-friendly practices, such as drastically cutting back on tilling — or disturbing soil — a common practice across the heartland that releases carbon dioxide into the air.

Another climate-friendly practice is the planting of cover crops, which improve soil health and help draw down CO2 by keeping the ground covered between crop rotations.

In his first address before Congress in April, Biden floated the idea of paying farmers to grow cover crops as part of his big jobs and climate plan. The idea is gaining popularity, but cover crops, which can include plants like cereal rye or oats, are grown on only about 4 percent of cropland acres, according to the most recent government estimates. The challenge for the Biden administration is figuring out how to provide tempting enough incentives to an entire industry to change how it operates — especially one that’s historically been resistant to change coming from inside the Beltway.

One problem USDA is trying to tackle right now is figuring out how to make carbon offset markets work better for farmers and ranchers who right now generate a tiny slice of the credits corporations can buy.

“Ag is playing a very small role in the market,” he said, adding that there are a lot of barriers. Administration officials are working to figure out the best way to ***remove*** those obstacles. They are currently evaluating thousands of comments they’ve received from farmers and interest groups about how they should approach climate incentives. One issue is that it’s extremely difficult and expensive to quantify the amount of carbon being stored in soils. Relying too heavily on computer modeling, which is cheaper than soil testing, can be problematic. Soils can vary quite a lot from region to region and even farm to farm. Making sure the carbon stays sequestered in the soil is another major challenge. Reverting back to old practices, such as conventional tilling, can release the CO2 right back into the atmosphere.

Another barrier is scale. Today, a mid- to large-scale farmer who decides to start generating carbon credits might sequester a few hundred tons of carbon. One ton is equal to one credit.

But other industries that generate greenhouse gas offsets, like landfills, can potentially generate 100,000 credits in a single project. The larger scale helps defray the cost of verifying the credits, which can run into thousands of dollars. Officials are now considering ways to help farms aggregate credits across multiple operations as a way to reduce the cost per project and make participation more economically viable.

Beyond carbon marketsSeveral climate advocates say the Biden administration should steer clear of promoting complex carbon markets. Instead, they recommend focusing on making existing multi-billion-dollar farm programs more climate-friendly. Scott Faber, head of government affairs for the nonprofit Environmental Working Group, said USDA should “reboot” longstanding environmental initiatives. Farmers already regularly participate in the well-established Conservation Reserve Program, Conservation Stewardship Program and Environmental Quality Incentives Program. All of those USDA programs pay farmers to either employ greener practices or take ***land*** out of production.

“It’s much easier to make progress by resetting the alphabet soup of conservation programs than by intervening in a still-emerging marketplace where it’s hard to measure the size and scale of the widgets being produced,” Faber said.

The Biden administration has taken smaller steps to reorient existing programs toward its climate change agenda. For example, ***Agriculture*** Secretary Tom Vilsack in April rolled out an expansion of the Conservation Reserve Program to include new incentives and higher payment rates for farmers who agree to take ***land*** out of production. USDA just began offering a $5-per-acre benefit on crop insurance premiums to farmers who planted cover crops during the current year.

The department, however, has been vague about more ambitious efforts. A 20-page outline of its “climate-smart ***agriculture*** and forestry strategy” in May had little to say about specific policy plans.Even persuading more farmers and ranchers to participate in existing conservation programs is tough when crops like corn and soybeans are currently fetching their highest prices in years.

“Bringing a lot of ***land*** out of production in prime crop areas is going to be an expensive proposition,” says Joseph Glauber, senior fellow at the International Food Policy Research Institute and former USDA chief economist. “Vilsack has been very clear that he wants to see CRP grow, but he wants it to be on a voluntary basis. The question then becomes, at what cost, and how much do you have to offer producers to coax ***land*** in?”

The department could attempt to funnel new climate initiatives through the Commodity Credit Corporation — a loosely regulated pot of money that Congress funds every year. The Trump administration used it for its trade bailout and coronavirus relief payments. But when incoming Biden officials floated the idea of using the CCC to create a “carbon bank” to help fund climate incentives, Republicans on Capitol Hill balked at the idea. Glauber contends Biden might have to wait until 2023, when the new farm bill is written, to push through sweeping policy changes. Even then, creating new programs might require shifting funds around from existing efforts — something that would inevitably raise the hackles of powerful farm industry groups.

“I think it’s very, very difficult to go in and initiate a big program without sufficient authority,” Glauber said. “It’s hard to see [USDA] doing a whole lot over the next couple years until a farm bill comes along. ”

That timeline is far too slow for advocates who argue urgent action is needed. Ben Lilliston, head of rural strategies and climate change at the left-leaning Institute for ***Agriculture*** and Trade Policy, said USDA should advocate more aggressively for Congress to expand the conservation programs in any upcoming infrastructure package.

“It’s a really unique opportunity, because very rarely do you get a chance to do that outside of the farm bill,” Lilliston said. “There would be immediate climate benefits. ” That’s also a priority for Senate ***Agriculture*** Chair Debbie Stabenow (D-Mich.), who said the $1 billion in Biden’s infrastructure package to help ***agriculture*** shift to net-zero ***emissions***, spread over eight years, was “woefully inadequate. ” Stabenow has been pressing to get somewhere in the neighborhood of $50 billion for climate and conservation efforts as part of a broader infrastructure or reconciliation package.

The heavy resistance to imposing new ***agricultural*** regulations also limits how big Biden can go on climate change.

“It would be so much easier if carbon was regulated,” Glauber said. “If there was a price for carbon, all of these programs would take care of themselves. There would be lower-cost ways of meeting carbon reduction goals. ” Supporters and critics of carbon markets all seem to agree that the price of carbon needs to go up. Farmers are currently being paid around $15 per ton of carbon sequestered as the market starts to get off the ground. There’s a growing consensus that the price probably needs to be more in the $30 to $50 range to draw in more farmers and pick up real momentum.

But it’s not clear how much the price of carbon can go up if the market is relying primarily on demand from corporations that have made voluntary ***emissions*** reductions pledges. A similar carbon offset market collapsed more than a decade ago due to lack of demand and a lack of trust in the credits right as cap-and-trade collapsed in Congress. There’s also a growing sense that USDA may ultimately have to buy ***agricultural*** carbon credits to boost the market, though that could be a ways off.

Sam Kass, a partner at Acre Venture Partners who was a food and ***agriculture*** policy adviser and chef to President Barack Obama, said he thinks the federal government will “absolutely” eventually buy credits, even if it’s just to offset the government’s own carbon footprint, which is substantial. “I think Washington would be wise to put some real dollars and some real policy muscle to work, because I don’t think this opportunity will come around again,” Kass said, noting that most of the other carbon sequestration options rely on technology that’s at least a decade away from being ready. “If we don’t figure out a solution right now to draw down a meaningful amount of carbon dioxide, it’s going to be too late,” he said.

**Load-Date:** July 1, 2021

**End of Document**



[***Global patterns of geo-ecological controls on the response of soil respiration to warming***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2B1-JCWX-C2SP-00000-00&context=1516831)

Nature Climate Change

June 2021

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**Section:** Pg. 623-627; Vol. 11; No. 7; ISSN: 1758-678X,1758-6798

**Length:** 6457 words

**Byline:** [*sdoetterl@usys.ethz.ch*](mailto:sdoetterl@usys.ethz.ch)

**Body**

Main

With implemented climate policies struggling to limit global warming to an average of <1.5 °C (ref. ), elucidating the response of an adapting ecosphere to warming is more and more important. Understanding soil carbon (C) dynamics is key to this because it directly determines a large portion of future net GHG ***emissions*** from terrestrial ecosystems.

Soils are considered net sinks for C with current net sequestration estimated at 1 PgC yr–1 (ref. ). This is only a minor part of the continuous exchange of C between soil and atmosphere due to C input to soils through plants and release of C through soil respiration, approximately balanced at annual fluxes of 58–80 PgC yr−1 (refs. –). Rising global temperatures are expected to lead to notably higher decomposition rates of soil C and thus CO2 release from soils,, largely because of more energy available for microbial decomposer communities. However, despite its importance, the response of soil C to warming is still one of the great uncertainties in global carbon cycling. Great uncertainties are related to the effect of warming on vegetation, C input across different soil depths, microbial responses and estimates for losses of soil C in Arctic plus high latitudes and tropical plus low latitudes.

While the temperature sensitivity of soil carbon has been long studied,, only now ecosystem models begin to implement mechanistic controls of microbial soil respiration in response to climate and soil changes,. One issue is that soil properties, often crucially related to subsoils, are hidden from air- and space-borne sensing techniques that do not ‘see’ soils. Therefore, statistical models are needed to better represent relationships between microscopic and macroscopic processes, especially on broader scales,. Furthermore, most of our mechanistic understanding of soil processes and warming is derived from studies in temperate zones; their numbers dwarf the number of studies in boreal and tropical ecosystems (Supplementary Figs. and ). Due to the nature of small-scale studies with often homogenous soil and environmental properties, an holistic, global assessment on factors controlling soil respiration, except for basic variables that integrate various processes at once (clay content) has not been done yet. Soil is not mechanistically represented in global ecosystem models but is rather given a mostly budgetary function. Thus, future global soil GHG ***emissions*** might be critically misrepresented under changing environmental conditions. For example, global climate and ecosystem models, dealing with warming focus on GHG fluxes from environments where climatic and hydrological barriers are the key controls to limit C decomposition. However, these climate- and hydrology-driven, geochemically speaking ‘young’, soil systems do not represent soil conditions found for the largest part of globally relevant soil C stocks. Most soil C is stored in geochemically more complex and weathered soil systems, where soils have developed over millennia and the biosphere adapted to warmer conditions over millions of years of evolution. Hence, soils in every (geo)climatic zone will probably show very different responses in respirations with warming due to their different, soil type-dependent, properties and drivers. To the best of our knowledge, previous models of soil Q10 took the average air temperature as main predictor for soil Q10 (refs. –). Thus, the global representation of soils and GHG ***emissions*** from them with their drivers and controls are not well represented in Earth system models and Q10 is still treated as an average value over all climate zones and state-of-the-art in Coupled Model Intercomparison Project Phase 5 models to consider temperature sensitivity in soil–. By using highly averaged values of temperature sensitivity of soil C (refs. ,–) that do not represent the underlying processes or by focusing on selected climatic drivers, current Earth system and climate models unintentionally neglect the variability of crucial biogeochemical factors altering the response of soils to climate forcing. Doing so introduces large biases and uncertainties in global estimates of future C ***emissions*** from soils.

Here, we brought together large- and small-scale controls that have been identified as key variables to explain the soil respiration response to warming—expressed as soil Q10—at the global scale and used machine learning techniques to identify the most important groups of explaining variables for soil Q10. More specifically, we combined experimental results with a large database on climate-, vegetation- and soil-related parameters (further called best data approach) as proxies of soil respiration influencing factors under warming, (Supplementary Table ). While Q10 of soil respiration is not a mechanistic depiction of soil C response, it can be interpreted as a phenomenological response of multiple instantaneous processes that differ across geoclimatic and ***land*** use settings, and is widely used in global-scale ecosystem models. We compiled 3,400 observations from 560 soil warming studies conducted from 1971 to 2018 with incubation lengths of several days to >3 yr from all major climate and ***land*** use combinations ( and Supplementary Fig. ). For our analyses, we concentrated on climate zones in which rich plant–soil interactions occur and excluded regions with bare soils (polar and non-polar (semi)deserts and high alpine environments) for which not enough data to train models and/or global maps of independent predictors were available. Then, we (1) built linear and nonlinear predictive models for soil Q10, (2) derived the relative importance of the derived groups of explaining variables for soil Q10 and (3) determined the changing importance of the identified controls in different climate systems and ***land*** use zones using partial dependence analyses (Figs. and ). To assess the validity of our interpretation and the robustness of our models, we have repeated steps 1–3 by using only predictors of soil Q10 derived from global datasets, further referred to as the generalized data approach (Supplementary Tables and ).

Prediction performance and partial dependence plots of soil Q10 and controlling factors.

a, Predictions for soil Q10, expressed as Q10 of soil respiration (best data approach, random ***forest*** model), show a good fit across the complete data range. b, An assessment of the relative importance of rPCA derived variables shows the dominance of the sum of soil parameters on the prediction over climate- and vegetation-related and experiment-specific modifiers. c, Partial dependence plots illustrate the variable effect of identified controls on averaged soil Q10. The residual plot of the presented model can be found in Supplementary Fig. . CNP, carbon–nitrogen–phosphorous.

Global soil Q10 prediction and uncertainty map.

a–d, Map of the predicted average soil Q10 for terrestrial, non-desert environments (a) and the averaged latitudinal Q10 pathway for different major ***land*** use types (b), aggregated at 0.25° latitudinal resolution and the corresponding distribution of relative uncertainty (c,d). ( ‘Global soil Q10 mapping’ gives details and uncertainty).

Predicting soil Q10 and its controls

Our model satisfactorily predicted soil Q10 across all included systems for both the best data and the generalized data approach (Fig. and Supplementary Fig. ), showing that the temperature sensitivity of heterotrophic soil respiration is driven by a combination of soil properties, vegetation and climate interactions at the global scale. Similarly to previous assessments of soil Q10 at the regional scale, nonlinear model approaches (R2 = 0.18–0.46; root mean square error of cross-validation (RMSE) 0.58–0.72) greatly outperformed linear models (R2 = 0.07–0.08; RMSE 0.76–0.77) (Supplementary Table ). Both the best data and generalized data model approaches performed similarly in explaining the variability in temperature sensitivity of soil respiration (R2 = 0.46) and with reasonable uncertainty (relative RMSE = 24%). Only a relative small part of soil Q10 was directly controlled by plant growth conditions (11.6%) as well as evapotranspiration and precipitation (12.6%). In contrast, a much larger share of soil Q10 variability was controlled by soil properties (63.1%) (Fig. ). Interestingly, climate and vegetation variables were more intercorrelated and their effects on soil Q10 were not clearly separable (Supplementary Table ).

Global patterns of controls on soil Q10

Our analyses also revealed an extremely high variability in the controlling factors for soil respiration (Fig. ). Vegetation- and climate-related parameters like growth conditions and evapotranspiration had a strong influence at both extreme ends of their respective range of values, which represent climatic extremes; as a general trend, climate was a strong control at lower temperatures, low precipitation or higher evaporation (Figs. c and ). This is probably related to the lack of mineral stabilization of C in these colder climate zones leading to a faster response of microorganisms to warming and hence a decomposition of labile C once temperature barriers are released. Notably, temperature was not a separate dominant control on soil Q10 and climatic variables in general exert little influence in environments with more moderate climate; moreover, temperature ceases to influence soil Q10 in warmer climate zones.

In contrast, a wide range of biotic and abiotic soil variables controlled the variability of soil Q10 across their full range of values, resulting in the observed high heterogeneity. This dominance of soil variables is most likely because of the variety of parent materials that soils develop from and the various stages of weathering across the globe that affect plant growth and C stabilization. In cold climates, soils show low reactivity due to climatic barriers to chemical soil weathering. Plant litter, and not microbially processed or mineral associated C, is often the main source of energy for microorganisms under these cold conditions. In temperate climates, soils have generally higher chemical reactivity and high C stabilization potential, thereby diversifying potential C sources for microorganisms. This diversification of energy sources can lead to very variable competitive strategies driving C use efficiency and thus soil Q10 (ref. ). In tropical climates, chemical weathering has depleted many soils of reactive minerals and reduced C stabilization potential, leading to a reduction in the variety of C resources.

Hence, strategies for an efficient recycling of nutrients from litter back into plants are prevailing,. The implementation of all identified controls in our model resulted into a spatially highly variable map of soil Q10 (Fig. ) and a similarly diverse map of relative uncertainty of prediction (Fig. ). More specifically, in Arctic and boreal environments, where temperature is a major barrier for decomposition of labile C, soil Q10 was particularly high across all major ***land*** use systems. In contrast, soil Q10 was highly variable in temperate zones where local soil development drives C stabilization and thus responsiveness to warming.

Lastly, soil Q10 was generally lowest in tropical environments where soils are deeply weathered and C accessibility is driven by litter quality. Deviations from this general pattern were tied to local variations in climatic, topographic and biogeochemical soil conditions (Supplementary Table ). Our uncertainty map (Fig. ) shows high spatial variability, especially in data-poor regions of the (sub)tropics or in regions with highly diverse soil landscapes (temperate and tropical zones). We explain this with the fact that in data-poor regions the model cannot be trained to the same degree as in data-rich regions due to a lack of data and precision for both response and independent variables. In regions of highly developed soils, our results point at the importance of considering local soil development and ***land*** use history for predicting soil Q10 because these can differ greatly from one geoclimatic region to the next leading to varying model complexity and strength of predictors (Fig. ) that is not fully captured at the global scale. In summary, our analyses allowed for predicting global patterns of soil Q10 with reasonable uncertainty at a much higher accuracy and spatial variability than comparable approaches using climatic and vegetation variables alone,,, across major climate zones in which ***forests***, grasslands and ***agricultural*** ***land*** use appears. Nevertheless, a larger share of variability in soil Q10 remained unexplained (~55%). We relate this lack of identifiability to the coarse spatial and temporal resolution of global key datasets, where information on local heterogeneity is lost, paired with a lack of accurate data from data-poor regions (that is, mountains, boreal zones, wetlands and tropics). Furthermore, global studies and predictions are in parts driven by completely different parameters than comparable regional studies due to the different resolution and data availability. A large number of local to regional scale controls on soil Q10 and microbial decomposition processes exist (***land*** management) that cannot be represented currently through proxy variables at the global scale.

CO2 release from soils in the decades to come

Our study showed much higher and more variable temperature sensitivity of respiration than comparable ecosystem-level assessments. Soil Q10 predicted by our model was on average 33 ± 10% higher compared to soil Q10 in climate-driven models. Our results are consistent with, and can help explain, the predicted reduced uptake of C in soils by the end of the twenty-first century,. As has been demonstrated before, boreal and temperate climate zones of the northern hemisphere showed increased C release from soils with changing temperature and precipitation while soils of the southern hemisphere showed only limited responses and tropical soils even less. However, on the basis of our results, we would predict that in colder environments, warming will create over time a more reactive soil matrix, similar to those found in temperate climates. Examples for the expected changes in Arctic soils are higher rock-derived nutrient release due to (bio)chemical weathering, higher potential to stabilize carbon with minerals, thicker soils for higher water retention capacity and larger rooting zones–. It is thus likely that in many of these changed future soils of Arctic, Antarctic or alpine environments, plant productivity will increase, C stabilization through various mineral-related physicochemical mechanisms will improve and microbial communities will respond to the changed climatic conditions with, for example, higher C use efficiency. Greening and weathering are likely to compensate some of the projected soil C loss from thawing and regressing permafrost losses through additional C sequestration and create new terrestrial C sinks in higher latitudes. However, recent studies show that it is unreasonable to assume that these processes can fully compensate for the additional release of C from soils. Plant growth is limited by more than atmospheric parameters and weathering leading to nutrient release or C stabilization potential is slow and on decadal timescales. Warming in the next decades could lead to an additional C release from soil that is equal to all other current anthropogenic C ***emissions***.

A warming climate, however, will ultimately lead to lower soil Q10 in boreal zones in the long term, as plant–soil systems become more adapted to warming with Arctic soil systems becoming more similar to boreal or even temperate systems if climate change is progressing as predicted. Predicting these contrasting trends of soil Q10 in changed soil landscapes requires Earth system models to incorporate soil development trajectories as a control for future C fluxes and account correctly for the carbon flux between soil and atmosphere. Indeed, to estimate C fluxes further into the future, a more mechanistic approach is needed that includes processes like soil formation (accelerated soil formation in Arctic due to warming and increased weathering) or soil degradation (that is, in the tropics due to ***land*** use change and erosion) to accurately predict the future warming response of these dynamic systems.

Our results illustrate how complex the interplay and strengths of controlling factors for soil Q10 can be at global scales. First, using a large range of independent variables to predict soil Q10 in heterogeneous ecosystems, we confirm that controls on soil C responses to climate change are drastically different between climate zones and environmental settings, limiting the transferability of experimental and mechanistic knowledge on soil processes across geoclimatic zones. Second, almost all variables showed spatially varying influence on soil Q10, meaning that soil Q10 is highly nonlinear and multifactorial. Lastly, from poles to the equator, temperature has not been identified as the main driving factor for soil Q10. While temperature was certainly a limiting and controlling factor for biological activity in high latitudinal environments, soil Q10 was increasingly more strongly related to biogeochemical and physical soil conditions than to warming per se in mid- and lower-latitudes. Thus, large changes to the soil C cycle will occur through a warming-induced feedback loop that is more strongly controlled by changing soil parameters and development due to better conditions for chemical weathering than by temperature itself. Our study, focusing on soil development-related variables shows which key controls have to be considered in Earth system models besides warming to understand and predict a changing terrestrial C sink versus source by the end of the twenty-first century. Lastly, improving our mechanistic understanding of the effects of developing soil characteristics in different climate zones and ecosystems, especially in tropical regions, is required before soil respiration responses to warming can be accurately projected into the future.

Methods

Statistical analysis

Basics

Statistical analysis was performed in R v.3.4.1 (ref. ) with additional packages (Supplementary Table ). For all statistical tests, a significance level of P < 0.05 was used. A documented and annotated R code of all applied statistics as well as a database containing all input data can be found at: [*https://doi.org/10.3929/ethz-b-000479158*](https://doi.org/10.3929/ethz-b-000479158).

Database assembly and preprocessing

Global Q10 data of soil basal respiration was collected from existing scientific databases and published laboratory and field studies (for a full overview of all included studies, see [*https://doi.org/10.3929/ethz-b-000479158*](https://doi.org/10.3929/ethz-b-000479158) and ). Most soil Q10 values were taken from the global database of soil respiration data, together with information about the experiment temperatures. The compiled information from the database was counterchecked with the reported values of the original reference and duplicate Q10 values for the same temperature ranges were removed to keep only the temperature range related to the original study. Furthermore, web-based search engines like Google Scholar, ResearchGate or Web of Science were examined with catchphrases like ‘(laboratory/field measured) temperature sensitivity of SOC decomposition’ or ‘soil Q10 (for laboratory/field experiments)’ and added to our database. In total, data from 67 laboratory studies and from 493 field studies were compiled located between 68° N to 43° S and 176° E to 156° W (Supplementary Fig. ).

In our compiled database, soil Q10 data in these studies were taken from temperature ranges −5 to +50 °C, conducted from 1971 to 2018 with incubation lengths of several days to >3 yr. We constrained our study to observations of topsoil samples (weighted averages for 0–30 cm of soil depth) and excluded studies that ***targeted*** autotrophic soil respiration. Reported Q10 in these studies represent the average soil Q10 during the length of the experiment and are considered as soil basal respiration.

The included soil Q10 data were tested for fulfilling normal distribution using the Shapiro–Wilk normality test and for fulfilling homogeneity of variances with the Fligner–Killeen test. Comparability of soil Q10 and to avoid introducing potential biases was tested in several ways.

To identify experiment-specific influencing factors (measures taken by the experimenter, Supplementary Fig. ) we used one-way analysis of variances (ANOVA), and in case of significant rejection of the statistical requirements for ANOVA, using the Kruskal–Wallis test, to test for differences in soil Q10 between (1) laboratory and field studies, (2) studies reporting explicitly heterotrophic respiration versus mixed respiration where remnants of autotrophic respiration cannot be excluded, (3) sequential versus parallel warming of soils and (4) explicit pretreatments of the samples versus non-treated samples. Results of this test indicated only minor differences between the above compared studies (Supplementary Fig. ). Furthermore, we evaluate the effect size of the applied Kruskal–Wallis test pairs to show the strength of the analysed relationship of statistical significant differences between subgroups of the database. We computed the effect size as follows:where H is the test statistic, n is the number of observations and k is the number of groups in the model.

The analyses revealed that, among all pairs, only grouping by climate zone has a strong effect on Q10 differences between subgroups. Other pairings, including the division of laboratory- versus field-derived Q10 did not show a significant effect size (Supplementary Table ). Additionally, we tested our model performance on a data-rich and environmentally diverse region (Continental Europe, Scandinavia and the United Kingdom) using the same independent predictor variables and model structures as for the global approach but predicting soil Q10 with only subsets of the data: one prediction where we use both field and laboratory data (n = 786) combined and one prediction each where we used only laboratory (n = 237) or field data (n = 549). Our results (Supplementary Fig. ) show that no difference in model performance or potential bias can be observed on the basis of the origin of parts of our data. Hence, we continued with a unified dataset for all other analyses but included these experiment-specific criteria in our later modelling approach as a confining factor ( section ‘Statistical analyses’, results in Supplementary Tables – and Fig. ).

From the compiled Q10 data, values <1 and >4.5 were excluded from further analysis, as (1) we want to represent natural conditions that follow current paradigm, namely that soil basal respiration increases with incubation temperatures and (2) that Q10 > 4.5 are the result of the decomposition of large amounts of poorly decomposed, isolated organic matter (litter, roots) in litter layers or defrosting former permafrost soils. Furthermore, including these values would lead to inaccuracy in calculation with exponential equations. These criteria led to the exclusion of 8% of the compiled observations (262 observations), resulting in a total of 3,413 observations remaining across all major ***land*** uses (grassland, cropland, ***forest*** and wetland) for the boreal, temperate, subtropical and tropical climate zones of the northern and southern hemisphere used in this study (Supplementary Fig. ).

Included independent variables

To analyse the influence of soil properties, vegetation and climate parameters on Q10, five climatic and vegetation as well as eight soil parameters were selected as independent variables. These parameters were used for all further statistical analyses. Where available, we used high-resolution local data taken from the included studies directly, resulting in our ‘best data’ dataset. Where local studies did not include all the desired independent variables, global datamaps and satellite remote sensing data were used to fill gaps in climate and soil properties (Supplementary Table ). Note that values of pH <3 were replaced with a pH 3, due to the fact that soils with a pH <3 do not occur in the ecosystems investigated in this study and are an artefact created during the assembly of the original dataset (best data approach, nine datapoints replaced; generalized data approach, zero datapoints replaced). Note that these global datamaps of independent controls show variable spatial resolutions ranging from 250 m to 0.5° and represent averages over 1–30 yr (Supplementary Table ). To assess the potential impact of spatially highly variable data in our analyses, we used the data in the highest available resolution and did not transform the data to match resolutions. In addition, to represent potential controls that result from the interaction of soil parameters with climate and vegetation, a series of interaction terms were included. Organic carbon/organic nitrogen/total phosphorus ratios were included to represent effects of nutrient stoichiometry in soils. Clay content/mean annual temperature ratios were included to represent soil weathering and changes in mineral surface area. Base saturation/clay content and potential cation exchange capacity/clay content as well as base saturation/cation exchange capacity ratios were used to assess mineral surface charge effects. Base saturation/pH ratios were used to assess soil acidity effects. Mean annual precipitation/potential evapotranspiration and potential evapotranspiration/normalized vegetation index ratios were used to assess plant productivity as well as precipitation- and evapotranspiration-related effects.

The resulting dataset of independent variables is not inclusive for all experimentally identified controls (variability of microbial decomposers and their strategies are not included),. However, key criteria for their selection in our modelling exercise were availability as global datasets to fill data gaps of the metadata of the included warming studies. Furthermore, all included variables stand in a causal relationship for controlling biological processes and C cycling between soils and atmosphere and vary across a large range of possible values (Supplementary Table ) that represent most conditions in which biological processes take place in soils (that is, very acidic, to very basic, very low and very high temperatures and so on). This compilation of empirical data was selected to bridge a crucial gap from experimental finding to implementation of soil processes into Earth system models.

Rotated principal component analysis

To increase the identifiability of larger groups of controls and to reduce the number of independent variables that are autocorrelated, we used rotated principal component analysis (rPCA), performed for both our best data model building (Supplementary Table ) as for our generalized data approach (Supplementary Table ) and interpreted the loading of each principal component according to their underlying relevance as a controlling factor for soil Q10. To minimize multicollinearity effects, the variance inflation factor was estimated for all independent predictor variables and maximal variance inflation factor was eliminated until all independent variables possessed a variance inflation factor of <5. As rotation method and to minimize multicollinearity, variance maximizing (VARIMAX) was used. The selection of an optimal number of principal components was done on the basis of the Kaiser–Guttman rule and limited to principal components with an eigenvalue of >1. This resulted in eight rotated principal components (rPC), identifying the eight most important groups of explaining variables for soil Q10 (Supplementary Table ).

Predictive modelling

To build and identify the best model for predicting soil Q10 and using the results of the rPCA analyses, regression modelling was conducted including four different linear and four different nonlinear regression types. Linear regression included models without (LM) and with (LEAPS) stepwise selection as well as models such as least angle regression (LARS) and Elastic Net (ENET) that use a penalizing term to the regression coefficients of those variables with minor influence on the prediction. Nonlinear regressions included the tree- and rule-based (= representing the path of partitioned regression(s) by using distinct if-then rules to create prediction models) models random ***forest*** (RF) and boosted tree model (BOOSTED), as well as model bagged tree (BAGGED) and cubist (CUBIST). All models, except for the LM linear regression and the BAGGED model, have built-in feature selection procedures and were tuned individually, to increase the accuracy and control the complexity of the models. As part of the tuning process, the following steps have been taken: LEAPS models were trained for the maximal number of variables. For penalizing models, penalty terms for feature reduction (that is, lowering the effect of less important variables on the final linear equation) varied between 0 and 0.1 in 0.01 steps. The RF models were constrained by setting the maximum number of allowed trees to 1,000. The number of included predictors was set to the maximum number of possible predictors divided by three. BOOSTED were trained with a minimum of ten to a maximum of 100 trees with one to seven nodes, a shrinkage factor of 0.01 or 0.1 and a maximum size of five. To train the CUBIST models, 1–9 by 2 neighbours and 1, 5, 10, 50, 75 and 100 communities were used. For all models, Monte Carlo cross-validation, with 100 repeated data resamples and a ratio of 80% training to 20% validation data were used to assess the uncertainty of model structures and prevent overfitting. RMSE and R² were estimated for all tuned models and used to analyse the residual variance and accuracy of the models and as a criterion for ranking model performance (Supplementary Table ). For an easier interpretation of the uncertainty of estimated soil Q10, relative RMSE was estimated by dividing the absolute error by the global mean of Q10. Random ***forest*** regressions resulted in the best model performance within one-standard error of minimal RMSE and were used for all further analyses of variable importance. Furthermore, residual plots for the global best model (Supplementary Fig. ) and the three data-rich examples of continental Europe (Supplementary Fig. ) were created. All residual plots show random patterns, indicating a good fit of the used random ***forest*** models for the global and the European models.

Assessing variable importance

To estimate the influence of the identified rPC variables for predicting Q10, we assessed variable importance using permutation variable importance measurements through the variable importance tool implemented in R caret package for the model with the highest accuracy and prediction quality (RF). Briefly, to assess the error of prediction in the model, the permutation variable importance measurements method calculates the mean square error for every given regression tree with out-of-bag estimates,. The resulting measure of variable importance of RF models represents the influence of the predictor variables on the model results. For better comparability all independent controls in our models, the included independent rPC control variables were normalized on a scale of 0 to 100% to represent relative importance for the model outcome.

Partial dependency of controls

Partial dependence analyses using the R package pdp (ref. ) were used to test effects between predicted Q10 and independent controls across the whole range of possible values that were included in the RF modelling. Briefly, the method results in a statement about the global relationship of an independent variable to the predicted across the whole range of all potential values by ***removing*** and averaging out the effect of other independent controls and isolating the effect of the ***targeted*** independent variable(s). In contrast to the assessment of the relative importance of an independent variable overall, partial dependence analyses and their visual representations (partial dependence plots, PDP) can illustrate the average marginal effect of one or more independent variables on the predicted outcome of a machine learning model across a specific range of values. For example, PDPs can show whether the relationship between the predicted variable and an independent control is linear, monotonic or complex. The shape and knickpoints of the PDP curve can then be used to interpret and identify areas where an independent has a particular strong and direct effect on the predicted, and where its control is rather indirect, for example through influencing other independent variables. For simpler interpretation of the PDPs x axis from low to high, the curves of rPCs with dominant negative loading (best data approach: rPC1, rPC7; Supplementary Table ) were reversed.

As an example in our study, PDPs illustrate that precipitation and evapotranspiration have a weak effect and control on Q10 at lower ranges but a stronger effect at higher ones (Fig. ). As the loading of our rPC variable ‘precipitation and evapotranspiration’ is not mixed with other controls (Supplementary Tables and ), the PDP allows a direct interpretation of the variable’s value. In contrast, temperature has a complex relationship to the predicted soil Q10, mostly through affecting plant growth conditions, experimental setup and weathering.

Global soil Q10 mapping

A map of the global distribution of soil Q10, expressed as Q10 of soil basal respiration and a corresponding map of the relative uncertainty of prediction (Fig. ) was derived using our best data rPCA structure and scores (Supplementary Table ) and an RF model with the included global climate, vegetation and soil datasets (Supplementary Table ) that we used to build our generalized data model of soil Q10. Using the datasets of the generalized data approach, we calculated factor maps on the basis of the primary input variables for our eight rPC scores for each according raster cell before using them to calculate a spatial explicit map of global soil Q10. In consequence, the resulting map corresponds in quality to the results of our RF model results without experiment-specific modifiers as explanatory variables (Supplementary Table ; R² = 0.42, RMSE 0.61). For this mapping exercise at a global scale, input variables were run at a 0.5° resolution and later aggregated at 0.25° latitudinal resolution to derive a mean Q10 value separately for major ***land*** use systems at the respective latitude. ***Land*** use was derived using the 2015 ESA CCI-LC (ref. ) ***land*** cover maps (300 m original resolution) and summarized to ***agriculture***, ***forest*** and grassland systems. We excluded those areas from our prediction where (1) data in any of the required predictors were missing, (2) ***land*** use was different to the aggregated ***land*** use systems listed above or (3) areas were located in climate zones which were not ***targeted*** by our model (polar and non-polar (semi)deserts). Predictors that were available at a higher resolution were resampled using geostatistics to match a 0.5° resolution. The resulting map’s averages shows significant differences for distinct USDA and WRB (ref. ) soil orders across climate zones and ***land*** use systems (Supplementary Table ).To assess the uncertainty related to the creation of the map due to resampling of data and unexplained variability not captured by the rPC scores we run the model also at a finer resolved 1-km2 grid or those areas where input variables were available at this higher resolution. This analysis revealed an overall uncertainty of our global soil Q10 map averaging at 27.4 ± 10%. The corresponding map of relative uncertainty of prediction was built by displaying standard deviation/divided by the mean of prediction based on the results of our final random ***forest*** model with standard deviation related to the range of possible predictions based on the build-up of the used decision tree after 500 model runs.

Caveats

The ‘real’ controls and the influence of experimental modifications

The identification of variables for regression models, including their importance and dependency assessments, are highly dependent on the range in which the included variables can vary. In our global model design, we addressed this by including independent variables that vary across a large range of possible values in which biological processes take place and which represent most conditions that can occur in soils (Supplementary Table ). To assess the validity of our interpretation and the robustness of our models, we repeated all statistical analyses that involve independent predictors by using data only derived from global datamaps, further referred to as the generalized data approach (Supplementary Table and Supplementary Fig. ). An approach that excluded experiment-specific modifiers (Supplementary Table ) generally resulted in less performance than fully parameterized models but differences were marginal (R2 = 0.03–0.42; RMSE 0.61–0.79). Together with our analyses of potential biases in the database that yielded negative results (Supplementary Fig. ) this suggests that experimental and climatic conditions, if made comparable across larger gradients, do not exceed the control of soil variables on soil Q10.

Spatial autocorrelation

Building our predictive models of soil Q10 (Fig. and Supplementary Fig. ), we tested for and quantified spatial autocorrelation of modelled residuals using Moran I test. Results indicated only a minor influence of spatial autocorrelation for all linear models (Moran I ≅ 0.3 for all models). Further corrections taking into account spatial variability and the accuracy of geographic coordinates in the modelling structure of the linear models showed no improvement. In combination with the good results of the machine learning models (Supplementary Tables and ), we interpret these results as supportive to our finding that the relationship of soil Q10 and the included independent controls are primarily nonlinear.

Online content

Any methods, additional references, Nature Research reporting summaries, source data, extended data, supplementary information, acknowledgements, peer review information; details of author contributions and competing interests; and statements of data and code availability are available at [*https://doi.org/10.1038/s41558-021-01068-9*](https://doi.org/10.1038/s41558-021-01068-9).

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**Notes**

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**Body**

**Government Structure**

There are three levels of government in Papua New Guinea: national, provincial and local. The legislative powers of these governments are regulated by the constitution and the Organic Law on Provincial Government and Local Level Government (Organic Laws). Each level has its own distinct law-making powers. The National Parliament's legislative powers are outlined in section 41 of the Organic Laws; the powers of the provincial legislatures are covered in section 42; and local government powers are laid out in section 44.

The division of law-making powers across the three levels is based on the following principles:

· The national, provincial and local level each have specific powers.

· Powers that are not specified are assumed to remain with the national government.

· Where a level of government cannot exercise its powers effectively, such powers may be delegated to either of the other levels of government to exercise on behalf of the first government.

· Both the provincial and local-level government powers are subject to the national law of PNG, but only to the extent that the national interest so requires; otherwise, they have relative autonomy to operate.

· The powers of local-level governments are subject to the powers of provincial-level governments, but only to the extent that the provincial interest requires them to be made subject to the provincial laws.

· The general principles above are non-justiciable, but may be used in the interpretation and implementation of the Organic Laws (section 40). Provincial and local-level government laws deal with issues such as the sale, purchase and consumption of alcohol; cemeteries; the organisation of community sport; local roads; motor vehicle use; and the sale and purchase of local foodstuffs.

The Autonomous Region of Bougainville is a special case. The region, governed by the Autonomous Bougainville Government (ABG), retains some features of a provincial government but has greater governance and administration powers due to its distinct political status. The autonomy arrangement is embedded in several founding documents: the Bougainville Peace Agreement, the PNG constitution, the Bougainville constitution, and the Organic Law on Peace-Building in Bougainville-ABG and the Bougainville Referendum.

The founding documents acknowledge the ABG and allow the region to establish its own system of government, hold elections for its government, make its own laws and establish its own courts, public service and police. Bougainville has adopted a modified Westminster system with three principal arms of government: the legislature, the executive and the judiciary. A directly elected president appoints ministers. A 2019 referendum may see the region become an independent country, though the result was non-binding and is subject to negotiations.

**Laws of PNG**

The laws of PNG consist of:

· The constitution;

· The Organic Laws;

· The acts of Parliament;

· Emergency regulations;

· The provincial laws;

· Laws made under or adopted by the constitution or any of the above laws, including subordinate legislative enactments made under the constitution or any of those laws; and

· The underlying law (English customary and common laws and equity). All written laws, other than those which are found in the constitution, must be read and construed subject to:

· In any case, the constitution;

· In the case of acts of Parliament, any relevant Organic Laws; and

· In the case of adopted laws or subordinate legislative enactments, the Organic Laws and the laws by or under which they were enacted or made. So as not to exceed the authority to make them properly given, to the extent that where any such law would have been in excess of the authority given, it is nevertheless treated as a valid law to the extent to which it is not in excess of that authority. The constitution and the Organic Laws are the supreme law in the country. Subject to section 10 of the constitution (construction of written laws), all acts - whether legislative, executive or judicial - that are inconsistent with these documents are, to the extent of the inconsistency, invalid and ineffective. An Organic Law may be altered only by another Organic Law, or by an alteration to the constitution.

**Common Law**

PNG adopted the common law of England on the day it achieved independence ( September 16, 1975) as part of the law of the country. The principles and rules that formed immediately before independence, as well as the English customary and common law and equity, are applied and enforced except if, and to the extent that, they are:

· Inconsistent with a constitutional law or statute;

· Inapplicable or inappropriate to the circumstances of the country at a certain time; or

· Inconsistent with custom, as adopted by the constitution, in their application to any matter. The principles and rules of common law and equity have been adopted notwithstanding any subsequent revision of them by any statute of the UK that does not apply in PNG by virtue of chapter 2.6 of the constitution (adoption of pre-independence laws).

Concerning any particular question before a court in PNG, the applicability or appropriateness of a particular rule of English common law or equity is determined by reference to, among other things, the particular circumstances of the case in question, including the time and place of any relevant transaction, act or event.

**Foreign Business Dealings**

There are a variety of laws that may impact a foreign enterprise in its business dealings in PNG. As noted above, PNG has adopted principles and rules of English customary and common law. English common law deals with issues such as the law of penalties, rights of subrogation, estoppel, privity of contract, and guarantees and indemnities that may be relevant to a foreign enterprise conducting business in PNG.

The courts will enforce financial agreements and other documents governed by the laws of a country other than PNG. In international financing transactions involving a PNG party, it is common for the loan agreement, the security documents and other related instruments to be governed by English law or the laws of another foreign country.

**Investment Promotion**

The Investment Promotion Act (IPA) of 1992 provides for the promotion of investment in PNG in the interests of national, social and economic development. For that purpose, the IPA established the Investment Promotion Authority. All foreign enterprises, including PNG-based companies owned or controlled by non-citizens, must be certified under the IPA in order to conduct business in the country legally. As a general rule, an isolated transaction (broadly, one completed within 30 days) will not, in and of itself, amount to carrying on business in PNG and, accordingly, there is no need for a foreign enterprise carrying out an isolated transaction to be certified under the IPA.

However, if a particular transaction is the first in a series of transactions, this may amount to carrying on business in PNG. Subject to certain exceptions, if there is a change in the ownership, shareholding, or beneficial ownership or control of a foreign enterprise doing business in PNG, the enterprise must apply for a fresh certification under the IPA within 14 days of the change.

Where a contract, agreement or understanding is entered into between a foreign enterprise and another enterprise, the National Court of PNG may, upon the application of the other enterprise or the Investment Promotion Authority, declare the contract to be unlawful, and null and void if either of the following situations apply:

· The foreign enterprise was not certified under the IPA at the time at which the contract, agreement or understanding was entered into; or

· The subject matter of the contract relates to business activities outside of the activities for which the foreign enterprise is currently certified to conduct business.

**Regulation of Companies**

PNG has comprehensive companies legislation. The Companies Act of 1997 is based on legislative principles from New Zealand, and adopts a simple and fairly effective system for dealing with business operations. In 2014 the Companies Act was amended to simplify business registration and filing processes, raise corporate governance standards for capital management, and increase protection for the shareholders and creditors of companies that operate in PNG.

A company that is incorporated in PNG under the Companies Act must operate in PNG subject to that act. Similarly, a company incorporated outside PNG that is registered to do business in PNG must operate subject to the Companies Act. The Companies Act deals with the registration of charges and insolvency, as well as a host of other company-related matters. A foreign enterprise doing business in PNG may, on occasion, want to grant a third party security over some or all of the assets of the foreign firm. In this case, it is appropriate to consider those provisions in the Companies Act that deal with the registration of charges. For the purposes of the Companies Act, the term "charge" is defined to include a right or interest in relation to property owned by a company, by virtue of which a creditor of the company is entitled to claim payment in priority to creditors entitled to be paid under section 361. This does not include a charge under a charging order issued by a court in favour of a creditor.

Where a PNG company creates a charge to which part 8 of the Companies Act applies, the company must submit the following to the registrar within two months of the creation of the charge:

· A notice of registration of the charge in the prescribed form; and

· A certified copy of the document creating or evidencing the charge. When this requirement is not complied with, the charge is, so far as it grants security over the company's property or undertaking, void against:

· The liquidator of the company; and

· Any creditor of the company. This does not prejudice any contract or obligation for repayment of the money secured by the charge, and when a charge becomes void under section 222(2), the money it secures becomes immediately payable. The charges to which part 8 of the Companies Act applies are as follows:

· Charges (other than charges solely on ***land***) to secure any issue of debentures;

· Charges on uncalled share capital of a company;

· Charges or assignments created or evidenced by instruments (including those which create or evidence absolute bills of sale, or absolute assignments or transfers of book debts) that, if executed by an individual, would be invalid or of limited effect if not registered under the Personal Property Security (PPS) Act of 2011;

· Floating charges on the undertaking or property of a company;

· Charges on calls made but not paid;

· Charges on a ship or aircraft, or on a share in a ship or aircraft;

· Charges on goodwill, on a patent or on a licence under a patent, on a trademark, or on a copyright or a licence under a copyright; and

· Charges on the book debts of a company. Where a charge created in PNG affects property abroad, an application for the registration of the charge in the prescribed form and a certified copy of the document creating or evidencing the charge may be submitted in accordance with the procedures outlined here. Further proceedings may also be necessary to make the charge valid or effectual per the law of the country in which the property is situated.

**Taxation**

A variety of taxes, imposts and duties are imposed on individuals and business organisations in PNG, including income tax, a form of value-added tax known as the goods and services tax (GST), ***land*** tax, payroll tax, withholding tax, Customs duties and excise, mining and petroleum royalties, and stamp duty. The tax year runs from January 1 to December 31; however, a substituted tax year can be adopted subject to the approval of the taxation office.

Income tax returns, where required, should be lodged by February 28 of the following year, unless lodged through a registered tax agent. Losses may be carried forwards for up to 20 years for most businesses and indefinitely for businesses operating in the primary industry sector.

Companies incorporated in PNG, as well as companies that conduct business in PNG and whose central management is located within the country, are deemed to be resident companies. The worldwide income of resident companies is taxed, while only the PNG-sourced income of non-resident companies is taxed.

**Income Tax**

Income tax in PNG is administered under the Income Tax Act of 1959. The provisions of this act apply to income derived by individuals, corporations, trusts and partnerships. Tax liabilities arise for taxable income, which is defined by the act to mean the amount remaining after deducting all allowable deductions from assessable income. Assessable income includes not only salaries and wages, business profits, rent and dividends, but also a number of other items set out in the act.

In general, all losses and outgoings - to the extent they are incurred in gaining or producing assessable income, or are necessarily incurred in doing business for the purpose of gaining or producing income - are allowable deductions, except to the extent that they are losses or outgoings of a capital, private or domestic nature incurred in relation to the gaining or production of exempt income. However, taxpayers who live in PNG and are involved in mining or petroleum projects may be able to deduct from their assessable income certain items of capital expenditure, such as allowable exploration expenditure. Special capital allowances are also available for forestry and ***agricultural*** production.

**Companies**

Different rates apply to residents and non-residents. The company tax rate is 30% and the dividend withholding tax is 15%. A company that conducts business in PNG must appoint a public officer to represent the firm in all dealings with the tax office.

**Partnerships & Joint Ventures**

Partnerships are required to lodge a tax return, but income from a partnership is not taxed separately; it is included in the assessable income of each partner. Joint ventures do not have to lodge a separate return, although each participant is taxed on their income from the venture.

**Tax Credits**

Some tax credits are given for foreign tax paid on overseas income. PNG has a number of double tax treaties with nations including Australia, Canada, China, Indonesia, Germany, Malaysia, New Zealand, Singapore, the UK, South Korea and Fiji.

**Goods & Services Tax**

A GST of 10% is levied on the following in accordance with the GST Act of 2003:

· Supplies of goods and services by a registered person in the course or furtherance of a taxable activity (but not including an exempt supply); and

· Imports into PNG (except certain goods). Export tax is 0%, thus enabling input tax credits to be refunded where applicable. Transfers of ***land*** is deemed not to be a taxable supply. The transfer of improvements and structures on ***land***, whether they be transferred with or without the transfer of ***land*** ownership, are not defined as transfers of ***land***. Exempt supplies under the GST Act include:

· Financial services;

· Fine metal;

· Medical and related services;

· Educational services by an educational institution;

· Public road transport for passengers by a registered public motor vehicle or taxi;

· Newspapers;

· Betting, lotteries and games of chance;

· Postage stamps; and

· Housing and motor vehicles given to an employee by his employer in the course of employment.

**Personal Property**

Taking security over personal property - including goods, chattel paper, investment property, a document of title, an instrument, money or an intangible - has been simplified, and is now regulated by the PPS Act of 2011. The act applies to every transaction that creates a security interest in personal property (collateral) situated or which may become situated in PNG without regard to the form of the security interest (such as a mortgage, charge or lien) and without regard to the person who has title to the collateral.

Under the PPS Act, security interests include the rights of a secured party via a mortgage or charge, as well as the interest of a consignor who delivers goods to a consignee under a commercial consignment and the interest of a lessor under a lease for a term of more than one year.

The PPS Act establishes the conditions for the attachment of security interests to collateral under security agreements. The debtor and secured party can agree that obligations may be secured by collateral acquired by the debtor in the future, and that collateral may secure an obligation of the secured party to make advances of funds in the future.

Furthermore, the PPS Act details the methods by, and the circumstances under which, security interests are perfected. This enables the secured party to enforce the security interest against third parties, such as certain buyers of collateral as well as some other types of creditors. A security interest is perfected when it has attached to the collateral and a method of perfection authorised under the PPS Act has been completed, regardless of the order of occurrence.

**PPS Registry**

Registration of a notice in the online PPS Registry is the principal means - although not the only means - of perfecting a security interest. Registering a notice perfects a security interest in non-monetary collateral, except when that registration perfects a security interest in money that is the proceeds of the sale of the collateral. Perfection may also occur by taking possession of collateral or by taking control of deposit accounts and investment property. The PPS Registry receives notices of security interests in collateral and maintains them for public search. The notices alert prospective creditors and buyers of collateral (personal property) of the possible existence of a security interest in that collateral. The registration date of a notice may establish the date by which the priority of competing claims is measured. A notice may be registered before a security agreement is concluded, as well as before a security interest attaches to personal property. A notice that substantially complies with the requirements of the PPS Act is effective even if it is insufficient, unless its insufficiency makes the notice seriously misleading.

A notice may relate to one or more security agreements and is effective for a designated number of years. The notice lapses at the end of this period unless, before the lapse, a continuation statement is registered. Upon lapse, a notice becomes ineffective and a security interest that was perfected by the notice becomes unperfected, unless the security interest is perfected without registration. Where a security interest becomes unperfected upon lapse, it is deemed never to have been perfected against a purchaser of the collateral for value.

Securities over real property (i.e., ***land***) will continue to be regulated by the ***Land*** Act of 1996 and the ***Land*** Registration Act.

**Mercantile Act**

The Mercantile Act, chapter 260 of the Revised Laws, contains various provisions that lenders in PNG need to be aware of. The act is a compendium of useful and sometimes odd provisions that have not been included in other legislation. All too often the provisions of the Mercantile Act are ignored to the detriment of lenders.

**Power of Attorney**

Power of attorney concerning an act or thing done or suffered in good faith continues in force until notice of the following:

· Death of the donor of the power; or

· Some other revocation of the power. Power of attorney is subject to any stipulation to the contrary in the instrument creating the power.

**Assignment of Debt**

A written absolute assignment under the hand of the assignor (not purporting to be by way of charge only) of a debt or of another legal thing in action, of which express written notice has been given to the debtor, trustee or other person from whom the assignor would have been entitled to claim the debt or thing in action, is always deemed effectual in law. This is subject to all equities being granted priority over the right of the assignee to pass and transfer from the date of notice of the following:

· The legal right to the debt or thing in action;

· All legal and other remedies for the debt or thing in action; and

· The power to give a good discharge for the debt or thing in action without the concurrence of the assignor (Mercantile Act section 3[1]). If the debtor, trustee or other person liable for a debt or thing in action has notice that the assignment is disputed by the assignor, a person claiming under them, or of any other opposing or conflicting claims to the debt or thing in action, they may:

· Call on the persons making claim to the debt or thing in action to interplead concerning it; or

· Take the debt or thing in action into court under the provisions of any act for the relief of trustees (Mercantile Act section 3[2]).

**Conveyances**

A conveyance of property made with intent to defraud creditors is voidable at the instance any person is prejudiced by it. This provision does not affect the operation of the law of insolvency (Mercantile Act section 7[2]). Additionally, this provision does not apply to an estate or interest in property conveyed:

· For valuable consideration; or

· For good consideration to a person not having, at the time of the conveyance, notice of the intent to defraud creditors (Mercantile Act section 7[3]). A voluntary disposition of ***land*** made with intent to defraud a subsequent purchaser is voidable at the instance of that purchase.

There is no voluntary disposition with intent to defraud by reason only that a subsequent conveyance for valuable consideration was made, if the subsequent conveyance was made after the commencement date (Mercantile Act section 8[2]).

A disposition includes every possible mode of disposition referred or referenced to in the ***Land*** Registration Act (chapter 191).

**Customary *Land***

Approximately 95% of ***land*** in PNG is held by its traditional owners under customary principles of ***land*** ownership. Specific rules of the customary ***land*** tenure system vary from place to place, depending on the governance of a region; however, customary ***land*** ownership generally recognises the traditional users of ***land*** and their personal and clan arrangements for ***land*** use.

A foreign investor operating in PNG cannot purchase or lease customary ***land*** from its traditional owners. However, if a foreign investor requires access to customary ***land***, it is possible for the government to acquire the ***land*** in question from its traditional owners and then lease it to the foreign investor. Previously, in order for customary ***land*** to be assigned or mortgaged, the government had to issue special ***agricultural*** and business leases (SABLs) to investors that were supported by a lease between the customary owners and the state.

Unfortunately, some developers utilised SABLs as a guise to harvest native ***forests*** for the purpose of selling round logs on the export market. As a result of those practices, the government set up a special commission of enquiry that made various recommendations in relation to granting a number of SABLs, including the recommendation that several of these leases be revoked.

In 2009 the government amended the ***Land*** Groups Incorporation Act and the ***Land*** Registration Act to improve the method of incorporation of ***land*** groups, and to include appropriate accountability and management processes for transparent and effective governance. The primary objective of the amended legislation is to empower customary landowners to utilise their ***land*** for development in a fair, equitable and convenient manner. The purpose of amending the legislation was to ensure that customary landowners do not divorce themselves from ownership of their ***land***. They continue to have control of their ***land*** through the registration of incorporated ***land*** groups without alienating the parent title from ownership by the incorporated ***land*** group so that future generations of landowners will have a voice in how their customary ***land*** is utilised.

**Incorporated *Land* Groups**

Incorporated ***Land*** Groups (ILGs) are now the preferred entity for both the state and developers to conduct dealings with. The amendment to the ***Land*** Groups Incorporated Act and the ***Land*** Registration Act recognises the important role that ILGs play in development projects. ILGs are used for two purposes:

· Landowner identification to obtain the consent of customary landowners; and

· For benefit sharing (payment of rent, royalties, business development grants et al.). The following is a brief overview of the resource sector and how ILGs are utilised in those sectors: Forestry sector: The Forestry Act 1991 provides that the PNG ***Forest*** Authority (PNGFA) must acquire timber rights from the customary landowners under a ***Forest*** Management Agreement (FMA). PNGFA then assigns the timber rights to logging companies to log on the customary ***land***.

Consequently, the act requires the landowners to organise themselves into ILGs to facilitate the landowners' consent to the FMA. The PNGFA receives payments from the logging companies and pays the landowners pursuant to the FMA.

Because the Forestry Act also provides a process for cases in which it is impractical to incorporate an ILG, 75% of the adult landowners can give their written consent to the FMA. Prior to the amendment to the ILGs Act there had been numerous reports regarding the effectiveness and multiplicity of ILGs, contributing to various corruption allegations in the forestry sector. Oil & gas projects: The Oil and Gas Act provides that applicants for petroleum development licences must undertake social mapping and landowner identification studies as a precondition for a development licence. The Oil and Gas Act does not specifically require the landowners to incorporate an ILG, though in practice the state does encourage landowners to incorporate ILGs, with various state agencies, such as the Department of ***Lands*** and Physical Planning and the Department of Petroleum and Energy, to coordinate and facilitate the incorporation of such ILGs through the so-called Clan Vetting Process. Mining: The Mining Act 1992 does not make specific reference to ILGs but refers to a "landowner" being the owner of customary ***land*** (as per section 2 of the Mining Act 1992). The compensation agreement is with the landowner and the mining company, and the landowner or landowners are given the leeway of entering into a "compensation agreement". Climate change: Climate change-related projects or activities - which include reducing ***emissions*** from deforestation and ***forest*** degradation, otherwise known as REDD+ - are regulated under the Climate Change (Management) Act 2015. The act provides specifically that the landowners must incorporate an ILG in order for the landowners to enter into any climate change-related project agreement with an entity or individual. If it is impractical to do so, then the climate change-related project agreement can be entered into by the express written consent of more than 85% of the adult landowners.

ILGs are increasingly becoming the preferred entity for the state and developers to engage with for projects occurring on customary ***land***. There are still challenges in terms of the mechanics of the various pieces of legislation in terms of fully utilising ILGs for development projects on customary ***land***. Due to the proliferation of ILGs, the ***Land*** Groups ( Amendment) Act 2009 introduced stricter requirements for applicants for ILGs, including a list of members together with the birth certificate of each individual member. Coupled with SABLs, mobilising customary ***land*** for development remains a challenge in light of the increasing scarcity of alienated ***land***.

**Alienated *Land***

Alienated ***land*** is ***land*** that has been acquired from customary owners by the government, either for its own use or for private development. However, some alienated ***land*** is held as freehold ***land*** and by entities other than the government. Most enterprises in which foreign investors are involved are located on alienated ***land***. Alienated ***land*** can be held either as freehold or leasehold from the state, although freehold ***land*** makes up only a small proportion of alienated ***land*** in PNG.

Both freehold and leasehold ***land*** are registered by the Registrar of Titles under a Torrens-type title system of ***land*** registration. Under this system, an original certificate of title for freehold ***land*** or state lease for leasehold ***land*** is kept on a register maintained at the Office of the Registrar of Titles (ORT). All ***land*** dealings in PNG are carried out by means of instruments that are perfected upon their registration. A certificate of title or state lease kept on the register maintained by the ORT should reveal at any time the exact location of the ***land*** in question, its dimensions, and the present owner or lessee, and may also reveal subleases and mortgages to which the title may be subject. Certain dealings in ***land*** require the approval of the minister for ***lands*** and physical planning.

**Freehold *Land***

Under the ***Land*** (Ownership of Freeholds) Act, a non-citizen is precluded from owning freehold ***land***. However, freehold ***land*** can be converted to leasehold ***land*** for use by a non-citizen. Leasehold ***land*** can be more freely dealt with than freehold ***land***. Leasehold ***land*** is ***land*** that the government has acquired from its customary owners and leased to a person or company for a term of up to 99 years for a specific purpose. The ***Land*** Act provides for several types of state lease, including the following:

· ***Agricultural*** leases;

· Pastoral leases;

· Business and residence leases;

· Mission leases;

· Leases of government-owned buildings;

· Special purpose leases; and

· Town subdivision leases. Also included in the act are the rules and procedures regarding the granting of licences, the transfer of customary ***land*** and compensation payments, as well as a list to specify which dealings require ministerial approval.

**Patents & Industrial Design**

The Patents and Industrial Design Act of 2002 came into effect on July 1, 2002. For the first time, it introduced legislation to protect the patents and industrial designs of companies and people in PNG.

Under the act, a patent for an invention expires approximately 20 years after the filing date of the application. Annual renewal fees are payable commencing one year after the filing date of the application. The act recognises the rights of priority under the Paris Convention for the Protection of Industrial Property. An invention is patentable if it is new or involves an inventive step on an existing creation, and is industrially applicable.

**Resource Ownership**

Relevant legislation in PNG vests the ownership of oil, petroleum, natural gas, gold, silver, copper and other minerals in the state. In 1990 and 1991 there was a constitutional challenge to the predecessor of the current Mining Act 1992. This was on the grounds that the government's ownership of minerals on privately owned ***land*** was an unjust deprivation of property. The court determined that the reference had been made prematurely and dismissed it without making a decision as to its merits. The litigation was subsequently settled without a further reference being made. The point, therefore, has not been settled beyond a doubt.

**Mining**

The Mining Act 1992 is administered by the Mineral Resources Authority (MRA) and sets out a detailed regime dealing with types of mining tenements that can be granted by the state, including:

· Exploration licences;

· Special mining leases;

· Mining leases (for hard rock and alluvial);

· Alluvial mining leases;

· Leases for mining purposes; and

· Mining easements. The act also sets out terms for the following:

· Licences;

· Requirements for mining development contracts;

· Paying rents, fees and royalties;

· Compensating landowners; and

· Registering interests and dealings in tenements.

**Tenement Registration**

The MRA's Tenement Register contains details of all applications, their grant or refusal, and other information. Any dealing in the legal or equitable interest of a mining tenement must be approved by the minister of mining and registered before it becomes effective.

**Compensation**

A tenement holder is liable to compensate the owners of the ***land*** on which the tenement is located, as well as any adjoining ***land*** or improvements, and ***land*** or improvements in the vicinity, for its entry onto or occupation of the ***land***. The holder is also responsible for any loss or damage caused or foreseen to be caused by exploration, mining or related activities. Compensation arrangements must be finalised and registered as a compensation agreement before the tenement holder can enter the ***land*** for mining.

**Hydrocarbons**

The exploration and development of oil, petroleum and gas is regulated under the Oil and Gas Act of 1998. Like the Mining Act 1992, it vests ownership of petroleum, natural gas and helium at or below the surface of ***land*** in the state. Geothermal, however, is regulated under the Mining Act 1992. The act sets out a comprehensive regime for the types of petroleum licences that may be granted by the state:

· Petroleum prospecting licences;

· Petroleum retention licences;

· Petroleum development licences;

· Pipeline licences; and

· Licences for petroleum processing facilities. The Oil and Gas Act also sets out the terms and conditions of issue for the above, including:

· Registering interests and dealings in tenements;

· Compensating landowners; and

· Paying fees and royalties.

**Forestry**

The Forestry Act of 1991 regulates the forestry industry for the purposes of the following:

· Managing, developing and protecting the country's ***forest*** resources and environment so as to conserve and renew them;

· Maximising citizens' participation in the use and development of ***forest*** resources;

· Using the country's ***forest*** resources to achieve economic benefits and create employment; and

· Encouraging study and research into ***forest*** resources so as to contribute to ecological balance. The Forestry Act covers the following:

· The establishment of a Forestry Authority and certain other entities involved in ***forest*** management and development, including the development of national and provincial ***forest*** plans;

· The approval of ***forest*** project proposals;

· The issue of timber permits, authorities and licences;

· The customary ownership of ***forest*** resources; and

· The payment of royalties and levies. A timber permit authorises the holder to carry out the operations specified in the permit within a certain area for a specified term and is subject to any conditions outlined, including compliance with project statements, five-year plans and annual logging plans.

**Fishing**

The Fisheries Management Act of 1998 regulates the fishing industry and its aquatic resources and environment for the following purposes:

· To manage, develop and protect PNG's fisheries resources, and marine, coastal and aquatic environments so as to conserve and replenish them;

· To maximise citizens' participation in the use and development of fisheries resources;

· To use the country's fisheries resources to achieve economic benefits and ecological balance, and to create employment; and

· To pursue effective strategies for managing fisheries resources, and national, provincial and local interests. The act deals with the following:

· Establishing the National Fisheries Authority;

· The management, development and regulation of fishing;

· The conservation of fisheries;

· Customary resource ownership; and

· The issuance of fishing licences.

**Environment**

The Environment Act of 2000 and other regulations established laws regarding the sustainable management of the country's environment, while the Conservation and Environment Protection Act 2014 created the Conservation and Environment Protection Authority (CEPA), which takes over the role formerly undertaken by the Department of Environment and Conservation as PNG's environmental regulator.

The CEPA grants permits to certain activities that are prescribed in the Environment Act as Level-A, Level-B or Level-C activities, with each level corresponding to the level of harm posed to the environment for which a permit is required. The levels are then categorised and further subcategorised into the specific type of activities. The permits are largely intended for projects and developments, but also extend to any activities that can potentially be harmful to the environment. The type of permits to be obtained are in their prescribed forms together with the prescribed fees.

**Employment Conditions**

The Employment Act regulates the conditions under which citizens of the country can be employed. Subject to certain exceptions, the legislation contains provisions relating to maximum daily hours and rest periods, overtime and overtime rates, recreation, sick leave, and the payment and protection of employee wages. A firm should take care in contracting with non-citizens, as these conditions may apply. Examples of common employment conditions in force include:

· A 40-hour work week with overtime;

· Three weeks of annual leave;

· A six-month service leave after a duration of 15 years of continuous service; and

· After three months of continuous service, a requirement of one week's notice of termination of employment by either party, or, if the employer terminates the employment, one week's wages in lieu of notice.

· These and other conditions of employment may be negotiated and varied in the contract between the employer and the employee, but some minimum entitlements are set by law. The act contains detailed provisions relating to contracts of employment.

· Minimum wage levels are set by a government-appointed Minimum Wages Board. The board, which includes representatives from labour unions, employers and the government, meets every three years and reevaluates the minimum wage. Some workers in major regional centres and major natural resource projects belong to a trade union - a right that is guaranteed to all workers. Other key regulations and laws relating to employment and working contracts in PNG are as follows:

· The Industrial Organisations Act, which provides for the registration and control of industrial organisations;

· The Industrial Relations Act, which established and operates the Minimum Wages Board, for the settlement of disputes and common rules; and

· The Workers' Compensation Act, which provides for compensation to workers and their dependents in respect of injuries sustained in the workplace.

**Insurance Act**

With limited exceptions, the Insurance Act regulates coverage for all types of risk. The act is administered by the insurance commissioner, who is appointed by the minister of Treasury. A corporation intending to conduct general insurance business or undertake business as a broker, loss adjuster or agent must first apply to the insurance commissioner for a licence. The insurance commissioner will grant a licence subject to such terms and conditions as they consider to be appropriate. Licences are issued for one year and can be renewed. All risks that are situated in PNG for which insurance (including reinsurance) is required must be insured with licensed insurers. A person who arranges insurance - such as an agent, broker or insurer - of a risk situated in PNG with a person other than a licensed insurer is guilty of an offence. The act contains an exemption to this prohibition where the insurance commissioner is satisfied with the existing facilities, and available capacity of licensed insurers are fully utilised. An application for exemption must comply with certain formalities and provide certain information, including details of arrangements for the payment of income tax by non-resident insurers, as well as for approvals required under the Central Banking (Foreign Exchange and Gold) Regulation.

**Stamp Duty**

The Stamp Duties Act imposes stamp duty (a form of indirect taxation) on a variety of documents (instruments) and transactions at rates detailed in schedule 1 of the act. The duty is imposed as ad valorem duty - that is, on the value of the transaction - or as fixed duty.

Stamp duty charged on an instrument is payable:

· In the case of an instrument that is first executed outside PNG before January 1, 1995, when the instrument comes into the country; and

· In all other cases, when it is first executed. An instrument executed before July 1, 1953 is not charged with stamp duty. Duty is chargeable with respect to an instrument that is outside PNG if the instrument (irrespective of whether it was executed in PNG or otherwise) relates to property situated, or any matter or thing done or to be done, in PNG. An instrument containing or relating to several distinct financial matters is chargeable with stamp duty with respect to each of those matters as if each matter were expressed in a separate instrument.

The consequences of not paying the correct amount of duty when due are severe. In addition to the actual duty itself, interest, fines and other penalties are payable with respect to unstamped instruments liable to duty. However, the most important consequence of not paying the correct duty is that, subject to certain exceptions and qualifications, an instrument must not be pleaded or given in evidence - except in criminal proceedings or if admitted to be good, useful or available by law - unless it is duly stamped in accordance with the law in force at the time when it was first executed or came into PNG, whichever is later. Effectively, this makes an unstamped document that is otherwise liable to duty unenforceable until the duty is paid in full.

Stamp duty has been abolished in relation to loan agreements and loan securities (including mortgages) executed after January 1, 2008. There is currently no stamp duty levied on guarantees.

**Foreign Exchange Control**

The key legislation governing foreign exchange is the Central Banking (Foreign Exchange and Gold) Regulation. Until December 2004 PNG maintained a comprehensive regulated foreign exchange control regime with a variety of transactions requiring the approval of the central bank. Since then controls have been progressively liberalised; however, the central bank still retains control over the following:

· The opening of offshore and onshore foreign currency accounts, including offshore kina accounts;

· The licensing of gold exporters;

· The licensing of foreign-exchange dealers; and

· The ***removal*** from PNG of physical cash in excess of PGK20,000 ($5900) or foreign currency equivalent. Furthermore, approval from the central bank is still required for residents - broadly, any enterprise of whatever legal structure having an economic presence in the country - to give a guarantee or grant security over assets in PNG in favour of a non-resident, where such guarantee or security is part of a transaction that is not for the direct benefit of a person resident in PNG.

Additionally, only authorised dealers (banks authorised by the central bank) may conduct foreign currency transactions. Residents still require central bank approval to enter into or perform an agreement with another resident in a currency other than kina.

**New Securities Legislation**

In November 2015 the National Parliament passed the New Securities Legislation package, which includes the following:

· The Securities Commission Act of 2015;

· The Capital Markets Act of 2015; and

· The Central Depositories Act of 2015. The New Securities Legislation, excluding the Central Depositories Act, is now in force. Importantly, the Securities Commission Act of 2015 repeals:

· The Securities Act of 1997;

· The Securities Regulation of 1998; and

· The Takeovers Code of 1998. The legislative intention was that the minister for trade, industry and commerce would prescribe a new takeovers code based on the recommendation of the PNG Securities Commission and that this new legislation would come into force immediately after the Takeovers Code of 1998 was repealed. Unfortunately, this did not occur, and the previous code was repealed before a replacement was ready. As of mid-2019 the PNG Securities Commission was still working on the new takeovers code and no recommendation concerning the pending legislation had been made to the minister for trade, industry and commerce.

This means that until a new takeovers code comes into operation, the takeover of PNG-incorporated companies remains largely unregulated. The PNG Securities Commission was purported to have put takeovers on hold; however, as takeovers are dependent on the dynamics of the market, this is impractical. Therefore, the PNG Securities Commission has requested that interested parties liaise closely with the organisation, pending the introduction of a new code. Initial indications are that new regulations will not be based on New Zealand precedents, but rather are likely to follow a model that has been adopted by a number of South-east Asian countries.

The New Securities Legislation as a whole aims to bring securities regulation in PNG more in line with international standards in securities law, practice and procedure. For example, in relation to the prospectus requirements, the Capital Markets Act of 2015 does away with the concept of an offer to the public. Instead, subject to specific exceptions - classified as excluded offers, excluded invitations and excluded issues - no person in PNG will be permitted to issue or offer securities for subscription or purchase or to make an invitation to subscribe or purchase securities.

For an initial listing, making an application for the quote of securities on a stock exchange is not allowed, unless a prospectus relating to the securities has been registered by the PNG Securities Commission. In this case, the prospectus must comply with the requirements of the Capital Markets Act of 2015. An offer of, or invitation to subscribe for, securities in a takeover offer "which complies with the relevant law applicable to such offers" is specifically excluded.

OBG would like to thank *Leahy PNG Law*for its contribution to THE REPORT Papua New Guinea 2020

**Load-Date:** November 25, 2020

**End of Document**



[***Government funds UK companies at the forefront of space innovation***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61G6-HN51-F0YC-N3Y2-00000-00&context=1516831)

Impact News Service

December 7, 2020 Monday

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**Length:** 3203 words

**Body**

London: UK Government has issued the following news release:

The cash injection is going to high-risk, high-reward projects that support companies and universities with radical ideas for how we tackle climate change through Earth Observation or address satellite communications challenges, from providing greater connectivity to remote places to increasing the efficiency of our homes.

Projects set for the cash boost include The Open University who will use the money to create the UK’s first Precision Forestry tool, TreeView, which will support efforts to tackle the climate emergency through detailed measurement of tree-planting initiatives aimed at increasing carbon dioxide ***removal***.

Surrey-based Global Satellite Vu will build a new compact, high-resolution infrared camera for satellites to measure thermal ***emissions*** from our homes, schools and places of work, supporting the government’s green economic recovery plan.

Space Forge will take advantage of the unique qualities offered by the space environment. By manufacturing in microgravity, the space start-up hopes to produce a next-generation computer chip for the terrestrial and satellite telecommunications industries and return them from orbit for use on Earth.

Science Minister Amanda Solloway said:

We want the UK to be a world leader in space technology which is why we are supporting our most ambitious innovators who are developing first-of-a-kind technologies to help solve some of our greatest challenges.

From slashing carbon ***emissions*** to protecting the UK’s critical services from harmful cyber-attacks, today’s funding will unshackle our most entrepreneurial space scientists so that they can transfer their revolutionary ideas into world-class products and services, while helping to boost the UK economy.

The funding comes from the UK Space Agency’s National Space Innovation Programme (NSIP), which is the first UK fund dedicated to supporting the space sector’s development of innovations, allowing us to compete internationally on the world stage with other countries, like France and Germany, which have dedicated national funding for space.

Businesses, universities and research organisations were awarded co-funding for projects that will help the space sector create new high-skilled jobs, while developing new skills and technologies on UK soil. Grants from the £15 million funding pot range from between £170,000 and £1.4 million per project.

Dr Graham Turnock, Chief Executive of the UK Space Agency, said:

Space technologies have become deeply embedded in, and critical to, almost every aspect of our daily lives. With rapid technological innovation, space offers a broad and growing range of opportunities to support economic activity and protect the environment.

From the satellites connecting our calls to the ones that tell us when to expect rain when we step outside, space technologies are fundamental to our day-to-day lives.

Our space sector is constantly advancing and welcoming new ideas, and through this funding we are championing the best of this British innovation.

In addition, £5 million of the programme funding has been set aside for international projects, which will focus on increasing exports and securing new inward investment, supporting UK science and the prosperity agenda by funding working relationships between world-leading researchers and institutions and developing space capabilities important to the UK’s security interests.

The call for applications for this strand of funding closed in October and successful applicants will be announced in the coming weeks.

The UK space sector is a huge economic success story, growing by over 60% since 2010. Satellites already support £300 billion of UK economic activity through the use of satellite services and is expected to grow further as this new government support unlocks commercial opportunities.

The UK also remains a leading member of the European Space Agency, which is independent of the EU. ESA membership allows the UK to cooperate in world-leading science on a global scale, enabling UK scientists and researchers access to a range of international R&D programmes.

Further details on the 21 projects

Space-based Mapping & Monitoring of Wetlands Carbon Sequestration, Argans, Plymouth, £215,866.00

Wetlands regeneration and conservation efforts offer a highly effective source of reducing ***emissions*** via carbon sequestration. The potential of wetlands is limited by the cost of mapping and monitoring. Plymouth based Argans aim to remedy this by utilising Earth Observation (EO) by developing a wetlands map to support monitoring of total carbon ***emissions*** for national accounting and to provide low-cost intelligence on how and where governments can most cost-effectively intervene to leverage wetlands as a source of carbon sequestration.

Consortium Partner: London Economics Ltd

GHGWatch, Geospatial Insight, Birmingham, £226,295.86

Greenhouse Gas (GHG) ***emissions*** are recognised as a major contributor to climate change and temperature increase, but detection and monitoring of locations where ***emissions*** are occurring is problematic and expensive using current technologies. Geospatial Insight aims to create a service which will detect, quantify and monitor point-source GHG ***emissions***.

Consortium Partner: University of Leicester

TreeView: Precision Forestry to Tackle Climate Change, The Open University, Milton Keynes, £283,978.68

TreeView, led by The Open University, is a SmallSat mission to provide unprecedented capacity in the emerging field of Precision Forestry. A major pillar of UK’s national response to the climate change emergency is a significant increase in tree planting for a nature-based carbon capture and storage solution. In this project, the team will conduct a feasibility study, resulting in a system design document and science case that both justifies and defines the UK’s first Precision Forestry tool with a national focus but global potential.

Consortium Partners: 2Excel Geo, Centre for Ecology and Hydrology, ***Forest*** Research, Grey Consultants, In-Space, RAL Space, Teledyne e2v, XCAM

Development of Novel High Resolution Infrared Sensor Payload for Heat Detection, Global Satellite VU, Surrey, £1,399,179.83

Global Satellite VU will develop and launch the world’s first small ~130kg satellite that will deliver high-quality thermal video and thermal still imagery of the Earth, initiating the design, build and integration of the infrared camera.

By launching a small constellation of infrared satellites, this project looks to measure the thermal ***emissions*** from any structure on the planet; their technology will act as the Earth’s ‘Smart Energy’ meter to monitor energy efficiency, economic activity and carbon footprint.

Consortium Partner: Surrey Satellite Technology Ltd

Nexus, Space Forge, Newport, Wales, £329,326

Space Forge is developing and launching the world’s first returnable satellite, delivering revolutionary products back to Earth to significantly improve the efficiency and sustainability of telecommunications infrastructure. They are launching a small fleet of satellites to harness the benefits of the space environment for manufacture of next generation devices, changing the way in which the UK uses space, for the benefit of its citizens on Earth.

Consortium Partners: Compound Semiconductor, Applications Catapult, AAC Clyde Space

Project CitiScan, D-Orbit UK Ltd, London, £183,158.00

Project CitiScan aim to develop a new, responsive, space-based climate observation service to support end users in their goal to achieve national and global climate obligations. The project will provide climate-related measurements of individual cities and industrial complexes to enable end-users, such as local authorities, to monitor their omissions and progress.

Consortium Partners: Thales Alenia Space UK, University of Leicester

ROKS payload flight model – discovery phase, Craft Prospect Limited, Glasgow, £345,433.00

The Responsive Operations for Key Services (ROKS) mission will demonstrate technologies for future secure telecommunication systems using Quantum Key Distribution (QKD) and supported by artificial intelligence. This discovery phase will progress the flight payload and ground test systems to Critical Design Review (CDR), before a final build and delivery to demonstrate in-orbit operation by 2022. To date the work has developed the technology basis for miniaturized space-ready QKD systems and has developed service opportunities with multinational finance, telecommunication and data providers for securing their networks.

Consortium Partners: Strathclyde University, Bristol University, Fraunhofer Centre for Applied Photonics (CAP) Glasgow

RAPID – Real-time AI Processes for Intelligent Detection, Teledyne e2v, Chelmsford, £207,637.50

New imaging sensors designed for Earth Observation (EO) are being developed with increasing numbers of pixels and faster operating rates. Whilst this allows improved performance it presents great challenges for data handling in the satellite itself and also for data downlink given the vast amount of data generated. RAPID – Real-time AI Processes for Intelligent Detection will use space ready hardware to establish the RAPID test and demonstration system while also providing the image processing platform and algorithms to handle the significantly higher data volumes.

Consortium Partner: Craft Prospect Ltd

STORICLI (EO STOrylines for water RIsk under CLImate change), HR Wallingford, Oxfordshire, £202,529.38

The STORICLI project will look into the opportunities for using earth observation techniques to better understand how the supply and demand for water might change in the future due to climate change. HR Wallingford will develop a prototype web-based tool to help water companies and regulators consider the robustness of water resources plans, using a set of plausible future storylines.

BRAIL (Backhaul Radio Access with Integrated LEO), Satellite Applications Catapult, Harwell, £510,757.00

There is an increased recognition of the need to deliver enhanced connectivity across the globe. In this project led by the Satellite Applications Catapult, the team is developing a pioneering solution for delivering connectivity to poorly served areas, leveraging the performance and ubiquitous coverage of satellite mega-constellations with the innovation of terrestrial networks. This project is the first of its kind and will use OneWeb’s satellites to demonstrate high speed data transfer through space to the Catapult’s 5G network at its connectivity research and innovation centre in Westcott, Buckinghamshire.

Consortium Partners: OneWeb, LiveWire Digital Ltd, Uni of Strathclyde

AI4CC Toolbox,Trillium Technologies, London, £332,765.12

Applying Machine Learning (ML) to Earth observation (EO) data gives us the ability to better make predictions about how to adapt and mitigate our changing climate. Trillium Technologies aims to create a new public ‘ML Toolbox’, comprising an open repository of artificial intelligence tools such as enhanced, simulated and labelled geospatial data and advanced machine learning modules. ML4CC is dedicated to simplifying ML production and validation and ultimately improving climate related decision-making within the UK.

Consortium Partners: Oxford University Innovation, Know.space

High resolution thermal infrared space telescopes for globally monitoring the energy efficiency of buildings, University of Cambridge (Institute of Astronomy and Cambridge Zero), £294,041.26

Thermal infrared telescopes in space can monitor the energy output of buildings which makes them a powerful tool for ensuring that governments, companies and even individuals are on track to meet internationally agreed carbon ***emission*** goals. The team will study how the data can be used and develop prototypes for an innovative unfolding telescope for a nanosat constellation giving the required ground resolution (7 metres) with frequent revisit rates.

Consortium Partners: Super-Sharp Space Systems Ltd, Open Cosmos Ltd

Hyperspectral Microwave Sounder Constellation of Nanosatellites for Climate change And Mitigation (HYMS CONCAM), RAL Space, STFC, £494,022

As average global temperatures rise, hazards such as heatwaves and floods grow in frequency and severity, and chronic hazards, such as drought and rising sea levels intensify. Improved observations of our weather systems and more accurate forecasts are essential for our understanding, planning, and mitigation of extreme events. RAL Space will carry out a rigorous analysis and develop the Hyperspectral Microwave Sounder, a first of its kind, designed to provide unprecedented resolution of global moisture and temperature profiles in a highly compact form factor, allowing for a constellation deployment that will dramatically enhance global weather forecasting and climate monitoring.

Satellites for Batteries, Satellite Applications Catapult – Harwell, £463,650.55

Climate change is a defining issue of our time with transport being the UK’s biggest contributor to greenhouse gas ***emissions***. The transition from greenhouse gas-emitting conventional engines to Electric Vehicles (EVs) will bring an unprecedented increase in demand for a mixture of battery metals.

This project is a collaboration between space and mining companies led by the Satellite Applications Catapult and will use satellite data with advanced analytics to increase the identification of battery metals for mining companies in the UK and internationally, whilst decreasing the overall cost and environmental degradation associated with exploration.

Consortium Partners: Decision Lab, CGG Satellite Mapping, Terrabotics, Pixalytics, Cornish Lithium, University of Exeter, BGS

Improved “real time” tracking of vessel performance and ***emissions*** across the global maritime system, UMAS International Ltd, Shrewsbury, £167,126.72

Shipping is responsible for approximately 1bn tonnes of greenhouse gas and significant air pollutant ***emissions***. NSIP’s support to integrate the latest satellite measurement developments into the latest modelling, is giving UMAS and the UK a globally leading position in the decarbonisation of this important sector. This project will build on previous “big data” capabilities and modelling studies that utilise the latest satellite systems to create powerful new tools for the estimation and tracking of shipping ***emissions*** on a global scale.

Consortium: UMAS International Ltd, University College London

Laser Optical Communications for CubeSats, University of Northumbria at Newcastle, £367,659.82

The space communications sector is currently booming with the emergence of low cost, short-turnaround and high production rate satellites, such as CubeSats. One significant drawback for CubeSats is that they are not currently applicable for data intensive applications, primarily because CubeSats have low data storage and data transmission capabilities. The aim of the project is to replace the existing low-speed radio frequency transceiver used in CubeSats with the high-speed, light weight and lower power free-space optical transceivers, enabling a step-change in our approach to communications constellations and space science missions. By the end of this project, a test-bed design will have been developed together with a mission design study for future testing of the system in space.

Consortium Partner: ISOCOM Limited

Faraday+, In-Space Missions Limited, Hampshire, £235,233

In-Space Missions is using its NSIP programme to substantially extend its current Space as a Service, Faraday, capabilities. The expanded capability, Faraday+, will provide a Software Defined Satellite service which will allow customers to upload their application from the ground or buy capacity without the need to launch their own space hardware. Short-circuiting lengthy satellite build schedules lasting years and costing millions of pounds, new services using Faraday+ will be rolled out in weeks and at a fraction of traditional costs. Faraday+ will support multiple customers at the same time and underpin a significant acceleration of innovation across the whole of the UK space sector.

Consortium: Subcos Wave RF Ltd, National Physical Laboratory (NPL)

LynkCast, Lynk Global UK, Guildford, £348,061

Lynk Global UK Limited, a subsidiary of Lynk Global, is developing LynkCast that will work on Lynk’s mobile microsatellite communications network. This network will function as a “mobile network in orbit” to enable mobile phones anywhere on Earth connect to their orbiting network without the need of modification to the devices’ hardware or software. LynkCast is an innovative product, which will be accelerated by funding from the UK Space Agency, to bring the critical information services such as weather forecasts and alerts to users direct from the satellites to the mobile phones in their pockets.

Consortium Partners: With Reason Ltd, Farm.ink

Global Lidar Altimetry MISsion: GLAMIS, University of Edinburgh, £289,920.53

Space-borne lidar systems, Laser altimeter system that determines the distance by measuring light pulse travel time, are collecting important data but provide only sparse coverage, making them unsuitable for many commercially and societally important applications such as flood prediction. Scaling up these existing technologies to provide continuous global coverage would be prohibitively expensive.

The School of Geosciences at the University of Edinburgh, GLAMIS will bring together expertise from Scotland’s growing space and photonics sectors to pioneer a new approach to space-borne lidar using a laser compatible with a small satellite and, for smaller platforms, deployable optics to collect sufficient light.

Consortium Partners: Fraunhofer UK Research Ltd (Glasgow), UK Astronomy Tech Centre, University of Strathclyde

Quantum Accelerometer Climate Explorer (Q-ACE), Thales Alenia Space, Reading, £205,437.59

The Quantum Accelerometer Climate Explorer (Q-ACE) Mission brings together cutting edge Teledyne e2v Cold Atom Space Payload (CASPA) quantum accelerometer with Thales Alenia Space’s new revolutionary Very Low Earth Orbit (VLEO) SkimSat satellite platform to better understand climate change. Through the development of these highly innovative technologies, the mission would measure the density of the Earth’s thermosphere, mapping the small scale structure. In the future, this could further improve climate predictions and its evolution.

Consortium Partners: Teledyne e2v, University of Birmingham, RAL Space

The Data SlipStream Project: advanced data systems to deliver timely information on Climate Change Mitigation and Adaptation from Earth Observation, University of Edinburgh, £214,542.82

The University of Edinburgh will develop and demonstrate efficient, scalable data handling systems for use by organisations working on climate change mitigation. These systems will have a further potential impact on the ***agriculture***, forestry, coastal, freshwater, urban and infrastructure domains.

Their pathfinder system, SingleTree, will use EO data to detect small scale ***land*** use changes that are important from a climate policy perspective.

Consortium Partners: Resilience Constellation Management Ltd, The Data-Driven Innovation and Edinburgh and South East Scotland City Region

**Load-Date:** December 8, 2020

**End of Document**



[***Letter: Sustainable farming needs reform and new blood***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62DV-1691-JB77-K3KC-00000-00&context=1516831)

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April 12, 2021 Monday

**Length:** 324 words

**Body**

Your editorial on the purchase by Bill Gates and other billionaires of vast swaths of farmland tries to justify it by claiming that “farmers...

**End of Document**



[***Wild at heart; Last year Anders Povlsen, the UK's largest private landowner, lost three children in the Sri Lankan terror attacks. In a rare interview he talks to Dan McDougall about finding new purpose in his plans to reforest Scotland***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61BS-JG51-JCBW-N29P-00000-00&context=1516831)

The Sunday Times (London)

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**Section:** MAGAZINE;FEATURES; Pg. 34,35,36,37,38,39

**Length:** 3084 words

**Body**

The track is narrow and serpentine, cutting a low channel through the great glen at Feshie as the rain turns to sleet and the ethereal Highland light is lost. Up ahead, ancient junipers, oaks and pines, stripped bare to

the waist, stand sentinel over the pass.

A Range Rover suddenly flashes in my rear-view mirror. At the wheel in a cashmere beanie is Britain's largest private landowner, Anders Povlsen, a reclusive billionaire who owns more of the UK than the Queen and the Church of Scotland combined.

As well as the 43,000-acre Glenfeshie estate, a pristine wilderness in the Cairngorms,

Scotland by

Povlsen owns 12 other Scottish estates. In total this Danish entrepreneur has acquired about 230,000 acres of Britain worth more than £120 million, and has grand visions for a 200-year "rewilding" plan ? to allow native

woodland and species to regenerate and flourish across northern Scotland. Povlsen's rewilding is the most ambitious privately funded environmental endeavour in the conflict-ridden history of the Highlands.

To achieve his goal Povlsen has bought adjoining estates and has begun the process of ***removing*** sheep, which overgraze and previous Highland lairds allowed to proliferate to promote a landscape suitable for gun sports. He is also planting trees ? restoring ancient Caledonian ***forest*** tracts. At Killiehuntly near Inverness his young Scottish team

have planted 1.5 million native trees in less than two years; over all his properties his staffhave planted more than four million.

The truth is that rewilding is an often maligned and misunderstood philosophy. Popularly it is often seen as a movement that seeks the return of carnivores such as wolves or lynx ? Natural England, for example, is currently considering the feasibility of reintroducing lynx. But for Povlsen rewilding aims to return far more modest animal species by undoing centuries of overgrazing and regenerating native woodlands and wetlands. It's notable that across Povlsen's ***lands*** there have been increased sightings of red squirrels, pine martens and golden eagles, as well as reforesting.

of owned Povlsen

His plans have drawn praise from environmentalists ? and criticism from ***land*** reform campaigners concerned about foreign ownership in the Highlands. "I generally think, over generations, we have lost the baseline," Povlsen says as we sit in the main lodge at Glenfeshie, a Ralph Lauren-imagined hallucination of stags' heads and Victorian-era crampons that he inherited from the estate's previous owner. "This [the Highlands] is not a natural environment any more ? when you're out there and there's only heather, heather, heather. In some places you will not be able to see a single tree for miles. Then we dig into the peat and you will find it used to be a ***forest***, and not only that, we can change it back to its splendour and natural state."

Povlsen recently made headlines

when his team sought a judicial review of plans for a space-rocket launch site in the Highlands, fearing it will damage protected areas. The Highlands and Islands Enterprise agency, on the other hand, says the project would create jobs.

Yet to most people Povlsen is something of a ghost. He rarely speaks to the media, not even to tell them when they are wrong ? which, in his opinion, they often are. In April Povlsen, who calls an estate near Aarhus in Denmark his home, was named in The Sunday Times Rich List as Scotland's richest man, with a fortune of £4.73 billion ? a title he says he finds unnecessary as a resident tax-paying Dane. This interview is the first Povlsen has given to a mainstream international publication for years.

It comes as he is fighting tooth and nail through the most significant professional challenge of his life: his multibillion-pound fashion company, Bestseller, along with the entire fashion industry, has been dramatically affected by Covid-19.

However, its impact on Povlsen pales into insignificance beside the appalling events that altered the course of his life last year.

In April 2019 he travelled to Sri Lanka with his wife, Anne, and their four children, partly on holiday, partly to visit potential conservation projects. A last-minute decision before their departure caused the family to spend a final night in Colombo before heading to the airport. As a consequence they were caught in a terrorist attack as a series of explosions ripped through the city.

One bomb detonated at 9am on Easter Sunday at the Shangri-La hotel, where the Povlsen family were having breakfast. It took the lives of three of his four children: Alfred, 5, Agnes, 12, and Alma, 15. Only Astrid, his youngest daughter, survived.

On Povlsen's left wrist is a row of three scarlet Buddhist threads, one for each of the children he lost that fateful morning. In the wake of the bombings, which killed an estimated 269 people including about 50 other children, Povlsen, his family and friends all adopted the three symbolic threads, which they continue to wear.

Although stricken with unimaginable sorrow, Povlsen has proven to be stoic, ploughing much of his heart and soul

into conservation. When he speaks about his projects in Scotland I am surprised by the passion in his voice. "This ***land*** moves me ? it motivates me. Here in Scotland it feels like we are at the vanguard of something."

Nevertheless, Povlsen admits he needs to work harder to explain his aims in the Highlands. "I am not going to pretend it was easy when I first started here in Scotland. But today the locals here are less suspicious of our motivation. They know we are trying to deliver something to protect the ***land***."

He adds: "Wildland, which manages our estates, is a business registered in Scotland. I am being taxed in the UK and Denmark for our Scottish estates. There will always be doubters, of course, but the truth is we are here for the long run and the right reasons."

Povlsen acknowledges that with more ownership comes deeper accountability. "We could probably have communicated our intentions here in Scotland better. If I was candid, we didn't plan to buy this much ***land***. It has grown organically and now we find ourselves here with titles like the UK's largest private landowners.

"The trouble with the attention this attracts is that people assume there is an angle in play. That I am buying all this ***land*** for reasons that are not entirely altruistic. Perhaps there is something inherent in human nature, when people see a project or a vision like this, to doubt it, to mistrust the scale."

S

cale is clearly an issue. In 2017 it was estimated that more than half of the private ***land*** in Scotland was owned by fewer than 500 people ? and the new wave of owners is universally foreign. The billionaire ruler of Dubai, Sheikh Mohammed bin Rashid al-Maktoum, owns 63,000 acres of the Highlands. The list also includes the Swedish philanthropist and

publisher Sigrid Rausing, who owns Coignafearn, a 40,000-acre estate in the Monadhliath Mountains.

Scotland arguably has more terms for rain than any other country on Earth, and with good reason.

Number with estimated than acres

Most commonly there is lashing (rain that bounces offthe ground), murr (a fine drizzle), scrow (a nasty squally shower) and uar (a persistent heavy fall of rain). There is also plenty of rainfall in the Jutland peninsula of Denmark, where Povlsen grew up and raised his children, sending them to a local state school. Part of me understands why Povlsen feels at home here in the Cairngorms. There is something about rain and how it shapes communities

and people. In the Highlands it bonds villages together in tight-knit groups. The harsh weather also forges resilience.

From the outset of our talk Povlsen makes it clear that the death of his three children in Sri Lanka is an issue he wishes to avoid. Yet it is clear he is also seeking catharsis. One treasured memory of his children is a family effort to collect litter on a remote Indian Ocean beach in the south of Sri Lanka. His children, he recalls quietly, were the best litter collectors he had ever seen.

owners estates at more 24,000 each

When he returned to Europe with their bodies, Denmark mourned for one of its most successful sons. The funeral, at Aarhus Cathedral, was attended by Denmark's prime minister and Crown Prince Frederik and Crown Princess Mary, with their own four children. After several minutes' silence outside the church, Astrid, Povlsen's only surviving child, cut a string of balloons for her siblings that rose into the blue sky.

In the Cairngorms and at Povlsen's other ***land*** holdings, local people, including entire classes of schoolchildren, wrote letters of condolence to the family ? prompting them to take out full-page adverts in local newspapers extending their gratitude. The owner of the small B&B I stayed at the night before driving up to the estate said simply: "We felt

for them. They were so young. Everything was in front of them."

I tell Povlsen that I covered Sri Lanka's civil war as a foreign correspondent, and how I stared down at the white-clothed bodies of rows of dead schoolchildren after a militia bomb attack in the north of the island. Unexpectedly he begins to talk about his loss and his new baby daughters ? then changes tack, turning to the humility of the Sri Lankan people.

His wife, Anne, gave birth to twin girls earlier this year. They are rays of light in a family history darkened by more than one trauma. In 1998 the family were ***targeted*** by an extortionist who threatened violence if he didn't receive a ransom. And in 2003 a close family friend was kidnapped in India by a gang that mistook him for one of the Povlsens; luckily he survived.

Povlsen is regularly described as a billionaire who inherited his father's

fortune, but he bristles at this half-truth. His parents opened their first store in 1975 in the small Danish town of Ringkobing and expanded it ? but their son wasn't handed an empire or offered an easy way into the family business. He holds a bachelor's degree from the Berlin School of Economics and Law and a doctorate in business and ecommerce from Anglia Ruskin University in Cambridge. He wrote his dissertation on an Amazon-style model for online shopping ? before Amazon, in its current form, existed. Today his fortune stems mainly from Bestseller, the fashion business he inherited from his parents and developed from the age of 28, selling clothes under 11 brand names, including Jack & Jones, Only and Vero Moda, across thousands of individual stores. Bestseller is one of the most

number planted as part of rewilding

successful western fashion chains in China.

That financial strength has allowed him to pursue conservation well beyond Scotland and his native Denmark. He has projects in the Leaota region of

Romania and is examining new frontiers in the Volcanoes National Park, which straddles Rwanda, Uganda and the Democratic Republic of Congo. It was, in fact, to Rwanda where Povlsen partially retreated with his wife and daughter after the bombings in Sri Lanka.

I ask about his wife's role in his Scottish projects. "Well, Anne's very aware. She shares the sense that we urgently need to do more around sustainability ? how nature needs a helping hand."

of trees Scotland povlsen's projects

This raises an awkward issue: there is an apparent contradiction between his business interests and his conservation efforts. The fashion industry produces 10 per cent of all carbon ***emissions*** and is the second-largest consumer of the world's water. How does Povlsen square being part of an

unsustainable industry while running a global conservation programme?

"It's a fair question," he says. "But I can't have conservation ambition without the business to fund it. I don't think you have the luxury of being able to wake up one morning and sell up everything ? to leave the business behind. This is more acute now that we have lost ground with Covid-19. In many ways I think we will reset the company for good. I think we will finally find ways of working that are a little bit smarter, a little bit more efficient, faster, more sustainable. Covid is resetting how we work and think. Will it mean that we operate in a cleaner and better way? We all hope so."

He suggests that the way big businesses are taxed may become related to their environmental impact. "In the future you should have to prove you are carbon neutral, that you're not subtracting from the natural world. And we run a fashion business, so it's challenging, right? There has to be a way forward, a new way of measuring a company's tax in relation to the natural world. I want to be part of that."

While Povlsen's environmental aims may satisfy some critics, ***land*** has long been

a thorny issue in Scotland. The Clearances ? the mass depopulation of the Highlands and Islands in the 18th and 19th centuries, when landlords enclosed fields and sought higher rents and thousands of people emigrated in the hope of a better life ? still resonate here. The Clearances are wrapped in a swirl of historical fact and romantic fiction, particularly at those moments when the Scottish parliament struggles with ***land*** reform, or billionaires turn up to buy ***land*** the size of a home county.

***Land*** is such a contentious issue that some communities are taking direct action. This month the 2,300 villagers of Langholm, a few miles north of the English border, announced they had made a bid to buy one of the UK's most famous grouse moors, owned by the hereditary landowner the Duke of Buccleuch. If it goes ahead the £3.8 million community buyout will convert the 5,000-acre Langholm Moor into a model for climate-friendly, sustainable ecological restoration. Povlsen himself is no opponent of such endeavours and claims that any community involvement in ***land*** is positive, but the scale of his own ***land*** purchases dwarfs that of the Langholm villagers.

As well as Glenfeshie, Povlsen owns the Strathmore estate at Altnaharra, the 24,000- acre Ben Loyal and the 23,000-acre Ben Hope estate near Tongue. His acquisition of the Killiehuntly farm for £2 million means he owns the ***land*** where the artist Sir Edwin Landseer painted The Monarch of the Glen. In 2014 Povlsen snapped up the £15 million Aldourie Castle estate by Loch Ness, and has also bought the 20,000-acre Gaick estate from Xavier-Louis Vuitton, fifth-generation head of the French designer-goods family.

In a recent report for the government the Scottish ***Land*** Commission found that

the heavy concentration of ***land*** ownership in a small number of hands, including private owners, charities and government agencies, constitutes a monopoly. It has recommended new legal powers to subject ***land*** sales to public interest tests and to investigate abuses of power, as well as requirements for landowners to publish management plans.

P

ovlsen's company Wildland, which ploughs profits from tourism back into conservation, insists that its agenda remains firmly in the public interest and that his ***land*** contains public throughways and trails. Povlsen goes further, arguing

that breaking up his estates would undo his interlinked rewilding masterplan.

One of the most vocal critics of foreign ***land*** ownership in the Highlands has been the Scots academic and ***land*** reformer Dr Jim Hunter, who admits to being conflicted by Povlsen's endeavours. "I have visited Glenfeshie and was stunned at what Anders Povlsen has achieved there in terms of his rewilding work," Hunter says. "They have transformed the ***forests*** and we certainly can't accuse him of being a typical absentee landlord. Then again, the truth is that rewilding also isn't the answer for the Highlands."

In Hunter's view, people are needed more than trees. "To ensure wealth generation and economic growth, we also need repeopling," he says. "It's possible these things can go hand in hand, but that will take a different approach. Many of these Highland glens used to be productive ecosystems that were also rich with people. Historical ***land*** clearances and intensive ***agriculture*** changed a lot of that. Povlsen is trying to improve tourism on his ***land***, but how many jobs that will bring in is hard to judge."

In response Povlsen appears hopeful that the perception of ownership will change through action. "We want to rewild and repeople," he says. "We think the two can work in tandem. We hope that tourism and conservation can help repeople remote areas, but I worry that the vision of the past in the Highlands is misplaced. Yes, in some of the glens there might have been many families, but they had an impoverished life. The future of many places in the Highlands needs to be reimagined, and we hope conservation will be part of this."

When he talks about climate change and Greta Thunberg, Povlsen seems genuinely torn between the value of action and activism. At times the Dane finds himself grimacing at the Swedish teenager's methods. It clearly concerns him that being forthright and divisive

might not be the best way to convert climate sceptics or win hearts and minds.

"We see a movement across the world.

With Greta, at times it might need to be done in ? how can I say? ? a more constructive and less confrontational way. I understand why sometimes she's raising her voice. But at other times you need to be solution-orientated, and that's what we're trying to do."

As he talks of protecting the landscape and building a legacy for the future, I hear the profound influence of Povlsen's children in his mission. "Things suddenly seem to be happening quite fast and that's the challenge for all our natural habitats: how to adapt to a change that is coming so quickly. My children understand this."

Sometimes he speaks as if the three children he lost are still alive. "They were always looking at the environment," he says. "They cared. They did." n

I am surprised by the passion in his voice. "This ***land*** moves me ? it motivates me. Here in Scotland it feels like we are at the vanguard of something" 230,000 Acres of Scotland owned by Povlsen on 87 Number of owners with estates estimated at more than 24,000 acres each His business interests and conservation efforts appear to contradict each other. The fashion industry produces 10 per cent of carbon ***emissions*** after I 4m number of trees planted in Scotland as part of povlsen's rewilding projects povlsen's holdings north of the border Estate Acres\* 1 Polla 6,000 2 Eriboll 3 Kinloch 4 Ben Loyal 5 Ben Hope 6 Strathmore 7 Aldourie Castle 8 Lynaberack 9 Killiehuntly 10 Glenfeshie 11 Braeroy 12 Tulloch 18,000 19,000 24,000 23,000 21,000 500 13,000 4,000 43,000 30,000 8,500 13 Gaick \* all acreages are approximate 20,000

**Graphic**

chAngIng the LAndScAPe Povlsen's assets include the 43,000- acre glenfeshie estate in the cairngormsIN the thIck of It the main lodge at Glenfeshie, where ambitious rewilding is under wayPovlsen and his wife, Anne, mourn at the funeral of Alfred, Agnes and Alma, May 2019uNIted froNt danish locals show support for the Povlsens after three of their children are killed in the Sri Lanka terror attacks, April 2019getty right: estate. glenfeshie the of courtesy / northshots, cairns peter left:the povlsens arrive for prince frederik's 50th birthday bash in copenhagen, May 2018livinG landScape Regeneration of native woodland and ***forests*** has led to increased sightings of red squirrels, ospreys and pine martenslie of the ***land*** ownership of estates such as Glenfeshie is a thorny issue in Scotland

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[***Intraspecific diversity as a reservoir for heat-stress tolerance in sweet potato***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2B1-JCWX-C2M2-00000-00&context=1516831)

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**Body**

Main

Over the past decades, much attention has been given to crop breeding and the development and diffusion of improved varieties with traits appropriate for coping with climate change. Utilization of intraspecific variation in crop species responses to climate change may improve productivity and favour farming systems’ resilience to increasing abiotic stress–. Intraspecific diversity not only is indispensable for the discovery and introgression of traits for resistance breeding, but also is an important prerequisite for the development and maintenance of the evolutionary potential of landraces for crop adaptation to new climatic conditions.

Sweet potato (Ipomoea batatas [L.] Lam., Convolvulaceae), the fifth most important food crop, after maize, wheat, rice and cassava, is an interesting crop to assess the potential of intraspecific variation for crop adaptation to climate change. Its architecture, easy propagation, salt and drought tolerance, short vegetative period and capacity for early bulking– make it a robust crop, relatively more tolerant to climate shocks and stresses than other major crops,. Moreover, unlike other crops such as maize, wheat or pearl millet, sweet potato has not undergone a severe genetic bottleneck during domestication. The gene bank at the International Potato Center (CIP) alone maintains 6,171 accessions of sweet potato landraces, cultivars, breeding lines and commercial varieties originating or donated from 62 different countries. Beyond stress tolerance and intraspecific diversity, sweet potato also has a tremendous potential for achieving several of the United Nations Sustainable Development Goals (SDGs). Sweet potato is commonly planted in erosion-prone areas to protect farmland due to its trailing vines that cover the soil, (SDGs 12 and 15). The crop is high in nutritional value, exceeding most staple foods in vitamins A and C, calcium, iron, dietary fibre and protein contents (SDGs 2 and 3). Sweet potato also has flexible planting and harvesting times and, compared with other crops, is less labour intensive and therefore particularly suitable for households threatened by migration or diseases (SDGs 10 and 16).

The impact of climate change on sweet potato production is still uncertain given that cultivars currently grown in many regions do not tolerate climatic stresses, resulting in yield losses. Heat and drought stresses are among the most important climatic events aggravated by climate change that affect sweet potato productivity. The increase in intensity and frequency of heat waves represents a serious threat to crop production worldwide, and can be projected from climate models with more certainty than precipitation changes. According to the IPCC, the heat-wave amplitude will probably increase by about 1 to 3 °C by mid-twenty-first century and by about 2 to 5 °C by the late twenty-first century, depending on the region and ***emissions*** scenario. The Coupled Model Intercomparison Project 5 (CMIP5) multimodel ensemble also projects an increase in heat-wave frequency (1.7 ± 6.6 per decade to 13.0 ± 27 per decade under representative concentration pathway (RCP) 8.5, 2006–2016 versus 2090–2100).

To assess the heat-tolerance potential of sweet potato, it is critical to use data containing observable variations (for example, functional and biogeographical traits) among a large sample of genotypes, which cannot be done using aggregated regional yield data, controlled experiments or simulation models. One strategy to overcome this challenge is to look for adapted germplasm that has evolved in climate-analogue areas elsewhere, under similar climatic conditions to those in areas currently under stress. Hence, the major focus of our investigation was to (1) assess heat-stress (HS) tolerance of a large number of sweet potato cultivars and breeding lines, (2) identify intrinsic and extrinsic plant traits that best predict sweet potato cultivar response to heat stress and (3) evaluate threats of heat extremes projected under future climate scenarios.

To assess whether global patterns in heat tolerance in sweet potato exist, we carried out a mass field screening for heat tolerance in a large set of sweet potato accessions originating from 50 countries (Fig. ). In total, 1,973 unique accessions, including traditional and modern cultivars as well as breeding lines (Supplementary Table ), were obtained from the germplasm collection of CIP, propagated in vitro, multiplied and subsequently planted under irrigated field conditions at a 2.5 ha experimental site in the coastal desert of Northern Peru (Fig. ). The experiment was laid out as an alpha-lattice design with two replications for each cultivar and two temperature treatments corresponding to non-heat-stress (NHS, minimum–maximum = 12.1–31.7 °C) and HS (17.3–36.9 °C) conditions. HS conditions showed a mean warming of +5.5 °C of the air and +4.5 °C of the soil compared with NHS conditions, with 14 days of extreme heat events (>35 °C) of a mean duration of 1.8 hours (Supplementary Fig. ). Temperatures during the HS season exceeded the thermal optimum of sweet potato as the reported temperature optimum for sweet potato storage root initiation and production varies between 24 and 30 °C during the day and between 14 and 22 °C during the night,. Other climatic parameters such as rain, relative humidity, solar radiations and vapour pressure deficit showed only limited differences between the periods (Supplementary Tables ). The heat effect on plant performance was evaluated by means of root and foliage yield metrics (Supplementary Table ) at 120 days after planting ().

World map of the 1973 sweet potato cultivars and breeding lines tested in the intentional exposure and control trial for HS tolerance.

a, Origin location of each cultivar and breeding line overlaid with the Worldclim maximum temperature of the warmest month. Blue dots indicate heat-tolerant cultivars under future climate scenario RCP 8.5, as identified in Fig. (tolerance to heat stress >1). The experimental field site for sweet potato heat screening is marked with a red star. b, Visual drone-based mapping of the 4,040 test plots at the experimental field site in Piura, Peru. c, Close-ups on the demarcation of sweet potato cultivar plots in the visual map. d, Corresponding high-precision thermographic image of plant canopy temperatures under HS conditions. Temperatures represent means of the warmest month in a and snapshot of surface canopy temperatures in b and d.

Under NHS conditions, a total of 981 out of 1,973 cultivars yielded more than the median root-yield value (21.5 t ha−1) as opposed to 132 cultivars (about one-seventh) that reached the same yield or more with heat stress (Fig. ). Also, while exposure to heat stress led to increased vine yields in 38.6% of sweet potato cultivars, it had an overall strong negative impact on roots. The number of cultivars that produced fewer than 1.89 roots per plant and fewer than 3.5 plants with storage roots (out of five plants per plot) increased 2.22- and 3.11-fold, respectively, under HS conditions. However, the screening also revealed that 132 cultivars performed well under heat stress (>21.5 t ha−1), representing promising candidates for the selection of high-yielding and heat-tolerant cultivars (for more information on the 22 yield metrics and geographic origin of the cultivars, see Supplementary Figs. and and Extended Data Fig. ).

Impact of heat stress on the performance of 1,973 sweet potato cultivars and breeding lines.

a–d, Alluvial chart showing the trajectory of change between NHS and HS treatments for four different yield metrics: root yield (t ha–1) (a), number of plants with roots (b), number of roots per plant (c) and vine yield (t ha–1) (d). Each metric is divided into four quartiles in the control treatment except for b, in which the trajectory of the number of plants with no roots is shown. Vertical numbers reflect the number of cultivars falling within each quartile. Yield data correspond to dry matter. Closed intervals include the end points, while open intervals exclude the end points.

We used a random ***forest*** model of 500 classification trees to estimate the relative importance on sweet potato root yield under both HS and control conditions of three environmental variables (altitude, temperature and precipitation at the location of origin) and nine morphological and physiological traits (out of 30 that were measured) known to be involved in heat tolerance in plants (Supplementary Table ). Because physiological processes are strongly affected by leaf temperature, canopy temperature depression (the difference between air and canopy temperature) of the whole experimental plot was measured using high-precision airborne thermography (Fig. and ). Under NHS conditions, sweet potato yield was best explained by the environmental variables of their location of origin (altitude, precipitation and temperature), which accounted for 39.1% of the explained variance (Fig. and Supplementary Table ). Under HS conditions, canopy temperature depression accounted for 26.3% of the variance explained, followed by leaf chlorophyll content (11.5%), temperature and precipitation in the cultivar’s region of origin (20.2% in total) and storage root-flesh colour (8.8%, Fig. ), with a significant tendency of cultivars with orange-fleshed roots to better tolerate heat stress (Extended Data Fig. ).

Random ***forest*** analysis of intrinsic and extrinsic predictors of root yield in 1,973 sweet potato cultivars and breeding lines.

a,b, The relative importance of each predictor is ranked in order (clockwise) and presented for NHS (a) and HS (b) conditions. Numerical values of importance for predictor variables were calculated as the decrease in classification accuracy after predictor ***removal*** in a random ***forest*** of 500 trees. Model accuracy was 28.99% and 13.08% for NHS and HS conditions, respectively. Arrow colours indicate the direction of correlation (blue, positive; red, negative) for the continuous variables. NDVI, Normalized Difference Vegetation Index.

Finally, threats of predicted climate change on sweet potato yields were assessed by relating the HS tolerance of each cultivar with the expected mean maximum temperature in its region of origin by 2070, with two greenhouse gas (GHG) concentration scenarios (medium/low, RCP 4.5; high, RCP 8.5; Supplementary Fig ). When grouping the results by continent, the Americas, Africa and Asia, we found that sweet potato cultivars will be exposed to temperature increases between 1 and 4 °C and between 2 and 5 °C for RCP 4.5 and RCP 8.5 GHG scenarios, respectively, with highly variable predicted mean monthly precipitations among regions (between 18 and 305 mm month−1, Fig. ). While each temperature class harbours a high number of cultivars poorly adapted to heat stress (red cells in Fig. ), each also contains tolerant ones (blue cells), in particular in Asia and America where sweet potato diversity has been well sampled. In America, for example, in areas where heat stress will be strongest (4–5 °C, close to our experimental stress conditions), seven cultivars (CIP 400282, 401145, 401461, 401469, 401483, 440087 and 440089 in Supplementary Table ) are highly tolerant (maintaining stable yields), and 15 would still retain more than 50% of their yield measured in stress-free conditions.

Predicted climate stress by 2070 to be experienced by 1,472 sweet potato cultivars and breeding lines showing different levels of HS tolerance.

Data are clustered for the three continents (the Americas, Africa and Asia) and are given for two GHG concentration scenarios. a, Low/medium (RCP 4.5). b, High (RCP 8.5). HS tolerance was calculated as the sweet potato root-yield ratio between HS and NHS conditions as reported in our field experiment (‘tolerance to heat stress’ values >1 indicate higher yields under HS conditions). The ranges of temperature increase projected at studied locations for each geographic zone are as follows: Africa, 2.0–2.8 °C and 3.1–4.3 °C; the Americas, 2.2–3.3 °C and 3.4–4.8 °C; and Asia, 1.9–2.7 °C and 3.0–4.3 °C for RCP 4.5 and RCP 8.5, respectively. Water drops indicate predicted mean monthly precipitations in sweet potato cultivar location of origin. Predicted changes in precipitation for each scenario (averaged values for all cultivars’ locations within a continent) are given next to the drops. Some uncertainties in geographic coordinates impeded the use of all cultivars for this analysis, hence the 1,472 cultivars reported here. Closed intervals include the end points, while open intervals exclude the end points.

Plants respond to heat stress by triggering a cascade of physiological processes and adapt by switching on numerous stress-responsive genes,. Mass screening as done in this study is crucial to identify heat-tolerance traits for further molecular characterization of specific genes. In case of water availability, we expected that tolerant genotypes would tend to have large leaves (with a large boundary layer resistance) so that they can minimize heat gain from the air and temperature feedbacks from the soil. However, leaf size was a poor predictor of HS tolerance. By contrast, our results suggest that canopy temperature—a parameter that has been largely neglected in plant adaptation studies—may be a suitable trait for selecting physiologically superior lines in warm and low relative humidity environments, where high evaporative demand leads to significant leaf cooling below ambient temperatures (Supplementary Fig. ). Our results also suggest that orange-fleshed sweet potato cultivars containing high carotenoid levels may confer HS tolerance, confirming recent biochemical evidence that carotenoid accumulation may protect the photosynthetic machinery from photo-oxidative damage during heat stress.

This study provides robust evidence of the role of intraspecific diversity for crop adaptation to heat stress, was conducted at unprecedented geographic and intraspecific scales and relies on a large amount of agronomic data. However, several limitations are to be noted. First, the overall limited accuracy of our random ***forest*** models to classify cultivars and breeding lines in yield categories on the basis of the selected variables (13–29%) suggests that more variables are important to fully understand sweet potato root-yield tolerance to heat stress. Second, heat waves characterized by similar air temperatures may have different impact on yield and plant traits (for example, leaf temperature) depending on local thermal optima of sweet potato cultivars and local environmental conditions such as wind speed, radiation loads and relative humidity. Third, the impact of heat stress becomes exacerbated as pest occurrence increases or water resources diminish. We need more data on combined high temperature and severe drought stresses on sweet potato yields as modest irrigation or timely availability of rainfall can reduce HS impacts.

While climate change is clearly pushing many crops to endure harsher thermal environments and farmers to develop adaptation strategies, our results suggest that intraspecific diversity could help sustain current yields. Interestingly, landraces accounted for 65.9% of our 132 HS-tolerant cultivars, highlighting the potential of traditional varieties versus commercial ones to achieve a stable production in stressed cropping systems. In addition, wild relatives of sweet potato have the potential to contribute to breeding objectives and improve the resilience of this crop. Two main findings from our global scale survey may be transferred to help farmers locally. First, we identified a set of thermotolerance traits that can be used to further increase selection for heat tolerance into local cultivars. Second, there is evidence that farmers can adopt new sweet potato varieties if these varieties are higher yielding or provide improved nutritional value. Adaptation will not be as simple as producers switching among currently available cultivars, and participatory option-by-context experiments will be further needed to test the efficacy and economic viability of selected cultivars. However, our global study strongly supports the idea that crop intraspecific diversity will be essential to help farmers adapt and ensure food and nutrition security under climate change by providing them with more options to manage climatic risks and strengthen the resilience of their farming systems,.

Methods

Intentional exposure and control trial

The heat-tolerance screening trial was conducted near Chapaira village in the province of Piura (Peru, 5° 6’ 18” S; 80° 37’ 16” W; 50 m above sea level). The study site is classified as hot and arid and harbours a sandy basic loam (pH of 7.94, eutric Arenosol). Trials were carried out from 3 May to 7 September 2013, representing the NHS season, and from 10 January to 22 May 2014, corresponding to the HS season. Meteorological data (air temperature, air humidity, precipitation, solar radiation and wind speed) were registered every hour using a HOBObase weather station U30 4.0 (Onset Computer Corporation). In addition, 18 soil temperature/moisture HOBO U23-001-ProV2 data loggers were distributed randomly in the field at 20 cm and 70 cm soil depth to monitor differences of soil temperature in the field (Supplementary Fig. ). Average daily minimum and maximum temperatures at the experimental site ranged between 12.1 and 31.7 °C and between 17.3–36.9 °C during the two experimental cropping seasons, in 2013 (NHS) and 2014 (HS), respectively. Annual precipitation was low. Irregular rain events were registered reaching a maximum of 11.4 mm in the month of February 2014. Heat stress was about +5.5 °C above ambient mean temperature experienced by sweet potato during the NHS season (Supplementary Fig. and Supplementary Table ). The reported temperature optimum for sweet potato storage root initiation and production varies between 24 and 30 °C during the day and between 14 and 22 °C during the night,.

Genetic material

A total of 1,973 sweet potato accessions were included in the experiment, of which 1,629 were landraces (traditional cultivars) and 344 were improved varieties (modern cultivars) or breeding lines from 50 countries (Supplementary Table ). Cultivars were received from CIP’s gene bank as plantlets grown on culture medium. Plantlets were raised in a greenhouse and planted in a multiplication plot at the CIP experimental station in San Ramon, Junín, Peru. Subsequently, 25 cuttings per cultivar were harvested and transferred to the experimental site in Piura. The experiment was carried out using an alpha-lattice design, which is constructed for two to four complete blocks or replications. This design is appropriate for experiments with a large amount of entries and has higher efficiency than a randomized complete block design,, which measures efficiency as the reduction in the variance error functions. In the context of the present research, the main purpose was to evaluate potential traits to predict HS response, and therefore we consider variability between genotypes more valuable than variability within them, hence favouring a greater number of genotypes with less replications. Additional repetitions of five commercial cultivars (Huambachero, Beauregard, Jewel, Jonathan, Tanzania) were distributed across the experimental site to monitor field heterogeneity, amounting to a total number of 2,039 and 1,988 plots planted per repetition during HS and NHS seasons, respectively.

Crop management

Ten cuttings per cultivar were planted in plots with five plants per row in two rows per plot. Distances were 0.30 m between plants and 1.20 m between rows, leading to a total plot area of 3.6 m2. To restrict border effects and prevent roaming animals from grazing inside the field, sweet potato borders strips were planted along fields and paths and between repetitions. Micronutrient fertilizers (Microsoil, 91 kg ha−1 of (NH4)2 HPO2, 70 kg ha−1 of KCl and 55.5 kg ha−1 of CH4N2O) were applied at planting followed by a second application of urea (65 kg ha−1) during hilling. Weeding was carried out once per month. Overall pest and disease pressure was low at the experimental site but tended to increase during the hotter season as insect life cycles were accelerated by higher temperatures. This was controlled by daily monitoring of plants and periodic applications (every 15 days) of insecticides against leaf eaters (Lepidoptera) and white flies (Hemiptera). Before planting, the soil was ploughed and the seed bed prepared. The entire field area was equipped with drip irrigation, with one drip irrigation line per plant placed at 0.1 m from the stem base of each seedling. All plots received approximately 18 mm water per week during the first trial and 24 mm per week during the second trial. These values were estimated as precisely as possible on the basis of pumping capacity and hours of irrigation. During the hot season (HS treatment), water scarcity at a regional level limited irrigation quantities as water supply was rationed and caused irrigation frequencies to be more irregular than during the cool season (NHS treatment).

Data collection

Chlorophyll content was determined by using a portable chlorophyll meter (Fieldscout CM 1000 NDVI Meter, Spectrum Technologies) through the measuring of Normalized Difference Vegetation Index (NDVI). The NDVI meter was held at a 0.5 m distance and 45° angle over the plot. Five readings of randomly selected leaves were averaged per plot. Measurements were taken at a minimum light level of >250–300 μmol m−2 s−1 of photosynthetically active radiation light to guarantee valid operation of the meter. Aerial thermography allowed measuring upper canopy leaf temperature almost instantaneously for the 1,973 cultivars (less than 10 minutes for covering the entire field), thus reducing error associated with traits measured on individual plants. Thermal infrared (TIR) images were acquired using a TIR camera (HR research 680, InfraTec) equipped with a 640 × 480 pixel uncooled micro-bolometer sensor and a 30 mm lens. Digital red-green-blue images were acquired with a Sony Nex-7 camera (Sony Corporation, 24 megapixels) that was attached to the thermal camera with both lenses pointing the same direction.

We flew a hexacopter UAV 60 m above ground level over the experimental site to build with multiple images one TIR and one RGB orthophoto with a resolution of 5 cm2 and 1.3 cm2 per pixel, respectively. Canopy temperatures for each sweet potato cultivar were then calculated following the methodology developed by Faye et al.. Harvests were performed 120 days after planting, and five plants per plot were harvested. A total of 22 yield performance metrics were calculated (Fig. and Supplementary Fig. ). All yield metrics correspond to dry matter.

Data analyses

We tested for quantitative relationships between predictor variables and sweet potato yield using the randomForest package in R. We ran two separate random ***forest*** models for yield values under NHS and HS conditions. Predictor variables were of two kinds: extrinsic (altitude, precipitation, temperature of the location of origin) and intrinsic (key traits of plants potentially involved in heat tolerance, Supplementary Table ). Variables that did not improve accuracy were not included in the final models (see node impurity values in Supplementary Table ). Accounting for multicollinearity before analysis did not affect the relative importance of predictor variables.

The Worldclim-2 database was used to obtain temperature and precipitation data downscaled to 30-inch resolution for the years 1970–2000, as well as future climate projections obtained by several downscaled general circulation models (GCMs). We collected two bioclimatic variables: maximum temperature of the warmest month and annual mean precipitation. These variables were selected to capture temperature and precipitation conditions that can limit the performance of sweet potato varieties. For future climate conditions, we used maximum temperature data for the 2070 time period (averages for 2061–2080) generated by three GCMs and following two GHG ***emissions*** scenarios. Considering different climate models, outputs and socioeconomic scenarios have been shown to be essential for ***agricultural*** or biodiversity risk assessments. The three GCMs selected to cover most of the intermodel variability (as seen in Supplementary Fig. ) were CCSM4 (CC), HadGEM2-CC (HG) and MIROC5 (MC), from which values were averaged. The two GHG scenarios were RCPs 4.5 and 8.5. RCP 4.5 represents a mid- to low-end ***emissions*** scenario that best matches the ***targets*** set by the 2016 Paris Agreement. In RCP 8.5, ***emissions*** continue to rise throughout the twenty-first century due to modest rates of technological change and energy intensity improvements. Compared with the total set of RCPs, RCP 8.5 thus corresponds to the pathway with the highest GHG ***emissions***. Current and future environmental information was extracted from bioclimatic rasters for each cultivar occurrence coordinate using the extract function of the raster package in R.

Reporting Summary

Further information on research design is available in the linked to this article.

Online content

Any methods, additional references, Nature Research reporting summaries, source data, extended data, supplementary information, acknowledgements, peer review information; details of author contributions and competing interests; and statements of data and code availability are available at [*https://doi.org/10.1038/s41558-020-00924-4*](https://doi.org/10.1038/s41558-020-00924-4).

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**Notes**

Extended datais available for this paper at [*https://doi.org/10.1038/s41558-020-00924-4.Supplementary*](https://doi.org/10.1038/s41558-020-00924-4.Supplementary) informationis available for this paper at [*https://doi.org/10.1038/s41558-020-00924-4.Peer*](https://doi.org/10.1038/s41558-020-00924-4.Peer) review informationNature Climate Change thanks Samuel Pironon, Delphine Renard and the other, anonymous, reviewer(s) for their contribution to the peer review of this work.Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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[***Federal Register: Conservation Stewardship Program (CSP) Pages 63993 - 64003 [FR DOC #2020-22345]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:611M-K981-F0YC-N495-00000-00&context=1516831)

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF AGRICULTURECommodity Credit Corporation7 CFR Part 1470[Docket No. NRCS-2019-0020]RIN 0578-AA67Conservation Stewardship Program (CSP)AGENCY: Commodity Credit Corporation, United States Department of ***Agriculture***.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: This final rule adopts, with minor changes, an interim rule published in the Federal Register on November 12, 2019. The interim rule implemented changes to CSP that were necessitated by enactment of the ***Agriculture*** Improvement Act of 2018 (2018 Farm Bill) or that were required to implement administrative improvements and clarifications. The Natural Resources Conservation Service (NRCS) received input from 110 commenters who provided 615 comments in response to the interim rule. This final rule makes permanent those changes appearing in the interim rule, responds to comments, and makes further adjustments in response to some of the comments received. In addition, the rule makes some minor technical corrections.DATES: Effective: October 9, 2020.FOR FURTHER INFORMATION CONTACT: Michael Whitt. Phone: (202) 690-2267 or email: [*michael.whitt@usda.gov*](mailto:michael.whitt@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).SUPPLEMENTARY INFORMATION:Background The Food, Conservation, and Energy Act of 2008 amended the Food Security Act of 1985 to establish CSP and the ***Agricultural*** Act of 2014 (2014 Farm Bill) reauthorized and revised CSP through fiscal year (FY 2018). The ***Agriculture*** Improvement Act of 2018 (2018 Farm Bill) moved CSP from subchapter B of chapter 2 of subtitle D of title XII of the Food Security Act of 1985 to a new subchapter B of chapter 4 of subtitle D of title XII of the Food Security Act of 1985, reauthorized CSP through FY 2023, and then repealed subchapter B of chapter 2 as amended. On November 12, 2019, NRCS published an interim rule with request for comments in the Federal Register (84 FR 60883-60900; referred to below as the interim rule) that implemented mandatory changes made by the 2018 Farm Bill or that were required to implement administrative improvements and clarifications. This final rule adopts, with minor changes, the interim rule.Discussion of CSP (7 CFR Part 1470) CSP encourages producers to address priority resource concerns and improve and conserve the quality and condition of natural resources in a comprehensive manner by: (1) Undertaking additional conservation activities and (2) Improving, maintaining, and managing existing conservation activities. The Secretary of ***Agriculture*** delegated authority to the Chief, NRCS, to administer CSP. Through CSP, NRCS provides financial and technical assistance to eligible producers to conserve and enhance soil, water, air, and related natural resources on their ***land***. Eligible ***lands*** include private or Tribal cropland, grassland, pastureland, rangeland, nonindustrial private ***forest*** ***lands***, and other ***land*** in ***agricultural*** areas (including cropped woodland, marshes, and ***agricultural*** ***land*** or ***land*** capable of being used for the production of livestock) on which resource concerns related to ***agricultural*** production could be addressed. Eligible ***lands*** also include ***lands*** associated with these private or Tribal ***agricultural*** ***lands*** on which a priority resource concern can be addressed through a CSP contract. Participation in CSP is voluntary. NRCS accepts applications for classic CSP at any time, with one cutoff period in the first quarter of each fiscal year. NRCS may also accept applications for renewal from a participant in the first half of the fifth year of the contract period. NRCS then ranks and makes funding decisions based on the applications received on or before the established cutoff date. Depending upon the availability of funds and the number of high-quality applications received during the first ranking and selection period, NRCS may establish additional ranking and selection periods during the remainder of the fiscal year. The interim rule: Removed text that addressed CSP implementation under the Regional Conservation Partnership Program (RCPP) since the 2018 Farm Bill removed the requirement that RCPP be implemented through CSP and the other ``covered programs.'' Removed reference to the CSP acreage cap and dollar-amount-per-acre limit. Added definitions to reflect 2018 Farm Bill changes: Advanced grazing management, comprehensive conservation plan, and management-intensive rotational grazing. Addressed State organic allocations, which will be based on the number of organic and transitioning-to-organic operations in a State and the number of organic and transitioning-to-organic acres in a State. Required that if two or more applications receive the same ranking, they be ranked on the extent to which actual and anticipated conservation benefits from each contract are provided at the lowest cost relative to the other similar offers. Added advanced grazing management as a type of supplemental payment. Included text for the one-time payment option for development of a comprehensive conservation plan. Incorporated text about opportunity for participants to renew their contracts in the first half of the fifth year of the 5-year contract. Outlined implementation of the new CSP-Grassland Conservation Initiative (GCI). In addition to incorporating the changes made by the 2018 Farm Bill, the interim rule incorporated the following programmatic changes: Removed identification of the NRCS Chief as a Vice President of the Commodity Credit Corporation. Modified existing terms to reflect changes in terminology, to more closely[[Page 63994]]align CSP administration with the Environmental Quality Incentives Program (EQIP), and for clarity. These include, but are not limited to-- [cir] Modifying ``eligible ***land***'' to include public ***land*** when the ***land*** is a working component of the participant's ***agricultural*** or forestry operation. [cir] Modifying the definition of ``veteran farmers or ranchers'' to cite the statutory reference as modified by the 2018 Farm Bill. [cir] Clarifying ``enhancement,'' ``participant,'' and ``stewardship threshold.'' Specified eligibility requirements for all applicants sharing in the risk and participating in day-to-day activities. Expanded the potential scope of bundles and provides NRCS with discretionary authority for offering bundles. Removed certain requirements for applicants who cross ranking pool boundaries to increase applicant flexibility. Added organic producers and producers transitioning to organic as a category of producer with a ***targeted*** ranking pool. Clarified the annual payment structure and adjusted the timeframe for implementing an applicant's first conservation activity to align with EQIP. Stated that, unless a waiver is granted, participants will not receive payment for conservation activities initiated or implemented prior to contract approval. Expanded the regulatory $400,000 contract limit for all joint operations. Added text to allow for contract increases due to minor adjustments made to conservation activities at the discretion of NRCS. Provided greater consideration to a participant's circumstances with respect to changes made to their ***agricultural*** operations. Addressed contract changes that arise due to the death, incompetence, or disappearance of a CSP participant. Included an eligibility restriction for renewal-eligible participants who choose not to renew in favor of competing for a new contract. Removed text related to training NRCS staff. Adjusted definitions to conform to those in other NRCS or Department regulations.Summary of Comments The interim rule 60-day comment period ended January 13, 2020. NRCS received 615 comments from 110 commenters in response to the rule. NRCS reviewed these 615 comments and categorized and summarized them according to the topics identified below. The topics that generated the greatest response were on payments, contract renewals and extensions, and ranking. In this rule, the comments have been organized in alphabetic order by topic. The topics include: Administration--Timing, Training, and Streamlining and Flexibility; Conservation Activities; Contract Renewals and Extensions--Incentives for Renewal, Ranking, and Single Renewal; Definitions; Eligibility--Activities, ***Land***, and Producer; Funding; Grassland Conservation Initiative; Local and Regional Priorities; Organic and Transitioning to Organic; Outreach; Payment and Contract Limits; Payments--Comprehensive Conservation Plan Payment, Early Start Waiver, ***Land*** Use Requirements, Minimum Payment, Payment Factors, Payment Rates, Payment Schedules, Stewardship Threshold, and Supplemental Payment; Ranking--Criteria, Ranking Pools, and Timing; Soil Health; Source Water Protection; and Technology. Of the 615 comments raised by the commenters, 45 were general in nature and most expressed support for CSP or how CSP has benefitted particular operations. NRCS also received 54 comments raised by the commenters that were either outside the scope of the changes that NRCS made in the interim rule, expressed specific support for various provisions in the rule, or did not advocate for any changes. Overall, the commenters supported the changes made by the interim rule. This final rule responds to the comments received by the public comment deadline and makes minor clarifying and related changes.AdministrationTiming Comment: NRCS received comment that urged the agency to continue to provide timely announcement of funding opportunities and consistently make payments on time. Response: NRCS remains committed to providing timely information and payment for involvement in all our programs, including CSP. Timeliness of information and payments are integral to maintaining public trust and NRCS will continue to emphasize this importance in CSP implementation. No changes in the final rule are necessary to address this concern.Training Comment: NRCS received comment that encouraged NRCS to continue to provide appropriate training to NRCS field staff. This was in response to a change to Sec. 1470.8(c). The interim rule removed the text that specifies that in providing technical assistance to specialty crop and organic producers, NRCS will provide appropriate training to field staff to enable them to work with producers and to utilize cooperative agreements and contracts with nongovernmental organizations with expertise in delivering technical assistance to these producers. Response: As explained in the interim rule, NRCS modified paragraph (c) to ***remove*** text related to training NRCS staff as this is an internal agency administrative matter. NRCS will continue to provide training to field staff for all aspects of work performed. No changes were made in this final rule in response to this comment.Streamlining and Flexibility Comment: NRCS received comment urging NRCS to further streamline the processes for participation in CSP. Specifically, comment cited an abundance of paperwork and regulations that were cumbersome and difficult for participants to understand or navigate. The comment also sought an increased level of flexibility in how NRCS approaches CSP implementation. Response: NRCS understands that navigating Federal programs can at times be difficult and complex. NRCS is streamlining application and contract processes, which will reduce the number and intensity of participant tasks required for CSP participation. While the interim rule and this final rule make strides in this direction, the vast majority of recommendations regard changes to the internal administration of NRCS personnel.Conservation Activities Comment: NRCS received comment recommending changes to conservation activities. These comments included discussion of: Bundles, criteria, environmental benefits, renewals, and recommendations for particular enhancements. Response: NRCS appreciates the level of commitment and interest of our stakeholders in the details of the conservation activities for CSP. While specific conservation activities are not the purview of the rule, NRCS shared these comments with the staff who develop the guidance and standards[[Page 63995]]related to conservation activities and will be taken into consideration as updates are made. NRCS maintains a National Handbook of Conservation Practices and Field Office Technical Guides, which provide the requirements for individual conservation practices. Requirements for other conservation activities, including enhancements and bundles, are provided in guide sheets available on the NRCS website. The process for managing conservation practice standards can be found in the NRCS General Manual, Title 450, Part 401, ``Technical Guides.''Contract Renewals and ExtensionsIncentives for Renewal Comment: NRCS received comment about incentives and other items associated with contract renewal. Several comments recommended that NRCS make renewing a CSP contract more appealing and straightforward, such as by offering higher contract rates than in the initial contract. Others suggested that a participant could exhaust the available enhancements needed to qualify for renewal, recommended renewal offers be made in year four, and urged that NRCS simply renew existing contracts without requiring additional enhancements (additionality). Additional comments requested that more emphasis be placed on work completed in the initial CSP contract when determining payment rates for the renewal contract. Another comment recommended that applications for renewal contracts compete along with the applications for new contracts in the classic signup. Response: Renewal payment rates are determined based on the payment factors identified in the regulation and are evaluated annually to determine whether adjustments are needed. NRCS will continue to evaluate costs associated with managing and maintaining existing activities and implementing new activities and work to adjust the rates accordingly. Additionality is required by the law. NRCS will revisit the role that additionality plays for renewal contracts as it pertains to ranking and scheduling additional activities. The agency will address these issues in more detail in subsequent topics. NRCS has flexibility in adjusting the specific ranking criteria for each ranking pool, including between new and renewal ranking pools. Greater equity occurs when both renewal applicants and new applicants compete with other like applications. This ensures continued participation by the best stewards and offers opportunities for new producers to participate in CSP.Ranking Comment: NRCS received comment recommending that renewal be based mostly or completely on the environmental benefits of renewal contracts, especially those benefits obtained from implementation of existing activities. Response: CSP renewals were automatic in the past if the participant met basic compliance and threshold requirements. The 2018 Farm Bill modified renewal criteria and required that renewals be based upon a competitive process using the same ranking factors as used for new CSP signups. Although the ranking criteria were simplified in the 2018 Farm Bill and in the interim rule, NRCS will continue to give more weight to additional conservation than existing conservation in the ranking for both renewal and new signup contracts. NRCS's goal is to increase conservation and we will adjust weighting to create the correct balance in CSP through internal guidance without any change to the final rule. NRCS will continue to monitor CSP and ensure that it remains competitive.Single Renewal Comment: NRCS received comment recommending that NRCS ***remove*** the ``one-time only'' text from the renewal options and allow participants to renew numerous times. Response: The 2018 Farm Bill removed the specific one-time renewal text that had been in the 2014 Farm Bill; however, the expectation is that participants will fully incorporate adopted CSP activities as part of their standard operation management. These producers should see the value in their conservation activities over time and no longer require payments they receive through CSP as an incentive to maintain these activities. This was the concept supporting the interim rule's addition of the 2-year ineligibility period in Sec. 1470.26(c). NRCS removed the ``one-time'' renewal text in this final rule, but also revised the provision related to the 2-year ineligibility period to include those who apply for renewal and are not selected. As comments point out, with each renewal, fewer and fewer enhancements remain available for an operation to qualify for renewal, and the competitive nature of the renewal process means that those enhancements that remain are likely not to have as much conservation benefit as existing activities on the operations seeking renewals beyond the first renewal contact. If situations change after 2 years, the operation will be eligible to once again compete in the classic CSP signup.Definitions Comment: NRCS received comment related to definitions in the interim rule, including conservation activities, eligible ***land***, enhancement, management intensive rotational grazing, and resource-conserving crop. Response: The comments suggested minor, technical edits or gave general praise for specific definitions. The suggested minor edits are adopted.EligibilityActivities Comment: NRCS received comment about the eligibility of certain activities. First, comment sought to make eligible annual payments for existing activities regardless of any enhancements or additional activities, looking at two basic scenarios: (a) Where an operation or ***land*** use on an operation had exhausted the opportunities for additional activities, and they wanted CSP to serve as a reward for ongoing stewardship despite this lack of opportunity; or (b) Where a producer has started an activity before the contract is executed. Second, comment criticized the interim rule as not remaining size-neutral, claiming this unfairly excluded larger operations where, as the comment argues, there is a greater opportunity for conservation benefits. Response: The CSP authorizing law mandates additional activities. By definition, a new conservation activity started before the contract is executed is not an ``additional'' activity under the contract. CSP requires participants to enroll their entire operation. NRCS only considers the size of the operation when calculating the per-acre payment-rate component of the existing activity payment, which is exclusively based on the actual acres of each ***land*** use enrolled in the contract. The only size-relevant limitation on CSP contracts is the $200,000 payment limit mandated by statute and incorporated in the CSP regulation and the associated regulatory contract limit that mirrors the payment limit for individuals and legal entities. In 2010, NRCS increased the contract limit to $400,000 for joint operations, which may benefit certain larger operations (through the final rule published in the Federal Register on June 3, 2010, 75 FR 31610-31661, referred to below as the 2010 CSP final[[Page 63996]]rule). In addition, participants in CSP are also subject to a $900,000 average Adjusted Gross Income limitation.***Land*** Comment: NRCS received comment about ***land*** eligibility. Generally, these comments supported the changes made in the interim rule, especially the expansion of ***land*** eligibility to public ***land*** components of ***agricultural*** operations. Several comments recommended that NRCS do more to ensure that participants understand the provisions of their CSP contracts. Comments also addressed heirs' property, employee training, and other areas of interest that commenters would like NRCS to make eligible. Response: The types of publicly held ***land*** mentioned in comments all fall within the scope of public ***lands*** identified in the interim rule. Heirs' property issues fall within the scope of ``other instances in which NRCS determines under Sec. 1466.6(b)(3) that there is sufficient assurance of control'' when NRCS is making determinations of eligibility and no change was needed to address this concern. NRCS employee training and ensuring that participants understand their CSP contracts are necessary for NRCS to provide the highest-quality customer service; they are a priority for NRCS.Producer Comment: NRCS received comment about producer eligibility requirements and how such may be affected by cash rent situations and tenant-landlord situations where: (a) The lease may terminate within the prospective contract period; (b) Control of ***land*** is ambiguous between tenant and landlord; and (c) The interests of tenant and landlord may be incongruous. Response: CCC regulations in 7 CFR part 1400 addresses cash-rent landlords and applies to CSP. This final rule reiterates that the producer must demonstrate control of the ***land*** and meet all applicant eligibility requirements for the producer to participate in CSP.Funding Comment: NRCS received comment about how fund allocations are addressed in the regulation, including both support for and against the changes made. Some commenters recommended exchanging dollars for acres allocated to each State (that is, a proportional allocation of dollars based on the ratio of each State's ***agricultural*** ***land***, weighted by ***land*** use type, relative to national totals). Other comment raised that different challenges and conservation opportunities for Western landowners should be considered in fund allocations to achieve more equitable geographic distribution of CSP funds. Some comment suggested using especially sensitive areas, such as critical conservation areas (CCAs), to prioritize allocations. Comment also recommended increasing set asides for historically underserved producers. Response: NRCS appreciates the suggestions made, but the text in the regulation about fund allocations mirrors the text in the law, and therefore no changes have been made in response to most of this comment. However, to provide clarity, NRCS adjusted text related to the set-aside for historically underserved producers in Sec. 1470.4(c).Grassland Conservation Initiative Comment: NRCS received comment that recommended either prohibiting crops on ***land*** covered by a Grassland Conservation Initiative (GCI) contract or limiting the types of crops and other planted species by type and area on ***land*** enrolled in GCI. Response: This concern is addressed by the conservation stewardship threshold requirement in the interim rule. Any crops planted on ***land*** covered by a GCI contract must implement conservation activities that achieve conservation stewardship levels analogous to the ***land*** being planted or maintained in grass. This requirement will be fleshed out on a State-by-State basis using the methods defined in the regulation for stewardship thresholds, including analytics tools or models and other methods that measure conservation and improvement in priority resource concerns.Local and Regional Priorities Comment: NRCS received comment requesting that NRCS address prioritization of conservation practices and activities according to local and regional needs, including seeking additional State-level flexibility and responsiveness to local resource concerns. Other comment requested that NRCS incorporate language that require consideration of local priority resource concerns when evaluating applications and to identify the prioritization process for States to select priority resource concerns. Comment also recommended that NRCS reference locally-led conservation in the rule, similar to what is in the EQIP rule. Response: NRCS has modified Sec. 1470.2(d) to more closely align with EQIP text, which addresses comments focused on flexibility and responsiveness to local and regional needs. NRCS involvement of State technical committees, Tribal Conservation Advisory Councils, and local working groups is identified in 7 CFR part 610, subpart C and in the NRCS standard operating procedures, which were published in the Federal Register on April 7, 2009 (74 FR 15673-15677). NRCS is not including these aspects in the CSP regulation.Organic and Transitioning to Organic Comment: NRCS received comment recommending modifications that assist organic producers or those transitioning to organic production, such as restoration of the full complement of organic-specific enhancements (citing the ``2017 reinvention of CSP''), weighting allocations more in the direction of farm numbers (as organic farms are smaller on average), using outside data to determine the number of operations transitioning to organic, and establishment of a separate ranking pool in each State for organic and transitioning to organic applicants. Response: Most CSP enhancement activities can be used on transitioning and certified organic operations. NRCS provides an organic crosswalk on its website, allowing transitioning and certified organic producers to see how various conservation activities can fit their operations. Though specific practices, activities, and enhancements are outside the scope of this rule, NRCS shared the comments with those who develop conservation standards and guidance to consider whether adjustments should be made. Similarly, with respect to weighting of allocations, Sec. 1470.4(b) states that NRCS will allocate funding based on both the number of operations and the number of acres. NRCS will continue to seek an equitable balance between these two criteria. Nothing in the rule prohibits the use of outside data to determine the status of an operation as transitioning to organic. NRCS addresses establishment of ranking pools, including those needed to support organic and transitioning to organic production, with the input of the State Technical Committee.Outreach Comment: NRCS received comment recommending additional outreach efforts, such as ***targeting*** ***forested*** ***lands***, cover crop activities, and public ***lands***. Response: NRCS appreciates this feedback and will continue to evaluate which aspects of CSP are underutilized to maximize the impact of outreach efforts.[[Page 63997]]Payments and Contract Limits Comment: NRCS received comment related to the higher contract limitation for joint operations. Most comment recommended keeping the contract limit at $200,000 regardless of the participant type suggesting that allowing the higher contract limit for joint operations reduces the availability of funds for individuals and small farms. Other comment suggested the contract limitation itself is a violation of the law and large operations provide more conservation benefits. Response: By law, CSP has an aggregate $200,000 payment limitation for persons and legal entities, directly or indirectly, for all contracts entered into during FYs 2019 through 2023. Under payment limitation requirements that are applicable to NRCS and Farm Service Agency programs, joint operations are able to receive a payment up to the maximum payment amount specified for a person or legal entity multiplied by the number of persons or legal entities that comprise ownership of that joint operation (see 7 CFR part 1400). Without a contract limit, joint operations could receive very large payments under a CSP contract. To address concerns related to large contracts with joint operations, NRCS decided in 2009 to impose a regulatory contract limit that corresponded with the CSP payment limitation. For the 2009 interim rule, the contract limit did not adjust for joint operations, but in response to public comment, the 2010 final rule doubled the contract limit for joint operations to $400,000. This system was maintained in the CSP regulation through the 2014 Farm Bill, was continued in the 2019 interim rule, and is maintained in this final rule. The overall CSP payment limitation may not be waived. No member of a joint operation may receive more than $200,000 in payment through CSP for FYs 2019 through 2023. But, when a joint operation of two or more members enters into a CSP contract, the CSP contract with the joint operation may receive funding of up to $400,000. Note that large operations do not necessarily have the best stewardship and will not necessarily or automatically receive a higher payment. Payment is based on the manner in which the operation is managed.PaymentsComprehensive Conservation Plan Payment Comment: NRCS received comment supporting the inclusion of the one-time payment for development of a comprehensive conservation plan, including consideration of source water protection and the use of this option for development of ***forest*** management plans. Response: NRCS appreciates acknowledgement of the 2018 Farm Bill's inclusion of the one-time payment for development of a comprehensive conservation plan.Early Start Waiver Comment: NRCS received comment about early start waivers. Comment expressed concern that this provision could prevent producers from earning payments for existing activities and recommended NRCS be required to grant waivers when administrative actions delay contract obligation and implementation of conservation activities until the following crop year. Response: In the interim rule, NRCS added text in Sec. 1470.24(f)(4) to allow an ``early start waiver'' for CSP, which provides alignment with EQIP. Additionally, NRCS adjusted the final rule text in Sec. 1470.24(f)(4) to reflect that the provision applies only to new conservation activities. NRCS awards early start waivers on a case-by-case basis and does not believe that adding text requiring waivers in specific situations is needed.***Land*** Use Requirements Comment: NRCS received comment recommending changes to requirements for payments tied to ***land*** use, including: (1) A change to Sec. 1470.24(a)(3) regarding the requirement that a participant implement at least one additional conservation activity on one ***land*** use within the first 12 months of the contract; and (2) A change to Sec. 1470.24(a)(2) requesting ***removal*** of the requirement that in order to receive an annual payment for a ***land*** use, the participant must adopt at least one additional conservation activity on that ***land*** use. Response: With respect to the requirement that a participant implement at least one additional conservation activity on one ***land*** use type, NRCS has adjusted the text in Sec. 1470.24(a)(3) to ***remove*** the phrase ``on one ***land*** use.'' To address the comment focused on annual payment eligibility, the CSP statute requires adoption of new conservation activities and management and maintenance of existing activities. Past policy set the requirement that the applicant had to schedule an additional activity on each ***land*** use within the operation in order to receive payments. NRCS will address this concern in a manner that conforms to the existing regulatory text.Minimum Payment Comment: NRCS received comment related to minimum payments recommending that the rule require that NRCS provide a minimum payment and that the minimum payment increase from $1,500 to at least $2,000. Response: Although NRCS has provided a minimum contract payment in the past, there may be reasons in the future where a minimum contract payment may not be warranted. As such, NRCS is retaining ``may'' in the final rule. The actual rate for minimum contract payments is not set in regulation but determined based upon estimated costs incurred by a participant for participation in the planning process that are not otherwise compensated under CSP. The NRCS Chief retains the discretion to adjust as appropriate to reflect costs incurred by a participant for which the participant is not otherwise compensated.Payment Factors Comment: NRCS received comment that encouraged NRCS to use as the primary means for determining payment levels the degree to which the conservation activities are integrated across the entire ***agricultural*** operation for all State-identified priority resource concerns over the term of the contract. Response: CSP statutory provisions require NRCS to make payments based, to the maximum extent practicable, on the following seven factors: (1) Cost incurred by the producer associated with planning, design, materials, installation, labor, management, maintenance, or training; (2) Income forgone by the producer; (3) Expected conservation benefits; (4) The extent to which priority resource concerns will be addressed through the installation and adoption of conservation activities on the ***agricultural*** operation; (5) The level of stewardship in place at the time of application and maintained over the term of the contract; (6) The degree to which the conservation activities will be integrated across the entire ***agricultural*** operation for all applicable priority resource concerns over the term of the contract; and (7) Such other factors as determined appropriate by the Secretary. NRCS incorporates all statutory payment factors into the regulatory text, which are used to develop payment rates for both the existing activity payment and the additional activity payment. NRCS determines how to weight the various payment factors with[[Page 63998]]input from State technical committees as appropriate.Payment Rates Comment: NRCS received comment related to payment rates recommending that NRCS evaluate the balance between payment for existing conservation activities versus payment for new conservation activities. Response: CSP participants are eligible to receive annual payments for maintaining existing conservation levels and implementing additional conservation activities. Since the CSP reinvention in 2017, annual payments for maintaining existing stewardship levels on the operation have been comprised of $300 to $350 per resource concern met at the time of application and a per-acre payment rate based on ***land*** use. Per-acre payment rates are based on estimated costs of existing conservation practices per acre on each ***land*** use. Cropland generally has received the highest payment rate, with range and forestland at the lower end, and pasture in the middle. As NRCS develops its digital tools, the agency will evaluate how to make payments more reflective of on-the-ground benefits using information available through the Conservation Assessment and Ranking Tool (CART). Based on the agency's goal to gain increased conservation benefits through CSP, NRCS will continue to give more weight to additional conservation over existing conservation in both ranking and payment.Payment Schedules Comment: NRCS received comment recommending that State Conservationists seek input from State technical committees in the development of the payment schedules; also, comment sought standardization of payment schedules between CSP and EQIP and increased public availability of those payment schedules. Response: Payment schedules are, and have been, consistent between CSP and EQIP. Payment schedules are posted on NRCS State websites and input from State technical committees is sought in the development of those schedules.Stewardship Threshold Comment: NRCS received comment expressing concern about the requirement to adopt new conservation activities when a producer has already met the stewardship threshold. Response: As specified in the law, NRCS must continue to require that producers both maintain their existing activities and adopt additional activities.Supplemental Payments Comment: NRCS received comment commending the interim rule's inclusion of supplemental payments for advanced grazing management and resource-conserving crop rotations; comment also offered a specific means of calculating the supplemental payment. Response: NRCS appreciates the positive feedback. The comment recommending calculation of the supplemental payment may be considered in the development of the payment schedules.RankingCriteria Comment: NRCS received comment related to ranking criteria including that existing activities receive either equal or greater priority in ranking applications and emphasizing that environmental benefits should be the sole basis for the evaluation regardless of whether they result from existing or new activities. In addition, comment requested specific emphasis for certain resource concerns or ***target*** areas, such as forestry, water management, grazing management, cover crops, highly erodible ***land*** management, natural or ancient heritage sites, and participation in sustainability programs. The remaining comments requested NRCS: (a) Align CSP more with EQIP regarding input from State technical committees and local work groups; (b) Provide additional assistance to landowners with environmentally sensitive ***lands***; (c) Allow for the continued use of basic cover crops in CSP; and (d) Broaden and simplify ranking criteria. Response: The text in Sec. 1470.20(c) in the interim rule mirrors text in the 2018 Farm Bill. The changes made there broaden the scope of NRCS discretion in ranking applications and building out the ranking factors within the final rule limits the discretion provided by the 2018 Farm Bill. Regarding Sec. 1470.20(c)(iii), NRCS will use its discretion to maximize its ability to achieve CSP goals and objectives, including ensuring that producers enroll in CSP through a thoroughly competitive process. The goal is for CSP contracts to be awarded to applicants who propose activities with the greatest conservation benefits.Ranking Pools Comment: NRCS received comment related to ranking pools, including recommending that the advice of the State technical committee in determining the appropriate ranking pools for the State, with a concern that focus on geographic areas, watersheds, or other high priority areas would detract from other priority resource concerns that were State-wide. Other comments request that NRCS include more specific language requiring the establishment of separate ranking pools for beginning farmers and ranchers, socially disadvantaged farmers and ranchers, and organic and transitioning-to-organic producers. Response: NRCS has historically provided policy guidance that requires States to establish separate fund pools for beginning farmers and ranchers and socially disadvantaged farmers and ranchers. Changes to the suite of NRCS business tools have allowed States new flexibility in managing applications from these historically underserved groups. As a result, NRCS is not incorporating requirements specifying these ranking pools in the final rule. NRCS will, however, continue to ensure that historically underserved groups continue to have access to CSP.Timing Comment: NRCS received comment on the timing of the ranking process, both supporting and recommending ***removal*** of the discretionary phrase ``to the extent practicable'' in Sec. 1470.2(c)(1). Other comments recommend expansion of the timing of the first ranking period. Response: NRCS appreciates the comments received on the timing of ranking periods. NRCS is retaining the discretionary text in the interim rule, which addresses unforeseen circumstances that may delay the agency's ability to hold a ranking period within the timeframe provided.Soil Health Comment: NRCS received comment expressing that the interim rule failed to identify how NRCS will address soil health as a priority? Response: This comment refers to the new requirement that the Secretary ``[t]o the maximum extent feasible . . . manage [CSP] to enhance soil health.'' To address this concern, NRCS has added a paragraph to Sec. 1470.2 that identifies how NRCS will address soil health as a priority.Source Water Protection Comment: NRCS received comment recommending that NRCS should specifically address source water and drinking water protection in the final rule. While acknowledging the interim rule addressed water quality and quantity, comment urged NRCS to distinguish such resource concerns from[[Page 63999]]source water protection, and to prioritize source water protection in the National Water Quality Initiative (NWQI) watersheds or other high priority sites. Response: NRCS will continue to implement CSP to address source water protection. The 2018 Farm Bill contained specific text regarding source water protection in the EQIP provisions and, as CSP moves toward greater alignment with EQIP, NRCS will consider adding source water protection criteria to existing and new conservation activity guide sheets. Further, within the interim rule's provisions, States retain the authority to ***target*** CSP funds toward source water protection through the establishment of ranking pools, including prioritization of conservation activities within the ranking templates.Technology Comment: NRCS received comment recommending greater producer accessibility to online tools, including access for rural communities without consistent online access. Other comment sought a way to calculate potential economic incentives for enrollment in CSP and another requested increased producer access to sustainability data in CART. Response: Digital tools and processes are outside the scope of the final rule. However, NRCS remains committed to providing excellent customer service, which includes providing a user-friendly interface with our public-facing digital tools. Future changes will likely take place on Farmers.gov or through other digital media.Miscellaneous Correction In addition to the changes discussed above, this rule is making two corrections, both correct cross references to other regulations. There is a typo in the cross reference to a paragraph in another section of the regulation. One correction simply revises the cross reference to point to the accurate paragraph where the original contract limit is outlined. The other correction updates the cross reference to the USDA debt management rules in 7 CFR part 3. In the UDSA rule published on June 17, 2020, (85 FR 36670-36714) USDA revised part 3 to eliminate the debt collection regulations of the following USDA agencies: The Commodity Credit Corporation (CCC); the Federal Crop Insurance Corporation (FCIC), and the Farm Service Agency (FSA). This rule updates the cross-reference in the CSP regulation, which previously pointed to the former CCC debt management regulations.Notice and Comment, Paperwork Reduction Act, and Effective Date In general, the Administrative Procedure Act (APA) (5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are-- To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review. Consistent with the use of the authority under 5 U.S.C 808 related to Congressional review for the immediate effective date of the interim rule, this rule is also effective on the date of publication in the Federal Register.Executive Orders 12866, 13563, 13771, and 13777 Executive Order 12866, ``Regulatory Planning and Review,'' and Executive Order 13563, ``Improving Regulation and Regulatory Review,'' direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. The requirements in Executive Orders 12866 and 13573 for the analysis of costs and benefits apply to rules that are determined to be significant. Executive Order 13777, ``Enforcing the Regulatory Reform Agenda,'' established a Federal policy to alleviate unnecessary regulatory burdens on the American people. The Office of Management and Budget (OMB) designated this final rule as economically significant under Executive Order 12866, and therefore, OMB has reviewed this rule. The costs, benefits, and transfers of this rule are summarized in the section below in this rule. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/). Executive Order 13771, ``Reducing Regulation and Controlling Regulatory Costs,'' requires that, to manage the private costs required to comply with Federal regulations, for every new significant or economically significant regulation issued, the new costs must be offset by savings from deregulatory actions. This rule involves transfer payments and does not rise to the level required to comply with Executive Order 13771. In general response to the requirements of Executive Order 13777, USDA created a Regulatory Reform Task Force, and USDA agencies were directed to ***remove*** barriers, reduce burdens, and provide better customer service both as part of the regulatory reform of existing regulations and as an on-going approach. NRCS reviews regulations and makes changes to improve any provision that was determined to be outdated, unnecessary, or ineffective.Cost Benefit Analysis Summary Compared to CSP as authorized under the 2014 Farm Bill, Congress significantly reduced CSP's size in the 2018 Farm Bill--from $9 billion to $3.975 billion over 5 years--but left much of CSP's underlying structure intact. With fewer dollars available, fewer contracts will be funded under the 2018 Farm Bill. However, CSP will continue to fund high-ranking applications across all States, with the aim of improving cost effectiveness based on dollars per additional unit of conservation effect. The 2018 Farm Bill eliminated the 10-million-acre cap on enrollment and the annual $18 per acre cap on CSP costs, moving to an annual funding level for new contracts, similar to EQIP. NRCS will now obligate funds for all activities conducted under a new or renewed CSP contract up front. NRCS will also allocate a portion of the annually available funds for contract renewals. Regarding changes beyond funding and the elimination of the acreage cap, only the revised contract renewal conditions are expected to generate impacts that are moderately different from the 2014 Farm Bill. CSP contracts continue to run for 5 years and include the potential for participants to compete for a renewal contract for an additional 5 years. Under the 2014 Farm Bill, renewals were non-competitive and as long as the participant met eligibility and CSP requirements, NRCS would[[Page 64000]]approve a renewal contract for one additional 5-year period. Under the 2018 Farm Bill, NRCS ranks contract renewals against other contract renewals and funds the highest ranked renewal applications. NRCS provides funding for renewals using approximately 40 percent of the total funds allocated for CSP in a given fiscal year, not including the funds set aside for the CSP Grassland Conservation Initiative. NRCS uses the remaining 60 percent of the allocation to fund the highest ranked new applications. The overall decrease in program funding will reduce the funding available for both renewal and new contracts, reducing the total number of acres treated and the amount of conservation achieved through CSP. Cost-effectiveness of overall CSP may increase as lower ranked applications will not be funded. The 2018 Farm Bill also mandates the establishment of the CSP Grassland Conservation Initiative for eligible producers with base acres where the entire farm was planted to grass or pasture, or was idle or fallow, from January 1, 2009 to December 31, 2017. Beginning in FY 2019, the Secretary started providing signups for producers' to make a one-time election to enroll eligible ***land*** in the initiative. NRCS will continue to provide signups until all eligible producers are enrolled or the authority for CSP expires, which is currently in FY 2023. Enrollment is for a 5-year non-renewable term. Participants must meet CSP eligibility conditions, but do not go through the ranking process. Participating producers must agree to meet or exceed the stewardship threshold for not less than one priority resource concern by the date on which the contract expires. The annual payment is limited to $18 per acre, and enrolled acreage cannot exceed the number of base acres on a farm. An estimated 2.4 million acres meet the 2009 through 2017 criterion noted above and are eligible for the Grassland Conservation Initiative. Although these eligible acres are concentrated in Texas, Oklahoma and Kansas, there are eligible acreages throughout most of the country. The Grassland Conservation Initiative is expected to cost $214.9 million over 5 years, representing 5.5-percent of total authorized CSP funding under the 2018 Farm Bill. Through March 2020, a total of 1.2 million acres had been enrolled with obligated funds totaling $106.8 million. Cost-effectiveness may be affected marginally as fewer funds will be available. The 2018 Farm Bill established a $200,000 CSP payment limit per person or legal entity which carried over into the 2014 and 2018 Farm Bills. To address concerns related to potentially large contracts with joint operations, NRCS initially set a contract limit of $200,000 for all contracts but increased the contract limit to $400,000 for joint operations in the 2010 CSP final rule. NRCS indicated in the interim rule that the higher contract limit for joint operations would continue for the duration of the 2018 Farm Bill (2019 through 2023). In response, NRCS received comments on contract limits, most of which recommended keeping the contract limit at $200,000 regardless of the participant type. To evaluate these comments, NRCS considered the impact of eliminating higher contract limit on potential CSP participants and the demand for CSP funds. Analysis of data found that reducing the contract limit to $200,000 for all contracts would increase funding available for additional contracts on average by $43.7 million per signup. The maximum increase in acres that could be treated with this additional funding--about 658,000 acres--represents 9.1 percent of the 7.2 million acres enrolled on average per signup since 2014. Reduced participation by joint operations and other factors, however, could lead to substantially fewer additional acres being treated than expected. Joint operations enrolled in CSP with contract costs exceeding the $200,000 limit are on average three times as large, in terms of acres, as operations enrolled in CSP with contract costs below the contract limit. However, the average per acre costs of the joint operations with contract costs exceeding the contract limit are only 1.34 times larger than the average per acre costs of operations enrolled in CSP that have contract costs below the contract limit. Based on these findings, NRCS is making no change to the existing $400,000 contract limit. Conservation activities funded through CSP contribute to improvements in soil health and reductions in water and wind erosion on cropland, pasture, ***forest*** and rangeland; reduce nutrient losses to streams, rivers, lakes and estuaries; increase wildlife habitat, including providing habitat for pollinators; and provide other environmental benefits. Environmental benefits resulting from CSP's conservation activities are difficult to quantify at this time. Partial estimates made by NRCS (see Benefits section in the full analysis) indicate the positive benefits of CSP. As explained above, beginning in FY 2020, NRCS began using a new software tool, CART, to assess and rank all program applications. Per the statutory requirements outlined in section 2308C(1) of the 2018 Farm Bill, CART allows NRCS to rank CSP applications based on (1) the natural resource conservation and environmental benefits that result from the conservation treatment on all applicable priority resource concerns at the time of submission of the application; (2) the degree to which the proposed conservation activities increase natural resource conservation and environmental benefits; and (3) other consistent criteria, as determined by the Secretary. Additionally, CART creates the framework to better facilitate, and integrate, the potential costs with environmental benefits (outcomes). Through data collected in CART, NRCS will be better prepared to conduct future analysis of the environmental benefits achieved through CSP. NRCS estimates that the total cost (Table 1) of accessing the program over 5 years is $2.5 million with total transfers over 5-years equaling $3.795 billion. Given a 3 percent discount rate, this translates into a projected annualized cost to producers of accessing CSP of $414.4 thousand in constant 2019 dollars and projected annualized transfers (NRCS funds) of $759 million in constant 2019 dollars. Table 1--Costs, Benefits and Transfers (Based on 3 Percent Discount Rate), 2019-2023------------------------------------------------------------------------ Category Annual estimate (2019 $)------------------------------------------------------------------------Costs \a\................................. $414,400.Benefits.................................. Qualitative.Transfers................................. $759,000,000.------------------------------------------------------------------------\a\ Costs consist of imputed cost of applicant and participant time to gain access to CSP. In implementing the 2018 Farm Bill, USDA is following legislative intent to maximize conservation impacts, address natural resource concerns, establish an open participatory process, and provide flexible assistance to producers who apply appropriate conservation measures to comply with Federal, State, and Tribal environmental requirements. Participation in CSP is voluntary. Hence, CSP participation is not expected to negatively impact CSP participants and nonparticipants.Clarity of the Regulation Executive Order 12866, as supplemented by Executive Order 13563, requires each agency to write all rules in plain language. In addition to the substantive comments NRCS received on the interim rule, NRCS invited public comments on how to make the rule easier to understand.[[Page 64001]]NRCS has incorporated these recommendations for improvement where appropriate. NRCS responses to public comment are described in more detail above.Regulatory Flexibility Act The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because this rule is exempt from notice and comment rulemaking requirements of the APA and no other law requires that a proposed rule be published for this rulemaking initiative.Environmental Review The environmental impacts of this rule have been considered in a manner consistent with the provisions of the National Environmental Policy Act (NEPA) (42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR parts 1500-1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). NRCS conducted an analysis of the CSP interim rule and the analysis has determined there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR 1508.13). While OMB has designated this rule as ``economically significant'' under Executive Order 12866, ``. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement'' (40 CFR 1508.14), when not interrelated to natural or physical environmental effects. The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were available for review and comment for 30 days from the date of publication of the interim rule in the Federal Register. NRCS has considered this input and determined that supplementing or revising the current available draft of the CSP EA was warranted. NRCS has made the following changes: 3.1--Added info on comments received on interim rule and EA and addressed comment on EA. 4.4--Updated description of ``Affected Environment'' when new data were available, including using 2017 Census of ***Agriculture*** data. Appendix C--Updated with 2019 CSP enhancement examples. Figure 7 (Socially Disadvantaged Farmers and Ranchers)--Updated map using the most recent census data.Executive Order 12372 Executive Order 12372, ``Intergovernmental Review of Federal Programs,'' requires consultation with State and local officials that would be directly affected by proposed Federal financial assistance. The objectives of the Executive order are to foster an intergovernmental partnership and a strengthened federalism, by relying on State and local processes for State and local government coordination and review of proposed Federal financial assistance and direct Federal development. For reasons specified in the final rule-related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the programs and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988 This rule has been reviewed under Executive Order 12988, ``Civil Justice Reform.'' This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted.Executive Order 13132 This rule has been reviewed under Executive Order 13132, ``Federalism.'' The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175 This rule has been reviewed in accordance with the requirements of Executive Order 13175, ``Consultation and Coordination with Indian Tribal Governments.'' Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a government-to-government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not have significant tribal implication that require further tribal consultation under Executive Order 13175 at this time. If a Tribe requests consultation, NRCS and CCC will work with OTR to ensure meaningful consultation is provided where changes, additions, and modifications identified in this rule are not expressly mandated by the 2018 Farm Bill. Tribal consultation for this rule was included in the 2018 Farm Bill Tribal consultation held on May 1, 2019, at the National museum of the American Indian, in Washington, DC. The portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title I session. There were no specific comments from Tribes on CSP during this Tribal consultation. Additionally, NRCS held sessions with Indian Tribes and Tribal entities across the country in the spring of FY 2019 to describe the 2018 Farm Bill changes to NRCS conservation programs, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access. NRCS invited State leaders for the Farm Service Agency (FSA) and Rural Development (RD), as well as Regional Directors for the Risk Management Agency (RMA) to discuss their programs also. As a result, approximately 50 percent of the comments received as a result of these sessions were directed to FSA, RMA, RD, and other USDA agencies, with many comments specific to hemp production and the surrounding regulations. Over 40 percent of the feedback pertained to NRCS programs. A handful of those comments were specific to CSP. Feedback included general requests for alternative funding arrangement opportunities under CSP, consideration of economic hardship of Tribes regarding financial assistance rates, and a more extensive list of culturally-significant plants for the subject state or region. Other comments included interest in establishing a separate funding pool for Tribes and an[[Page 64002]]explanation of why CSP went from an acre-based program to a dollar-based program. Comments also listed challenges specific to Tribes that impact eligibility and inhibit access to USDA programs. None of the feedback received necessitated a change to the regulation. NRCS will continue to work with our Tribal stakeholders to address the issues raised in order to facilitate greater technical assistance and program delivery to Indian country. Separate from Tribal consultation and the sessions discussed above, communication and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests.Unfunded Mandates Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments or the private sector. Agencies generally must prepare a written statement, including cost-benefits analysis, for proposed and final rules with Federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local, or Tribal governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no Federal mandates, as defined under title II of UMRA, for State, local, and Tribal governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies is 10.924--Conservation Stewardship Program.E-Government Act Compliance NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to government information and services, and for other purposes.List of Subjects in 7 CFR Part 1470 ***Agricultural*** operation, Conservation activities, Natural resources, Priority resource concern, Stewardship threshold, Resource-conserving crop rotation, Soil and water conservation, Soil quality, Water quality and water conservation, Wildlife and ***forest*** management. Accordingly, the interim rule published November 12, 2019, at 84 FR 60883, is adopted as final with the following changes:PART 1470--CONSERVATION STEWARDSHIP PROGRAM01. The authority citation for part 1470 continues to read as follows: Authority: 16 U.S.C 3839aa-21-3839aa-25.02. In Sec. 1470.2, add paragraph (c)(3) and revise paragraph (d) introductory text to read as follows:Sec. 1470.2 Administration.\* \* \* \* \* (c) \* \* \* (3) To the maximum extent feasible, manage CSP to enhance soil health. (d) To support locally led conservation, NRCS will solicit input from State technical committees, Tribal Conservation Advisory Councils, and local working groups to develop State-level technical, outreach, and program materials, including:\* \* \* \* \*03. In Sec. 1470.3, revise the definitions for ``enhancement,'' ``management-intensive rotational grazing,'' and ``resource-conserving crop'' to read as follows:Sec. 1470.3 Definitions.\* \* \* \* \* Enhancement means a type of conservation activity used to treat natural resources and improve conservation performance that allows a producer to address levels of conservation beyond what the minimum conservation practice standard requires. Enhancements, alone or in combination with other enhancements and practices, result in conservation systems that are equal to or greater than the performance level for the planning criteria identified for a given resource concern. Planning criteria are defined for each resource concern in Section III--Conservation Management Systems, Field Office Technical Guide.\* \* \* \* \* Management-intensive rotational grazing means a strategic, adaptively managed multipasture grazing system in which animals are regularly and systematically moved to a fresh pasture in a manner that, as determined by NRCS: (1) Maximizes the quantity and quality of forage growth; (2) Improves manure distribution and nutrient cycling; (3) Increases carbon sequestration; (4) Improves the quality and quantity of cover for wildlife; (5) Provides permanent cover to protect the soil from erosion; and (6) Improves water quality.\* \* \* \* \* Resource-conserving crop means a crop that is one of the following, as determined by NRCS: (1) A perennial grass; (2) A legume grown for use as a cover crop, forage, seed for planting, or green manure; (3) A legume-grass or diverse grass-forb mixture comprised of species selected for climate, rainfall, soil, and other region-specific conditions; or (4) A small grain or other resource-demanding crop grown in combination with a grass, legume, other forbs, or grass-forb mixture, whether interseeded, relay-planted into the resource-demanding crop, or planted in rotation.\* \* \* \* \*04. In Sec. 1470.4, revise paragraph (c) introductory text to read as follows:Sec. 1470.4 Allocation and management.\* \* \* \* \* (c) Of the funds made available for each of fiscal years 2019 through 2023 to carry out CSP, NRCS will, to the maximum extent practicable, use at least:\* \* \* \* \*05. In Sec. 1470.24, revise paragraphs (a)(3) and (f)(4) to read as follows:Sec. 1470.24 Payments. (a) \* \* \* (3) At least one additional conservation activity must be implemented within the first 12 months of the contract. NRCS may extend this timeframe if NRCS determines that the participant is unable to complete the conservation activity for reasons beyond their control;\* \* \* \* \* (f) \* \* \*[[Page 64003]] (4) New conservation activities initiated or implemented prior to contract approval, unless NRCS granted a waiver prior to the participant starting the activity.\* \* \* \* \*Sec. 1470.25 [Amended]06. In Sec. 1470.25, amend paragraph (c) by ***removing*** the cross reference ``Sec. 1470.24(g)'' and adding ``Sec. 1470.24(h)'' in its place.07. In Sec. 1470.26, revise paragraphs (a) and (c) to read as follows:Sec. 1470.26 Contract renewal. (a) During the first half of the fifth year of the initial contract period, NRCS may allow a participant to apply and compete for the opportunity under Sec. 1470.20 to renew the contract to receive payments for an additional 5-year period, subject to the availability of funds, if the participant meets criteria from paragraph (b) of this section.\* \* \* \* \* (c) NRCS will determine a participant ineligible for a new CSP contract on an ***agricultural*** operation for 2 years following expiration of their prior contract if the participant does not enter a renewal contract on the ***agricultural*** operation at the end of the prior contract period.Sec. 1470.35 [Amended]08. In Sec. 1470.35, amend paragraph (a) by ***removing*** the words ``7 CFR part 1403'' and adding the words ``part 3 of this title'' in their place.Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2020-22345 Filed 10-8-20; 8:45 am]BILLING CODE 3410-16-P

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[***Federal Register: Conservation Stewardship Program (CSP) Pages 63993 - 64003 [FR DOC #2020-22345]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:611M-K981-F0YC-N49Y-00000-00&context=1516831)

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Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF AGRICULTURECommodity Credit Corporation7 CFR Part 1470[Docket No. NRCS-2019-0020]RIN 0578-AA67Conservation Stewardship Program (CSP)AGENCY: Commodity Credit Corporation, United States Department of ***Agriculture***.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: This final rule adopts, with minor changes, an interim rule published in the Federal Register on November 12, 2019. The interim rule implemented changes to CSP that were necessitated by enactment of the ***Agriculture*** Improvement Act of 2018 (2018 Farm Bill) or that were required to implement administrative improvements and clarifications. The Natural Resources Conservation Service (NRCS) received input from 110 commenters who provided 615 comments in response to the interim rule. This final rule makes permanent those changes appearing in the interim rule, responds to comments, and makes further adjustments in response to some of the comments received. In addition, the rule makes some minor technical corrections.DATES: Effective: October 9, 2020.FOR FURTHER INFORMATION CONTACT: Michael Whitt. Phone: (202) 690-2267 or email: [*michael.whitt@usda.gov*](mailto:michael.whitt@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).SUPPLEMENTARY INFORMATION:Background The Food, Conservation, and Energy Act of 2008 amended the Food Security Act of 1985 to establish CSP and the ***Agricultural*** Act of 2014 (2014 Farm Bill) reauthorized and revised CSP through fiscal year (FY 2018). The ***Agriculture*** Improvement Act of 2018 (2018 Farm Bill) moved CSP from subchapter B of chapter 2 of subtitle D of title XII of the Food Security Act of 1985 to a new subchapter B of chapter 4 of subtitle D of title XII of the Food Security Act of 1985, reauthorized CSP through FY 2023, and then repealed subchapter B of chapter 2 as amended. On November 12, 2019, NRCS published an interim rule with request for comments in the Federal Register (84 FR 60883-60900; referred to below as the interim rule) that implemented mandatory changes made by the 2018 Farm Bill or that were required to implement administrative improvements and clarifications. This final rule adopts, with minor changes, the interim rule.Discussion of CSP (7 CFR Part 1470) CSP encourages producers to address priority resource concerns and improve and conserve the quality and condition of natural resources in a comprehensive manner by: (1) Undertaking additional conservation activities and (2) Improving, maintaining, and managing existing conservation activities. The Secretary of ***Agriculture*** delegated authority to the Chief, NRCS, to administer CSP. Through CSP, NRCS provides financial and technical assistance to eligible producers to conserve and enhance soil, water, air, and related natural resources on their ***land***. Eligible ***lands*** include private or Tribal cropland, grassland, pastureland, rangeland, nonindustrial private ***forest*** ***lands***, and other ***land*** in ***agricultural*** areas (including cropped woodland, marshes, and ***agricultural*** ***land*** or ***land*** capable of being used for the production of livestock) on which resource concerns related to ***agricultural*** production could be addressed. Eligible ***lands*** also include ***lands*** associated with these private or Tribal ***agricultural*** ***lands*** on which a priority resource concern can be addressed through a CSP contract. Participation in CSP is voluntary. NRCS accepts applications for classic CSP at any time, with one cutoff period in the first quarter of each fiscal year. NRCS may also accept applications for renewal from a participant in the first half of the fifth year of the contract period. NRCS then ranks and makes funding decisions based on the applications received on or before the established cutoff date. Depending upon the availability of funds and the number of high-quality applications received during the first ranking and selection period, NRCS may establish additional ranking and selection periods during the remainder of the fiscal year. The interim rule: Removed text that addressed CSP implementation under the Regional Conservation Partnership Program (RCPP) since the 2018 Farm Bill removed the requirement that RCPP be implemented through CSP and the other ``covered programs.'' Removed reference to the CSP acreage cap and dollar-amount-per-acre limit. Added definitions to reflect 2018 Farm Bill changes: Advanced grazing management, comprehensive conservation plan, and management-intensive rotational grazing. Addressed State organic allocations, which will be based on the number of organic and transitioning-to-organic operations in a State and the number of organic and transitioning-to-organic acres in a State. Required that if two or more applications receive the same ranking, they be ranked on the extent to which actual and anticipated conservation benefits from each contract are provided at the lowest cost relative to the other similar offers. Added advanced grazing management as a type of supplemental payment. Included text for the one-time payment option for development of a comprehensive conservation plan. Incorporated text about opportunity for participants to renew their contracts in the first half of the fifth year of the 5-year contract. Outlined implementation of the new CSP-Grassland Conservation Initiative (GCI). In addition to incorporating the changes made by the 2018 Farm Bill, the interim rule incorporated the following programmatic changes: Removed identification of the NRCS Chief as a Vice President of the Commodity Credit Corporation. Modified existing terms to reflect changes in terminology, to more closely[[Page 63994]]align CSP administration with the Environmental Quality Incentives Program (EQIP), and for clarity. These include, but are not limited to-- [cir] Modifying ``eligible ***land***'' to include public ***land*** when the ***land*** is a working component of the participant's ***agricultural*** or forestry operation. [cir] Modifying the definition of ``veteran farmers or ranchers'' to cite the statutory reference as modified by the 2018 Farm Bill. [cir] Clarifying ``enhancement,'' ``participant,'' and ``stewardship threshold.'' Specified eligibility requirements for all applicants sharing in the risk and participating in day-to-day activities. Expanded the potential scope of bundles and provides NRCS with discretionary authority for offering bundles. Removed certain requirements for applicants who cross ranking pool boundaries to increase applicant flexibility. Added organic producers and producers transitioning to organic as a category of producer with a ***targeted*** ranking pool. Clarified the annual payment structure and adjusted the timeframe for implementing an applicant's first conservation activity to align with EQIP. Stated that, unless a waiver is granted, participants will not receive payment for conservation activities initiated or implemented prior to contract approval. Expanded the regulatory $400,000 contract limit for all joint operations. Added text to allow for contract increases due to minor adjustments made to conservation activities at the discretion of NRCS. Provided greater consideration to a participant's circumstances with respect to changes made to their ***agricultural*** operations. Addressed contract changes that arise due to the death, incompetence, or disappearance of a CSP participant. Included an eligibility restriction for renewal-eligible participants who choose not to renew in favor of competing for a new contract. Removed text related to training NRCS staff. Adjusted definitions to conform to those in other NRCS or Department regulations.Summary of Comments The interim rule 60-day comment period ended January 13, 2020. NRCS received 615 comments from 110 commenters in response to the rule. NRCS reviewed these 615 comments and categorized and summarized them according to the topics identified below. The topics that generated the greatest response were on payments, contract renewals and extensions, and ranking. In this rule, the comments have been organized in alphabetic order by topic. The topics include: Administration--Timing, Training, and Streamlining and Flexibility; Conservation Activities; Contract Renewals and Extensions--Incentives for Renewal, Ranking, and Single Renewal; Definitions; Eligibility--Activities, ***Land***, and Producer; Funding; Grassland Conservation Initiative; Local and Regional Priorities; Organic and Transitioning to Organic; Outreach; Payment and Contract Limits; Payments--Comprehensive Conservation Plan Payment, Early Start Waiver, ***Land*** Use Requirements, Minimum Payment, Payment Factors, Payment Rates, Payment Schedules, Stewardship Threshold, and Supplemental Payment; Ranking--Criteria, Ranking Pools, and Timing; Soil Health; Source Water Protection; and Technology. Of the 615 comments raised by the commenters, 45 were general in nature and most expressed support for CSP or how CSP has benefitted particular operations. NRCS also received 54 comments raised by the commenters that were either outside the scope of the changes that NRCS made in the interim rule, expressed specific support for various provisions in the rule, or did not advocate for any changes. Overall, the commenters supported the changes made by the interim rule. This final rule responds to the comments received by the public comment deadline and makes minor clarifying and related changes.AdministrationTiming Comment: NRCS received comment that urged the agency to continue to provide timely announcement of funding opportunities and consistently make payments on time. Response: NRCS remains committed to providing timely information and payment for involvement in all our programs, including CSP. Timeliness of information and payments are integral to maintaining public trust and NRCS will continue to emphasize this importance in CSP implementation. No changes in the final rule are necessary to address this concern.Training Comment: NRCS received comment that encouraged NRCS to continue to provide appropriate training to NRCS field staff. This was in response to a change to Sec. 1470.8(c). The interim rule removed the text that specifies that in providing technical assistance to specialty crop and organic producers, NRCS will provide appropriate training to field staff to enable them to work with producers and to utilize cooperative agreements and contracts with nongovernmental organizations with expertise in delivering technical assistance to these producers. Response: As explained in the interim rule, NRCS modified paragraph (c) to ***remove*** text related to training NRCS staff as this is an internal agency administrative matter. NRCS will continue to provide training to field staff for all aspects of work performed. No changes were made in this final rule in response to this comment.Streamlining and Flexibility Comment: NRCS received comment urging NRCS to further streamline the processes for participation in CSP. Specifically, comment cited an abundance of paperwork and regulations that were cumbersome and difficult for participants to understand or navigate. The comment also sought an increased level of flexibility in how NRCS approaches CSP implementation. Response: NRCS understands that navigating Federal programs can at times be difficult and complex. NRCS is streamlining application and contract processes, which will reduce the number and intensity of participant tasks required for CSP participation. While the interim rule and this final rule make strides in this direction, the vast majority of recommendations regard changes to the internal administration of NRCS personnel.Conservation Activities Comment: NRCS received comment recommending changes to conservation activities. These comments included discussion of: Bundles, criteria, environmental benefits, renewals, and recommendations for particular enhancements. Response: NRCS appreciates the level of commitment and interest of our stakeholders in the details of the conservation activities for CSP. While specific conservation activities are not the purview of the rule, NRCS shared these comments with the staff who develop the guidance and standards[[Page 63995]]related to conservation activities and will be taken into consideration as updates are made. NRCS maintains a National Handbook of Conservation Practices and Field Office Technical Guides, which provide the requirements for individual conservation practices. Requirements for other conservation activities, including enhancements and bundles, are provided in guide sheets available on the NRCS website. The process for managing conservation practice standards can be found in the NRCS General Manual, Title 450, Part 401, ``Technical Guides.''Contract Renewals and ExtensionsIncentives for Renewal Comment: NRCS received comment about incentives and other items associated with contract renewal. Several comments recommended that NRCS make renewing a CSP contract more appealing and straightforward, such as by offering higher contract rates than in the initial contract. Others suggested that a participant could exhaust the available enhancements needed to qualify for renewal, recommended renewal offers be made in year four, and urged that NRCS simply renew existing contracts without requiring additional enhancements (additionality). Additional comments requested that more emphasis be placed on work completed in the initial CSP contract when determining payment rates for the renewal contract. Another comment recommended that applications for renewal contracts compete along with the applications for new contracts in the classic signup. Response: Renewal payment rates are determined based on the payment factors identified in the regulation and are evaluated annually to determine whether adjustments are needed. NRCS will continue to evaluate costs associated with managing and maintaining existing activities and implementing new activities and work to adjust the rates accordingly. Additionality is required by the law. NRCS will revisit the role that additionality plays for renewal contracts as it pertains to ranking and scheduling additional activities. The agency will address these issues in more detail in subsequent topics. NRCS has flexibility in adjusting the specific ranking criteria for each ranking pool, including between new and renewal ranking pools. Greater equity occurs when both renewal applicants and new applicants compete with other like applications. This ensures continued participation by the best stewards and offers opportunities for new producers to participate in CSP.Ranking Comment: NRCS received comment recommending that renewal be based mostly or completely on the environmental benefits of renewal contracts, especially those benefits obtained from implementation of existing activities. Response: CSP renewals were automatic in the past if the participant met basic compliance and threshold requirements. The 2018 Farm Bill modified renewal criteria and required that renewals be based upon a competitive process using the same ranking factors as used for new CSP signups. Although the ranking criteria were simplified in the 2018 Farm Bill and in the interim rule, NRCS will continue to give more weight to additional conservation than existing conservation in the ranking for both renewal and new signup contracts. NRCS's goal is to increase conservation and we will adjust weighting to create the correct balance in CSP through internal guidance without any change to the final rule. NRCS will continue to monitor CSP and ensure that it remains competitive.Single Renewal Comment: NRCS received comment recommending that NRCS ***remove*** the ``one-time only'' text from the renewal options and allow participants to renew numerous times. Response: The 2018 Farm Bill removed the specific one-time renewal text that had been in the 2014 Farm Bill; however, the expectation is that participants will fully incorporate adopted CSP activities as part of their standard operation management. These producers should see the value in their conservation activities over time and no longer require payments they receive through CSP as an incentive to maintain these activities. This was the concept supporting the interim rule's addition of the 2-year ineligibility period in Sec. 1470.26(c). NRCS removed the ``one-time'' renewal text in this final rule, but also revised the provision related to the 2-year ineligibility period to include those who apply for renewal and are not selected. As comments point out, with each renewal, fewer and fewer enhancements remain available for an operation to qualify for renewal, and the competitive nature of the renewal process means that those enhancements that remain are likely not to have as much conservation benefit as existing activities on the operations seeking renewals beyond the first renewal contact. If situations change after 2 years, the operation will be eligible to once again compete in the classic CSP signup.Definitions Comment: NRCS received comment related to definitions in the interim rule, including conservation activities, eligible ***land***, enhancement, management intensive rotational grazing, and resource-conserving crop. Response: The comments suggested minor, technical edits or gave general praise for specific definitions. The suggested minor edits are adopted.EligibilityActivities Comment: NRCS received comment about the eligibility of certain activities. First, comment sought to make eligible annual payments for existing activities regardless of any enhancements or additional activities, looking at two basic scenarios: (a) Where an operation or ***land*** use on an operation had exhausted the opportunities for additional activities, and they wanted CSP to serve as a reward for ongoing stewardship despite this lack of opportunity; or (b) Where a producer has started an activity before the contract is executed. Second, comment criticized the interim rule as not remaining size-neutral, claiming this unfairly excluded larger operations where, as the comment argues, there is a greater opportunity for conservation benefits. Response: The CSP authorizing law mandates additional activities. By definition, a new conservation activity started before the contract is executed is not an ``additional'' activity under the contract. CSP requires participants to enroll their entire operation. NRCS only considers the size of the operation when calculating the per-acre payment-rate component of the existing activity payment, which is exclusively based on the actual acres of each ***land*** use enrolled in the contract. The only size-relevant limitation on CSP contracts is the $200,000 payment limit mandated by statute and incorporated in the CSP regulation and the associated regulatory contract limit that mirrors the payment limit for individuals and legal entities. In 2010, NRCS increased the contract limit to $400,000 for joint operations, which may benefit certain larger operations (through the final rule published in the Federal Register on June 3, 2010, 75 FR 31610-31661, referred to below as the 2010 CSP final[[Page 63996]]rule). In addition, participants in CSP are also subject to a $900,000 average Adjusted Gross Income limitation.***Land*** Comment: NRCS received comment about ***land*** eligibility. Generally, these comments supported the changes made in the interim rule, especially the expansion of ***land*** eligibility to public ***land*** components of ***agricultural*** operations. Several comments recommended that NRCS do more to ensure that participants understand the provisions of their CSP contracts. Comments also addressed heirs' property, employee training, and other areas of interest that commenters would like NRCS to make eligible. Response: The types of publicly held ***land*** mentioned in comments all fall within the scope of public ***lands*** identified in the interim rule. Heirs' property issues fall within the scope of ``other instances in which NRCS determines under Sec. 1466.6(b)(3) that there is sufficient assurance of control'' when NRCS is making determinations of eligibility and no change was needed to address this concern. NRCS employee training and ensuring that participants understand their CSP contracts are necessary for NRCS to provide the highest-quality customer service; they are a priority for NRCS.Producer Comment: NRCS received comment about producer eligibility requirements and how such may be affected by cash rent situations and tenant-landlord situations where: (a) The lease may terminate within the prospective contract period; (b) Control of ***land*** is ambiguous between tenant and landlord; and (c) The interests of tenant and landlord may be incongruous. Response: CCC regulations in 7 CFR part 1400 addresses cash-rent landlords and applies to CSP. This final rule reiterates that the producer must demonstrate control of the ***land*** and meet all applicant eligibility requirements for the producer to participate in CSP.Funding Comment: NRCS received comment about how fund allocations are addressed in the regulation, including both support for and against the changes made. Some commenters recommended exchanging dollars for acres allocated to each State (that is, a proportional allocation of dollars based on the ratio of each State's ***agricultural*** ***land***, weighted by ***land*** use type, relative to national totals). Other comment raised that different challenges and conservation opportunities for Western landowners should be considered in fund allocations to achieve more equitable geographic distribution of CSP funds. Some comment suggested using especially sensitive areas, such as critical conservation areas (CCAs), to prioritize allocations. Comment also recommended increasing set asides for historically underserved producers. Response: NRCS appreciates the suggestions made, but the text in the regulation about fund allocations mirrors the text in the law, and therefore no changes have been made in response to most of this comment. However, to provide clarity, NRCS adjusted text related to the set-aside for historically underserved producers in Sec. 1470.4(c).Grassland Conservation Initiative Comment: NRCS received comment that recommended either prohibiting crops on ***land*** covered by a Grassland Conservation Initiative (GCI) contract or limiting the types of crops and other planted species by type and area on ***land*** enrolled in GCI. Response: This concern is addressed by the conservation stewardship threshold requirement in the interim rule. Any crops planted on ***land*** covered by a GCI contract must implement conservation activities that achieve conservation stewardship levels analogous to the ***land*** being planted or maintained in grass. This requirement will be fleshed out on a State-by-State basis using the methods defined in the regulation for stewardship thresholds, including analytics tools or models and other methods that measure conservation and improvement in priority resource concerns.Local and Regional Priorities Comment: NRCS received comment requesting that NRCS address prioritization of conservation practices and activities according to local and regional needs, including seeking additional State-level flexibility and responsiveness to local resource concerns. Other comment requested that NRCS incorporate language that require consideration of local priority resource concerns when evaluating applications and to identify the prioritization process for States to select priority resource concerns. Comment also recommended that NRCS reference locally-led conservation in the rule, similar to what is in the EQIP rule. Response: NRCS has modified Sec. 1470.2(d) to more closely align with EQIP text, which addresses comments focused on flexibility and responsiveness to local and regional needs. NRCS involvement of State technical committees, Tribal Conservation Advisory Councils, and local working groups is identified in 7 CFR part 610, subpart C and in the NRCS standard operating procedures, which were published in the Federal Register on April 7, 2009 (74 FR 15673-15677). NRCS is not including these aspects in the CSP regulation.Organic and Transitioning to Organic Comment: NRCS received comment recommending modifications that assist organic producers or those transitioning to organic production, such as restoration of the full complement of organic-specific enhancements (citing the ``2017 reinvention of CSP''), weighting allocations more in the direction of farm numbers (as organic farms are smaller on average), using outside data to determine the number of operations transitioning to organic, and establishment of a separate ranking pool in each State for organic and transitioning to organic applicants. Response: Most CSP enhancement activities can be used on transitioning and certified organic operations. NRCS provides an organic crosswalk on its website, allowing transitioning and certified organic producers to see how various conservation activities can fit their operations. Though specific practices, activities, and enhancements are outside the scope of this rule, NRCS shared the comments with those who develop conservation standards and guidance to consider whether adjustments should be made. Similarly, with respect to weighting of allocations, Sec. 1470.4(b) states that NRCS will allocate funding based on both the number of operations and the number of acres. NRCS will continue to seek an equitable balance between these two criteria. Nothing in the rule prohibits the use of outside data to determine the status of an operation as transitioning to organic. NRCS addresses establishment of ranking pools, including those needed to support organic and transitioning to organic production, with the input of the State Technical Committee.Outreach Comment: NRCS received comment recommending additional outreach efforts, such as ***targeting*** ***forested*** ***lands***, cover crop activities, and public ***lands***. Response: NRCS appreciates this feedback and will continue to evaluate which aspects of CSP are underutilized to maximize the impact of outreach efforts.[[Page 63997]]Payments and Contract Limits Comment: NRCS received comment related to the higher contract limitation for joint operations. Most comment recommended keeping the contract limit at $200,000 regardless of the participant type suggesting that allowing the higher contract limit for joint operations reduces the availability of funds for individuals and small farms. Other comment suggested the contract limitation itself is a violation of the law and large operations provide more conservation benefits. Response: By law, CSP has an aggregate $200,000 payment limitation for persons and legal entities, directly or indirectly, for all contracts entered into during FYs 2019 through 2023. Under payment limitation requirements that are applicable to NRCS and Farm Service Agency programs, joint operations are able to receive a payment up to the maximum payment amount specified for a person or legal entity multiplied by the number of persons or legal entities that comprise ownership of that joint operation (see 7 CFR part 1400). Without a contract limit, joint operations could receive very large payments under a CSP contract. To address concerns related to large contracts with joint operations, NRCS decided in 2009 to impose a regulatory contract limit that corresponded with the CSP payment limitation. For the 2009 interim rule, the contract limit did not adjust for joint operations, but in response to public comment, the 2010 final rule doubled the contract limit for joint operations to $400,000. This system was maintained in the CSP regulation through the 2014 Farm Bill, was continued in the 2019 interim rule, and is maintained in this final rule. The overall CSP payment limitation may not be waived. No member of a joint operation may receive more than $200,000 in payment through CSP for FYs 2019 through 2023. But, when a joint operation of two or more members enters into a CSP contract, the CSP contract with the joint operation may receive funding of up to $400,000. Note that large operations do not necessarily have the best stewardship and will not necessarily or automatically receive a higher payment. Payment is based on the manner in which the operation is managed.PaymentsComprehensive Conservation Plan Payment Comment: NRCS received comment supporting the inclusion of the one-time payment for development of a comprehensive conservation plan, including consideration of source water protection and the use of this option for development of ***forest*** management plans. Response: NRCS appreciates acknowledgement of the 2018 Farm Bill's inclusion of the one-time payment for development of a comprehensive conservation plan.Early Start Waiver Comment: NRCS received comment about early start waivers. Comment expressed concern that this provision could prevent producers from earning payments for existing activities and recommended NRCS be required to grant waivers when administrative actions delay contract obligation and implementation of conservation activities until the following crop year. Response: In the interim rule, NRCS added text in Sec. 1470.24(f)(4) to allow an ``early start waiver'' for CSP, which provides alignment with EQIP. Additionally, NRCS adjusted the final rule text in Sec. 1470.24(f)(4) to reflect that the provision applies only to new conservation activities. NRCS awards early start waivers on a case-by-case basis and does not believe that adding text requiring waivers in specific situations is needed.***Land*** Use Requirements Comment: NRCS received comment recommending changes to requirements for payments tied to ***land*** use, including: (1) A change to Sec. 1470.24(a)(3) regarding the requirement that a participant implement at least one additional conservation activity on one ***land*** use within the first 12 months of the contract; and (2) A change to Sec. 1470.24(a)(2) requesting ***removal*** of the requirement that in order to receive an annual payment for a ***land*** use, the participant must adopt at least one additional conservation activity on that ***land*** use. Response: With respect to the requirement that a participant implement at least one additional conservation activity on one ***land*** use type, NRCS has adjusted the text in Sec. 1470.24(a)(3) to ***remove*** the phrase ``on one ***land*** use.'' To address the comment focused on annual payment eligibility, the CSP statute requires adoption of new conservation activities and management and maintenance of existing activities. Past policy set the requirement that the applicant had to schedule an additional activity on each ***land*** use within the operation in order to receive payments. NRCS will address this concern in a manner that conforms to the existing regulatory text.Minimum Payment Comment: NRCS received comment related to minimum payments recommending that the rule require that NRCS provide a minimum payment and that the minimum payment increase from $1,500 to at least $2,000. Response: Although NRCS has provided a minimum contract payment in the past, there may be reasons in the future where a minimum contract payment may not be warranted. As such, NRCS is retaining ``may'' in the final rule. The actual rate for minimum contract payments is not set in regulation but determined based upon estimated costs incurred by a participant for participation in the planning process that are not otherwise compensated under CSP. The NRCS Chief retains the discretion to adjust as appropriate to reflect costs incurred by a participant for which the participant is not otherwise compensated.Payment Factors Comment: NRCS received comment that encouraged NRCS to use as the primary means for determining payment levels the degree to which the conservation activities are integrated across the entire ***agricultural*** operation for all State-identified priority resource concerns over the term of the contract. Response: CSP statutory provisions require NRCS to make payments based, to the maximum extent practicable, on the following seven factors: (1) Cost incurred by the producer associated with planning, design, materials, installation, labor, management, maintenance, or training; (2) Income forgone by the producer; (3) Expected conservation benefits; (4) The extent to which priority resource concerns will be addressed through the installation and adoption of conservation activities on the ***agricultural*** operation; (5) The level of stewardship in place at the time of application and maintained over the term of the contract; (6) The degree to which the conservation activities will be integrated across the entire ***agricultural*** operation for all applicable priority resource concerns over the term of the contract; and (7) Such other factors as determined appropriate by the Secretary. NRCS incorporates all statutory payment factors into the regulatory text, which are used to develop payment rates for both the existing activity payment and the additional activity payment. NRCS determines how to weight the various payment factors with[[Page 63998]]input from State technical committees as appropriate.Payment Rates Comment: NRCS received comment related to payment rates recommending that NRCS evaluate the balance between payment for existing conservation activities versus payment for new conservation activities. Response: CSP participants are eligible to receive annual payments for maintaining existing conservation levels and implementing additional conservation activities. Since the CSP reinvention in 2017, annual payments for maintaining existing stewardship levels on the operation have been comprised of $300 to $350 per resource concern met at the time of application and a per-acre payment rate based on ***land*** use. Per-acre payment rates are based on estimated costs of existing conservation practices per acre on each ***land*** use. Cropland generally has received the highest payment rate, with range and forestland at the lower end, and pasture in the middle. As NRCS develops its digital tools, the agency will evaluate how to make payments more reflective of on-the-ground benefits using information available through the Conservation Assessment and Ranking Tool (CART). Based on the agency's goal to gain increased conservation benefits through CSP, NRCS will continue to give more weight to additional conservation over existing conservation in both ranking and payment.Payment Schedules Comment: NRCS received comment recommending that State Conservationists seek input from State technical committees in the development of the payment schedules; also, comment sought standardization of payment schedules between CSP and EQIP and increased public availability of those payment schedules. Response: Payment schedules are, and have been, consistent between CSP and EQIP. Payment schedules are posted on NRCS State websites and input from State technical committees is sought in the development of those schedules.Stewardship Threshold Comment: NRCS received comment expressing concern about the requirement to adopt new conservation activities when a producer has already met the stewardship threshold. Response: As specified in the law, NRCS must continue to require that producers both maintain their existing activities and adopt additional activities.Supplemental Payments Comment: NRCS received comment commending the interim rule's inclusion of supplemental payments for advanced grazing management and resource-conserving crop rotations; comment also offered a specific means of calculating the supplemental payment. Response: NRCS appreciates the positive feedback. The comment recommending calculation of the supplemental payment may be considered in the development of the payment schedules.RankingCriteria Comment: NRCS received comment related to ranking criteria including that existing activities receive either equal or greater priority in ranking applications and emphasizing that environmental benefits should be the sole basis for the evaluation regardless of whether they result from existing or new activities. In addition, comment requested specific emphasis for certain resource concerns or ***target*** areas, such as forestry, water management, grazing management, cover crops, highly erodible ***land*** management, natural or ancient heritage sites, and participation in sustainability programs. The remaining comments requested NRCS: (a) Align CSP more with EQIP regarding input from State technical committees and local work groups; (b) Provide additional assistance to landowners with environmentally sensitive ***lands***; (c) Allow for the continued use of basic cover crops in CSP; and (d) Broaden and simplify ranking criteria. Response: The text in Sec. 1470.20(c) in the interim rule mirrors text in the 2018 Farm Bill. The changes made there broaden the scope of NRCS discretion in ranking applications and building out the ranking factors within the final rule limits the discretion provided by the 2018 Farm Bill. Regarding Sec. 1470.20(c)(iii), NRCS will use its discretion to maximize its ability to achieve CSP goals and objectives, including ensuring that producers enroll in CSP through a thoroughly competitive process. The goal is for CSP contracts to be awarded to applicants who propose activities with the greatest conservation benefits.Ranking Pools Comment: NRCS received comment related to ranking pools, including recommending that the advice of the State technical committee in determining the appropriate ranking pools for the State, with a concern that focus on geographic areas, watersheds, or other high priority areas would detract from other priority resource concerns that were State-wide. Other comments request that NRCS include more specific language requiring the establishment of separate ranking pools for beginning farmers and ranchers, socially disadvantaged farmers and ranchers, and organic and transitioning-to-organic producers. Response: NRCS has historically provided policy guidance that requires States to establish separate fund pools for beginning farmers and ranchers and socially disadvantaged farmers and ranchers. Changes to the suite of NRCS business tools have allowed States new flexibility in managing applications from these historically underserved groups. As a result, NRCS is not incorporating requirements specifying these ranking pools in the final rule. NRCS will, however, continue to ensure that historically underserved groups continue to have access to CSP.Timing Comment: NRCS received comment on the timing of the ranking process, both supporting and recommending ***removal*** of the discretionary phrase ``to the extent practicable'' in Sec. 1470.2(c)(1). Other comments recommend expansion of the timing of the first ranking period. Response: NRCS appreciates the comments received on the timing of ranking periods. NRCS is retaining the discretionary text in the interim rule, which addresses unforeseen circumstances that may delay the agency's ability to hold a ranking period within the timeframe provided.Soil Health Comment: NRCS received comment expressing that the interim rule failed to identify how NRCS will address soil health as a priority? Response: This comment refers to the new requirement that the Secretary ``[t]o the maximum extent feasible . . . manage [CSP] to enhance soil health.'' To address this concern, NRCS has added a paragraph to Sec. 1470.2 that identifies how NRCS will address soil health as a priority.Source Water Protection Comment: NRCS received comment recommending that NRCS should specifically address source water and drinking water protection in the final rule. While acknowledging the interim rule addressed water quality and quantity, comment urged NRCS to distinguish such resource concerns from[[Page 63999]]source water protection, and to prioritize source water protection in the National Water Quality Initiative (NWQI) watersheds or other high priority sites. Response: NRCS will continue to implement CSP to address source water protection. The 2018 Farm Bill contained specific text regarding source water protection in the EQIP provisions and, as CSP moves toward greater alignment with EQIP, NRCS will consider adding source water protection criteria to existing and new conservation activity guide sheets. Further, within the interim rule's provisions, States retain the authority to ***target*** CSP funds toward source water protection through the establishment of ranking pools, including prioritization of conservation activities within the ranking templates.Technology Comment: NRCS received comment recommending greater producer accessibility to online tools, including access for rural communities without consistent online access. Other comment sought a way to calculate potential economic incentives for enrollment in CSP and another requested increased producer access to sustainability data in CART. Response: Digital tools and processes are outside the scope of the final rule. However, NRCS remains committed to providing excellent customer service, which includes providing a user-friendly interface with our public-facing digital tools. Future changes will likely take place on Farmers.gov or through other digital media.Miscellaneous Correction In addition to the changes discussed above, this rule is making two corrections, both correct cross references to other regulations. There is a typo in the cross reference to a paragraph in another section of the regulation. One correction simply revises the cross reference to point to the accurate paragraph where the original contract limit is outlined. The other correction updates the cross reference to the USDA debt management rules in 7 CFR part 3. In the UDSA rule published on June 17, 2020, (85 FR 36670-36714) USDA revised part 3 to eliminate the debt collection regulations of the following USDA agencies: The Commodity Credit Corporation (CCC); the Federal Crop Insurance Corporation (FCIC), and the Farm Service Agency (FSA). This rule updates the cross-reference in the CSP regulation, which previously pointed to the former CCC debt management regulations.Notice and Comment, Paperwork Reduction Act, and Effective Date In general, the Administrative Procedure Act (APA) (5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are-- To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review. Consistent with the use of the authority under 5 U.S.C 808 related to Congressional review for the immediate effective date of the interim rule, this rule is also effective on the date of publication in the Federal Register.Executive Orders 12866, 13563, 13771, and 13777 Executive Order 12866, ``Regulatory Planning and Review,'' and Executive Order 13563, ``Improving Regulation and Regulatory Review,'' direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, of reducing costs, of harmonizing rules, and of promoting flexibility. The requirements in Executive Orders 12866 and 13573 for the analysis of costs and benefits apply to rules that are determined to be significant. Executive Order 13777, ``Enforcing the Regulatory Reform Agenda,'' established a Federal policy to alleviate unnecessary regulatory burdens on the American people. The Office of Management and Budget (OMB) designated this final rule as economically significant under Executive Order 12866, and therefore, OMB has reviewed this rule. The costs, benefits, and transfers of this rule are summarized in the section below in this rule. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/). Executive Order 13771, ``Reducing Regulation and Controlling Regulatory Costs,'' requires that, to manage the private costs required to comply with Federal regulations, for every new significant or economically significant regulation issued, the new costs must be offset by savings from deregulatory actions. This rule involves transfer payments and does not rise to the level required to comply with Executive Order 13771. In general response to the requirements of Executive Order 13777, USDA created a Regulatory Reform Task Force, and USDA agencies were directed to ***remove*** barriers, reduce burdens, and provide better customer service both as part of the regulatory reform of existing regulations and as an on-going approach. NRCS reviews regulations and makes changes to improve any provision that was determined to be outdated, unnecessary, or ineffective.Cost Benefit Analysis Summary Compared to CSP as authorized under the 2014 Farm Bill, Congress significantly reduced CSP's size in the 2018 Farm Bill--from $9 billion to $3.975 billion over 5 years--but left much of CSP's underlying structure intact. With fewer dollars available, fewer contracts will be funded under the 2018 Farm Bill. However, CSP will continue to fund high-ranking applications across all States, with the aim of improving cost effectiveness based on dollars per additional unit of conservation effect. The 2018 Farm Bill eliminated the 10-million-acre cap on enrollment and the annual $18 per acre cap on CSP costs, moving to an annual funding level for new contracts, similar to EQIP. NRCS will now obligate funds for all activities conducted under a new or renewed CSP contract up front. NRCS will also allocate a portion of the annually available funds for contract renewals. Regarding changes beyond funding and the elimination of the acreage cap, only the revised contract renewal conditions are expected to generate impacts that are moderately different from the 2014 Farm Bill. CSP contracts continue to run for 5 years and include the potential for participants to compete for a renewal contract for an additional 5 years. Under the 2014 Farm Bill, renewals were non-competitive and as long as the participant met eligibility and CSP requirements, NRCS would[[Page 64000]]approve a renewal contract for one additional 5-year period. Under the 2018 Farm Bill, NRCS ranks contract renewals against other contract renewals and funds the highest ranked renewal applications. NRCS provides funding for renewals using approximately 40 percent of the total funds allocated for CSP in a given fiscal year, not including the funds set aside for the CSP Grassland Conservation Initiative. NRCS uses the remaining 60 percent of the allocation to fund the highest ranked new applications. The overall decrease in program funding will reduce the funding available for both renewal and new contracts, reducing the total number of acres treated and the amount of conservation achieved through CSP. Cost-effectiveness of overall CSP may increase as lower ranked applications will not be funded. The 2018 Farm Bill also mandates the establishment of the CSP Grassland Conservation Initiative for eligible producers with base acres where the entire farm was planted to grass or pasture, or was idle or fallow, from January 1, 2009 to December 31, 2017. Beginning in FY 2019, the Secretary started providing signups for producers' to make a one-time election to enroll eligible ***land*** in the initiative. NRCS will continue to provide signups until all eligible producers are enrolled or the authority for CSP expires, which is currently in FY 2023. Enrollment is for a 5-year non-renewable term. Participants must meet CSP eligibility conditions, but do not go through the ranking process. Participating producers must agree to meet or exceed the stewardship threshold for not less than one priority resource concern by the date on which the contract expires. The annual payment is limited to $18 per acre, and enrolled acreage cannot exceed the number of base acres on a farm. An estimated 2.4 million acres meet the 2009 through 2017 criterion noted above and are eligible for the Grassland Conservation Initiative. Although these eligible acres are concentrated in Texas, Oklahoma and Kansas, there are eligible acreages throughout most of the country. The Grassland Conservation Initiative is expected to cost $214.9 million over 5 years, representing 5.5-percent of total authorized CSP funding under the 2018 Farm Bill. Through March 2020, a total of 1.2 million acres had been enrolled with obligated funds totaling $106.8 million. Cost-effectiveness may be affected marginally as fewer funds will be available. The 2018 Farm Bill established a $200,000 CSP payment limit per person or legal entity which carried over into the 2014 and 2018 Farm Bills. To address concerns related to potentially large contracts with joint operations, NRCS initially set a contract limit of $200,000 for all contracts but increased the contract limit to $400,000 for joint operations in the 2010 CSP final rule. NRCS indicated in the interim rule that the higher contract limit for joint operations would continue for the duration of the 2018 Farm Bill (2019 through 2023). In response, NRCS received comments on contract limits, most of which recommended keeping the contract limit at $200,000 regardless of the participant type. To evaluate these comments, NRCS considered the impact of eliminating higher contract limit on potential CSP participants and the demand for CSP funds. Analysis of data found that reducing the contract limit to $200,000 for all contracts would increase funding available for additional contracts on average by $43.7 million per signup. The maximum increase in acres that could be treated with this additional funding--about 658,000 acres--represents 9.1 percent of the 7.2 million acres enrolled on average per signup since 2014. Reduced participation by joint operations and other factors, however, could lead to substantially fewer additional acres being treated than expected. Joint operations enrolled in CSP with contract costs exceeding the $200,000 limit are on average three times as large, in terms of acres, as operations enrolled in CSP with contract costs below the contract limit. However, the average per acre costs of the joint operations with contract costs exceeding the contract limit are only 1.34 times larger than the average per acre costs of operations enrolled in CSP that have contract costs below the contract limit. Based on these findings, NRCS is making no change to the existing $400,000 contract limit. Conservation activities funded through CSP contribute to improvements in soil health and reductions in water and wind erosion on cropland, pasture, ***forest*** and rangeland; reduce nutrient losses to streams, rivers, lakes and estuaries; increase wildlife habitat, including providing habitat for pollinators; and provide other environmental benefits. Environmental benefits resulting from CSP's conservation activities are difficult to quantify at this time. Partial estimates made by NRCS (see Benefits section in the full analysis) indicate the positive benefits of CSP. As explained above, beginning in FY 2020, NRCS began using a new software tool, CART, to assess and rank all program applications. Per the statutory requirements outlined in section 2308C(1) of the 2018 Farm Bill, CART allows NRCS to rank CSP applications based on (1) the natural resource conservation and environmental benefits that result from the conservation treatment on all applicable priority resource concerns at the time of submission of the application; (2) the degree to which the proposed conservation activities increase natural resource conservation and environmental benefits; and (3) other consistent criteria, as determined by the Secretary. Additionally, CART creates the framework to better facilitate, and integrate, the potential costs with environmental benefits (outcomes). Through data collected in CART, NRCS will be better prepared to conduct future analysis of the environmental benefits achieved through CSP. NRCS estimates that the total cost (Table 1) of accessing the program over 5 years is $2.5 million with total transfers over 5-years equaling $3.795 billion. Given a 3 percent discount rate, this translates into a projected annualized cost to producers of accessing CSP of $414.4 thousand in constant 2019 dollars and projected annualized transfers (NRCS funds) of $759 million in constant 2019 dollars. Table 1--Costs, Benefits and Transfers (Based on 3 Percent Discount Rate), 2019-2023------------------------------------------------------------------------ Category Annual estimate (2019 $)------------------------------------------------------------------------Costs \a\................................. $414,400.Benefits.................................. Qualitative.Transfers................................. $759,000,000.------------------------------------------------------------------------\a\ Costs consist of imputed cost of applicant and participant time to gain access to CSP. In implementing the 2018 Farm Bill, USDA is following legislative intent to maximize conservation impacts, address natural resource concerns, establish an open participatory process, and provide flexible assistance to producers who apply appropriate conservation measures to comply with Federal, State, and Tribal environmental requirements. Participation in CSP is voluntary. Hence, CSP participation is not expected to negatively impact CSP participants and nonparticipants.Clarity of the Regulation Executive Order 12866, as supplemented by Executive Order 13563, requires each agency to write all rules in plain language. In addition to the substantive comments NRCS received on the interim rule, NRCS invited public comments on how to make the rule easier to understand.[[Page 64001]]NRCS has incorporated these recommendations for improvement where appropriate. NRCS responses to public comment are described in more detail above.Regulatory Flexibility Act The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because this rule is exempt from notice and comment rulemaking requirements of the APA and no other law requires that a proposed rule be published for this rulemaking initiative.Environmental Review The environmental impacts of this rule have been considered in a manner consistent with the provisions of the National Environmental Policy Act (NEPA) (42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR parts 1500-1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). NRCS conducted an analysis of the CSP interim rule and the analysis has determined there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR 1508.13). While OMB has designated this rule as ``economically significant'' under Executive Order 12866, ``. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement'' (40 CFR 1508.14), when not interrelated to natural or physical environmental effects. The Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were available for review and comment for 30 days from the date of publication of the interim rule in the Federal Register. NRCS has considered this input and determined that supplementing or revising the current available draft of the CSP EA was warranted. NRCS has made the following changes: 3.1--Added info on comments received on interim rule and EA and addressed comment on EA. 4.4--Updated description of ``Affected Environment'' when new data were available, including using 2017 Census of ***Agriculture*** data. Appendix C--Updated with 2019 CSP enhancement examples. Figure 7 (Socially Disadvantaged Farmers and Ranchers)--Updated map using the most recent census data.Executive Order 12372 Executive Order 12372, ``Intergovernmental Review of Federal Programs,'' requires consultation with State and local officials that would be directly affected by proposed Federal financial assistance. The objectives of the Executive order are to foster an intergovernmental partnership and a strengthened federalism, by relying on State and local processes for State and local government coordination and review of proposed Federal financial assistance and direct Federal development. For reasons specified in the final rule-related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the programs and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988 This rule has been reviewed under Executive Order 12988, ``Civil Justice Reform.'' This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted.Executive Order 13132 This rule has been reviewed under Executive Order 13132, ``Federalism.'' The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175 This rule has been reviewed in accordance with the requirements of Executive Order 13175, ``Consultation and Coordination with Indian Tribal Governments.'' Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a government-to-government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not have significant tribal implication that require further tribal consultation under Executive Order 13175 at this time. If a Tribe requests consultation, NRCS and CCC will work with OTR to ensure meaningful consultation is provided where changes, additions, and modifications identified in this rule are not expressly mandated by the 2018 Farm Bill. Tribal consultation for this rule was included in the 2018 Farm Bill Tribal consultation held on May 1, 2019, at the National museum of the American Indian, in Washington, DC. The portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title I session. There were no specific comments from Tribes on CSP during this Tribal consultation. Additionally, NRCS held sessions with Indian Tribes and Tribal entities across the country in the spring of FY 2019 to describe the 2018 Farm Bill changes to NRCS conservation programs, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access. NRCS invited State leaders for the Farm Service Agency (FSA) and Rural Development (RD), as well as Regional Directors for the Risk Management Agency (RMA) to discuss their programs also. As a result, approximately 50 percent of the comments received as a result of these sessions were directed to FSA, RMA, RD, and other USDA agencies, with many comments specific to hemp production and the surrounding regulations. Over 40 percent of the feedback pertained to NRCS programs. A handful of those comments were specific to CSP. Feedback included general requests for alternative funding arrangement opportunities under CSP, consideration of economic hardship of Tribes regarding financial assistance rates, and a more extensive list of culturally-significant plants for the subject state or region. Other comments included interest in establishing a separate funding pool for Tribes and an[[Page 64002]]explanation of why CSP went from an acre-based program to a dollar-based program. Comments also listed challenges specific to Tribes that impact eligibility and inhibit access to USDA programs. None of the feedback received necessitated a change to the regulation. NRCS will continue to work with our Tribal stakeholders to address the issues raised in order to facilitate greater technical assistance and program delivery to Indian country. Separate from Tribal consultation and the sessions discussed above, communication and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests.Unfunded Mandates Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal governments or the private sector. Agencies generally must prepare a written statement, including cost-benefits analysis, for proposed and final rules with Federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local, or Tribal governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no Federal mandates, as defined under title II of UMRA, for State, local, and Tribal governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies is 10.924--Conservation Stewardship Program.E-Government Act Compliance NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to government information and services, and for other purposes.List of Subjects in 7 CFR Part 1470 ***Agricultural*** operation, Conservation activities, Natural resources, Priority resource concern, Stewardship threshold, Resource-conserving crop rotation, Soil and water conservation, Soil quality, Water quality and water conservation, Wildlife and ***forest*** management. Accordingly, the interim rule published November 12, 2019, at 84 FR 60883, is adopted as final with the following changes:PART 1470--CONSERVATION STEWARDSHIP PROGRAM01. The authority citation for part 1470 continues to read as follows: Authority: 16 U.S.C 3839aa-21-3839aa-25.02. In Sec. 1470.2, add paragraph (c)(3) and revise paragraph (d) introductory text to read as follows:Sec. 1470.2 Administration.\* \* \* \* \* (c) \* \* \* (3) To the maximum extent feasible, manage CSP to enhance soil health. (d) To support locally led conservation, NRCS will solicit input from State technical committees, Tribal Conservation Advisory Councils, and local working groups to develop State-level technical, outreach, and program materials, including:\* \* \* \* \*03. In Sec. 1470.3, revise the definitions for ``enhancement,'' ``management-intensive rotational grazing,'' and ``resource-conserving crop'' to read as follows:Sec. 1470.3 Definitions.\* \* \* \* \* Enhancement means a type of conservation activity used to treat natural resources and improve conservation performance that allows a producer to address levels of conservation beyond what the minimum conservation practice standard requires. Enhancements, alone or in combination with other enhancements and practices, result in conservation systems that are equal to or greater than the performance level for the planning criteria identified for a given resource concern. Planning criteria are defined for each resource concern in Section III--Conservation Management Systems, Field Office Technical Guide.\* \* \* \* \* Management-intensive rotational grazing means a strategic, adaptively managed multipasture grazing system in which animals are regularly and systematically moved to a fresh pasture in a manner that, as determined by NRCS: (1) Maximizes the quantity and quality of forage growth; (2) Improves manure distribution and nutrient cycling; (3) Increases carbon sequestration; (4) Improves the quality and quantity of cover for wildlife; (5) Provides permanent cover to protect the soil from erosion; and (6) Improves water quality.\* \* \* \* \* Resource-conserving crop means a crop that is one of the following, as determined by NRCS: (1) A perennial grass; (2) A legume grown for use as a cover crop, forage, seed for planting, or green manure; (3) A legume-grass or diverse grass-forb mixture comprised of species selected for climate, rainfall, soil, and other region-specific conditions; or (4) A small grain or other resource-demanding crop grown in combination with a grass, legume, other forbs, or grass-forb mixture, whether interseeded, relay-planted into the resource-demanding crop, or planted in rotation.\* \* \* \* \*04. In Sec. 1470.4, revise paragraph (c) introductory text to read as follows:Sec. 1470.4 Allocation and management.\* \* \* \* \* (c) Of the funds made available for each of fiscal years 2019 through 2023 to carry out CSP, NRCS will, to the maximum extent practicable, use at least:\* \* \* \* \*05. In Sec. 1470.24, revise paragraphs (a)(3) and (f)(4) to read as follows:Sec. 1470.24 Payments. (a) \* \* \* (3) At least one additional conservation activity must be implemented within the first 12 months of the contract. NRCS may extend this timeframe if NRCS determines that the participant is unable to complete the conservation activity for reasons beyond their control;\* \* \* \* \* (f) \* \* \*[[Page 64003]] (4) New conservation activities initiated or implemented prior to contract approval, unless NRCS granted a waiver prior to the participant starting the activity.\* \* \* \* \*Sec. 1470.25 [Amended]06. In Sec. 1470.25, amend paragraph (c) by ***removing*** the cross reference ``Sec. 1470.24(g)'' and adding ``Sec. 1470.24(h)'' in its place.07. In Sec. 1470.26, revise paragraphs (a) and (c) to read as follows:Sec. 1470.26 Contract renewal. (a) During the first half of the fifth year of the initial contract period, NRCS may allow a participant to apply and compete for the opportunity under Sec. 1470.20 to renew the contract to receive payments for an additional 5-year period, subject to the availability of funds, if the participant meets criteria from paragraph (b) of this section.\* \* \* \* \* (c) NRCS will determine a participant ineligible for a new CSP contract on an ***agricultural*** operation for 2 years following expiration of their prior contract if the participant does not enter a renewal contract on the ***agricultural*** operation at the end of the prior contract period.Sec. 1470.35 [Amended]08. In Sec. 1470.35, amend paragraph (a) by ***removing*** the words ``7 CFR part 1403'' and adding the words ``part 3 of this title'' in their place.Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2020-22345 Filed 10-8-20; 8:45 am]BILLING CODE 3410-16-P

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[***Negative to positive shifts in diversity effects on soil nitrogen over time***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2M1-JCWX-C2C4-00000-00&context=1516831)

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**Body**

Main

Nitrogen (N) is an essential element for all living organisms and is often the main limiting nutrient for plant carbon assimilation in terrestrial ecosystems worldwide–. Consequently, changes in soil total N can alter the global carbon cycle, thereby impacting both global climate change and human food security. Although some plants may possess a capacity to take up dissolved organic N in some environments, soil inorganic N (NH4+ and NO3−) is the major plant-available form for direct uptake through root systems. Soil inorganic N is ultimately determined by the balance between inorganic N inputs via the microbial mineralization of organic N and outputs via the uptake of plants and soil microbes as well as via N leaching and gas ***emissions*** (for example, N2O, N2, NO and NH3) (Fig. ). The net amount of inorganic N produced per unit of time (net N mineralization rate, the difference between gross N mineralization rate and gross N immobilization rate) is highly dependent on soil total N and plant–microbe interactions,. As local plant biodiversity (at patch, neighbourhood or stand scales) generally supports ecosystem function and is known to influence aspects of nitrogen cycling,–, and has declined globally due to ***land***-use and related changes, its loss has been hypothesized to negatively impact soil N pools. However, support for this idea is uneven, as previous studies have reported positive,, negligible or even negative effects of plant diversity on soil total N.

A conceptual diagram of the influence of plant diversity on the processes that control soil N.

Rectangles represent the main biogenic forms of soil N; blue ovals indicate biogeochemical processes. Symbols ‘+’, ‘−’ and ‘+/−’ represent expected positive, negative and unclear diversity effects on the processes, respectively.

Plants play a decisive role in regulating soil N as they are the principal pathways through which N enters the soil. Plant diversity can increase plant productivity and N utilization while reducing soil N losses because of the differences of N uptake in space, time or the chemical forms among plant species within a community,–. More-diverse plant communities can also increase the chance of having productive, dominant species with high N uptake. Higher productivity and associated N retention induced by plant diversity increase both above- and below-ground litter inputs to soils and, in so doing, increase N return to the soil, (Fig. ). Total soil inorganic N availability and relative abundance of soil inorganic N forms (NO3−, NH4+) are controlled by microbial organisms, (Fig. ). Diverse plant communities can increase soil microbial biomass and activities because of a greater amount of plant-derived food and expanded microbial niches, and are more likely to enhance both mineralization and immobilization rates of soil N (refs. ,) (Fig. ). Furthermore, more efficient utilization of soil inorganic N in species-rich plant communities may reduce microbial nitrification rate, leading to a decreased NO3−/NH4+ ratio. However, the effects of plant diversity on soil N may change over time, similar to soil carbon and microbial communities,. Compared with those in monocultures, soil total and inorganic N in mixtures could be lower in young stands due to higher N uptakes from higher plant productivity with the positive effects of plant diversity on litter production and soil biota lagging temporally,; but they may become higher over time due to enhanced feedback of litter inputs, decomposition and soil biota as well as reduced N leaching,.

Divergent empirical findings on the effects of plant diversity on soil N could also result from differences in ecosystem type, the presence of N-fixing plants in species mixtures, climate and soil depth (D) sampled. The responses of soil N to plant diversity may also vary contingent on ecosystem type (croplands, grasslands and ***forests***) due to differences in the magnitudes of diversity–productivity relationships caused by dissimilarities in vegetation physiology, structure and lifespan. The presence of N-fixing plants in species mixtures would also change soil microbial communities (for example, abundance of nitrifiers and denitrifiers) and in turn affect diversity effect on soil N cycling (Fig. ). Given the increased positive plant diversity effects on microbial biomass and respiration with decreasing temperatures and the dominant role of soil-dwelling microorganisms in controlling soil N cycling, we expected that the effects of species mixtures on the soil microbial N mineralization rate and associated inorganic N would increase with reduced temperatures. We also expected a stronger effect of species mixtures on soil N in drier climates since the positive effects of plant diversity on biomass, which drives N cycling, tend to be more pronounced in reduced water availability. The positive diversity effects on soil total N may increase with D due to a stronger plant diversity effect on root litter inputs in deeper soils,. By contrast, soil inorganic N may be less in deeper soil layers in mixtures than in monocultures due to increased nutrient uptake from deeper soil layers.

We conducted a global meta-analysis with 1,650 paired observations of plant mixtures and constituent monocultures from 149 studies (131 experimental and 18 observational studies) (Supplementary Fig. ). We quantified the effects of species mixtures as the natural log-transformed response ratio (lnRR) of the observed to the expected values of soil N variables, including total N, net N mineralization rate, total inorganic N, NH4+, NO3− and the ratio of NO3−/NH4+, in a mixture. The expected values in a mixture were calculated as the weighted average values of the constituent species in monocultures, in which weights represent the species proportions in the mixture (). We hypothesized that (1) the effects of species mixtures on N would shift from negative to positive over time; (2) these effects would increase with the species richness in mixtures (SR), similar to those reported for above- and below-ground productivity,, soil carbon, soil microbial biomass and soil respiration. We tested the preceding hypotheses for total N, net N mineralization rate, total inorganic N, NH4+, NO3− and the ratio of NO3−/NH4+ across a wide variety of ecosystem types and environmental conditions.

Results and discussion

As the responses of soil total N, net N mineralization rate, inorganic N, NO3–, NH4+ and NO3–/NH4+ to species mixtures, including the average responses and the effects of stand age (SA) and SR, generally held regardless of D, mean annual temperature (MAT), aridity index (AI) or ecosystem type (for example, croplands, grasslands and ***forests***) as well as the presence or absence of N-fixing plants in species mixtures (Supplementary Tables and ), we present these for all data pooled unless otherwise stated. On average, across all sites, mixtures increased soil total N by 6.1% (95% confidence intervals (CIs), 3.4–8.8%), and the mixture effects increased with SA and SR, with more-pronounced positive effects in older, more-diverse mixtures (Fig. ). Young species mixtures had lower soil total N compared with the expected values calculated from constituent monocultures, probably due to increased uptake of inorganic N through higher productivity while increased N mineralization lagging temporally,. Larger total soil N in older and more-diverse mixtures could be attributable in part to the substantially reduced N losses via leaching in old, species-rich plant communities,. The enhanced effect of plant mixtures on soil total N over time, coupled with those for plant productivity, soil carbon and soil microbial communities,,,, suggests that plant diversity induces positive feedback to the ecosystem carbon and N cycles via increased carbon assimilation and reduced N leaching.

Comparison of soil total N, inorganic N and net N mineralization rate in species mixtures versus monocultures.

a, In relation to stand age (SA). b, In relation to the species richness in mixtures (SR) and by SA intervals. Slope estimates in a and b are partial dependence, derived from the full model (). The effects are quantified as the percentage changes in mixtures compared with the corresponding mean value of constituent monocultures. Red triangles and error bars represent the overall mean and its 95% CIs. Points represent the values predicted by partial regressions for each explanatory variable, with their sizes representing the relative weights of corresponding observations. The colours of the points indicate the different SAs of corresponding observations. Black and coloured lines represent the average and SA-specific responses, respectively, with their bootstrapped 95% CIs indicated by shading. The significance (P) is presented for each term tested with solid and dashed lines, respectively, for significant and insignificant interaction effects at α = 0.05.

The mixture effect on soil net N mineralization rate shifted from negative to positive approximately seven years after stand establishment (P < 0.001), similarly among ecosystem types (Fig. ). The mixture effect on soil inorganic N also shifted from negative to positive over time, with an average effect of −6.9% (CI, −13.2% to −0.6%) due to most observations being in young stands (Fig. ). These age-dependent shifts of mixture effects indicate that the accumulated diversity effect on soil N retention over time has promoted N mineralization and subsequently increased inorganic N (refs. ,). For both net N mineralization rate and inorganic N, their decreases in young mixtures and increases in old mixtures compared with monocultures became more pronounced with increasing SR (Fig. ). The reduced net N mineralization rate in young, species-rich mixtures could have resulted from decreased plant N concentration with species diversity due to more efficient use of local resource pools,. Decreased plant N concentration in species mixture may create a high N demand for decomposers, resulting in large amounts of inorganic N having to be immobilized to increase the litter N concentration to the critical value required for net N release. In addition, soil microbial N mineralization may respond to the increasing plant diversity with a delay of several years after the experiment was established, as observed for other soil microbial functions, such as microbial respiration and biomass,. The increased net N mineralization in older, species-rich mixtures suggests that gross N mineralization due to increased litter inputs and soil decomposers has increased more than N immobilization associated with decreased plant N concentration.

The mixture effects on soil NO3– and NH4+ also changed with SA, with effects on NO3– shifting from negative to null and on NH4+ from negative to positive over time, in line with findings of Oelmann et al. (Fig. ). Moreover, the mixture effects on soil NO3– became more negative with increasing SR in both young and old stands, while the mixture effects on soil NH4+ increased with SR in old stands but not in young stands (Fig. ). The different responses of soil NO3– and NH4+ to species mixtures led to an average NO3–/NH4+ reduction of 22.9% (CI, −43.7% to −2.2%), with greater reductions in more-diverse stands, particularly at older ages (Fig. ). These results may have arisen from two non-excluding mechanisms. First, higher plant biomass of diverse mixtures might retain more soil moisture, which could increasingly suppress nitrification and, in turn, increase soil NH4+ availability. Second, since increased soil organic matter in species mixtures reduces NH4+ mobility and its availability to plants, species mixtures increase NO3– uptake, contributing to reduced NO3– leaching in species mixtures. The increased soil NO3– and NH4+ in older, species-rich mixtures tracked the variation in total inorganic N and net N mineralization rate as well as those of soil microbial biomass and activity reported in a previous meta-analysis, suggesting increased litter inputs and soil decomposers may diminish the initial negative effect of plant diversity on soil NO3– and NH4+ availability. However, long-term diversity manipulation experiments in Jena found that soil NO3– concentrations decreased with increasing richness, and this effect was consistent over time, which could be attributed to the reduced soil N availability due to frequent N ***removals*** from biomass harvests. As N accumulation in groundwater and/or surface waters is one of the pressing environmental issues worldwide, conserving terrestrial plant diversity may help reduce NO3– contamination in water.

Comparison of soil NO3–, NH4+ and NO3–/NH4+ in species mixtures versus monocultures.

a, In relation to stand age (SA). b, In relation to the species richness in mixtures (SR) and by SA intervals. Slope estimates in a and b are partial dependence, derived from the full model. The effects are quantified as the percentage changes in mixtures compared with the corresponding mean value of constituent monocultures. Red triangles and error bars represent the overall mean and its 95% CIs. Points represent the values predicted by partial regressions for each explanatory variable, with their sizes representing the relative weights of corresponding observations. The colours of the points indicate the different SAs of corresponding observations. Black and coloured lines represent the average and SA-specific responses, respectively, with their bootstrapped 95% CIs indicated by shading. The significance (P) is presented for each term tested with solid and dashed lines, respectively, for significant and insignificant interaction effects at α = 0.05.

Global conversion of species-rich natural ***forests*** and grasslands into single-species plantations and ***agricultural*** crops is a major cause of local biodiversity loss. To better contextualize our results in the context of the proposed global restoration, we estimated the effects of 10%, 20%, 40% and 60% losses (that is, 100% SR at the establishment versus 90%, 80%, 60% and 40% at the establishment) from assemblages of 16 species (the highest SR level studied for both soil total N and inorganic N) on the basis of the estimated effects of the SR and SA (Fig. ). We found that lower plant SR at establishment led to a detectable loss of soil total N and inorganic N in the second and fifth years, respectively. A 40% decrease in plant SR over a decade from conversion led to a loss of 2% and 5% in soil total N and inorganic N, respectively (Fig. ). Given that global ***forests*** and grassland contain about 82 Pg of soil N (ref. ), a 40% decrease in SR in 10% of these areas over ten years could release 0.16 Pg of N from the soil (average 16 Tg yr–1 of N). This estimate of soil N loss with a 40% decrease in SR over 10% of the global ***forest*** and grassland area represents about 17% of global annual application of anthropogenic nitrogenous fertilizer (96 Tg yr−1 of N in 2010;). This highlights that plant diversity conservation will have important and substantive positive impacts on soil N availability and associated ecosystem function,,, and perhaps more than might have been concluded on the basis of experiments on timescales of less than one decade.

Predicted responses of soil total N and inorganic N to a range of plant species richness (SR) reductions at the establishment.

a, Total N. b, Inorganic N. Coloured lines represent the SR reduction-specific responses with their bootstrapped 95% CIs indicated by shading. The dotted vertical lines represent the time when plant SR began to reduce the soil total N and inorganic N.

Because of the importance of N-fixing plants for soil N accumulation and cycling,, we examined whether the presence of N-fixing plants in mixtures influences plant diversity effects on soil N. We included the presence (or absence) of N-fixing plants as a factor in our models to account for the effects of N-fixing plants. We found that presence or absence of N-fixing species in plant mixtures did not alter the species mixture effects on soil inorganic N, NH4+ and net N mineralization rate except soil NO3–, which responded more negatively in the mixtures with N-fixing plants (P = 0.027) (Supplementary Table and Supplementary Fig. ). This suggests that the positive effect of species mixtures on soil total N and negative effects on soil inorganic N are consistent among N-fixing and non-N-fixing plant communities. The stronger negative effect of species mixtures on soil NO3– in the mixtures with N-fixing plants was partly explained by the higher denitrification rate in mixtures with N-fixing plants. The presence of N-fixing plants may accelerate the activity of denitrifiers and thereby decrease soil NO3– availability. We also found that the presence or absence of N-fixing plants yielded qualitatively similar estimates for the effects of SR and SA (Supplementary Tables and ).

The responses of soil inorganic N, NO3–, NH4+ and net N mineralization rate to species mixtures were not altered by D, MAT, AI or ecosystem type (for example, croplands, grasslands and ***forests***) (Supplementary Table and Supplementary Fig. ). This suggests that the effect of species mixtures on soil inorganic N is globally consistent across climates and ecosystem types, similar to the reported effects of species mixtures on above-ground and below-ground productivity,, soil microbial biomass, soil respiration and soil carbon. However, when analysed by individual ecosystem types, plant mixture effects were not always similar between ecosystem types because of the differences in SR and SA (Supplementary Fig. ). Therefore, the effects of ecosystem types without considering their difference in SR and SA should be interpreted with caution. In addition, we found the positive effect of species mixtures on soil total N increased with D (Supplementary Fig. ) because more N is reallocated to deeper soil layers from the topsoil in species mixtures due to deeper fine-root distribution in plant species mixtures compared with monocultures. We also found that the positive species mixture effects on soil total N were more apparent in drier climates (Supplementary Fig. ), similar to diversity effects on productivity. These water availability-dependent effects are attributable to the stronger plant diversity effect on productivity-induced litter production and soil biota abundance (for example, earthworms, collembola) in drier climates,. The higher litter production and soil biota could increase soil N retention via enhanced microbial immobilization sink for N (ref. ). Alternatively, soils in diverse communities may have higher moisture than those in monocultures, which could favour N denitrification and associated N loss in gaseous forms (for example, N2, N2O) in wetter sites.

Our meta-analysis demonstrates that the effects of plant species mixtures on soil N are strongly dependent on SA, shifting from negative in young stands to positive in older stands, with these age-dependent effects increasing with the species richness in mixtures. Our results highlight that global biodiversity loss, caused by ***land***-use change such as the conversion of species-rich ***forests*** and grasslands into species-poor systems, not only decreases plant productivity, and soil carbon sequestration but also reduces soil N availability for the future vegetation. Plant diversity conservation will sustain long-term soil N availability and reduce N pollution in the global hydrosphere.

Methods

Data collection

We systematically searched all peer-reviewed publications that were published before June 2020 that investigated the effects of plant diversity on soil total N, inorganic N and net N mineralization rate using the Web of Science (Core Collection; [*http://www.webofknowledge.com*](http://www.webofknowledge.com)), Google Scholar ([*http://scholar.google.com*](http://scholar.google.com)) and the China National Knowledge Infrastructure (CNKI; [*https://www.cnki.net*](https://www.cnki.net)) with the search term ‘soil nitrogen OR soil N OR nitrate OR ammonia OR no3 OR nh4 OR nitrogen mineralization AND plant diversity OR richness OR mixture OR pure OR polyculture OR monoculture OR overyielding’. We also searched for references within these papers. Our survey also included studies summarized in previously published diversity–ecosystem functioning meta-analyses,,. The literature search was performed following the guidelines of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Moher et al.; Supplementary Fig. ).

We employed the following criteria to select the studies: (1) they were purposely designed to test the effects of plant diversity on soil total N (both total N content and stock), total inorganic N, NO3–, NH4+ and net N mineralization rate in mineral soils; (2) they had at least one species mixture treatment and constituent monocultures; (3) they had the same initial climatic and soil properties in the monoculture and mixture treatment plots. To better represent responses of soil N under natural conditions, we did not include greenhouse and mesocosms studies. In total, 141 publications met these criteria (Supplementary Fig. and Supplementary Table ). In ten publications, several experiments, each with independent controls, were conducted at different locations and were considered to be distinct studies. When different publications included the same data, we recorded the data only once. When a study included plant species mixtures of different numbers of species, we considered them as distinct observations. This resulted in 115 studies for soil total N (including both N content and stock), 50 studies for soil inorganic N, 26 studies for net N mineralization, 43 studies for soil NO3– and 41 studies for soil NH4+. Across all studies, the responses of soil N content and stock to species mixtures were statistically not significant (Supplementary Fig. ).

For each site, we extracted the means, the number of replications and the standard deviations of soil total N, inorganic N, the net N mineralization rate, NO3– and NH4+, if reported. The net N mineralization rate data included both in situ covered-cylinder and laboratory-incubated measurements. Across all studies, the in situ covered-cylinder and laboratory-incubated measurements of mixture effects on net N mineralization rate did not differ significantly (Supplementary Fig. ). We note, however, as all original studies in our metadata measured net N mineralization rates with plants and soils separated in what is a coupled system, there are uncertainties in the estimates of the true N mineralization rates in the field.

When an original study reported the results graphically, we used Plot Digitizer version 2.0 (ref. ) to extract data from the figures. We also extracted SR, functional-group richness (FR, number of plant functional groups), D, ecosystem type (for example, ***forest***, grassland, cropland), latitude, longitude, MAT (°C), SA and soil pH measured in water (pH (H2O), if reported) from original or cited papers, or cited data sources. Annual AI data were retrieved from the Consultative Group for International ***Agricultural*** Research Consortium for Spatial Information Global Aridity Index dataset through the use of location information. The annual AI was calculated as the ratio of mean annual precipitation to mean annual potential evapotranspiration. SA was recorded as the number of years since stand establishment after a stand-replacing disturbance in ***forests*** and the number of years between the initiation and measurements of the experiments in grasslands and croplands. The D was recorded as the midpoint of each soil-depth interval. The species proportions in mixtures were based on the basal area or stem density in ***forests***, coverage in croplands and sown seeds in grasslands. Plants in ***forests*** were classified into three functional groups (coniferous trees, leguminous broadleaved trees and nonleguminous broadleaved trees). Those of grasslands were classified into four functional groups (C3 grasses, C4 grasses, nonleguminous forbs and legumes), whereas those of croplands were classified into two functional groups (grains and legumes). The soil total N data included both experimental and observational environments (18 studies from 7 publications conducted in natural ***forests***, Supplementary Table ). We compared the estimates for the datasets with and without these natural ***forest*** studies and found that both datasets yielded qualitatively similar results (Supplementary Tables 3 and ). Thus, we reported results based on the whole dataset.

Data analysis

The natural log-transformed response ratio (lnRR) was employed to quantify the effects of plant diversity following Hedges et al.:where and are the observed values of a selected variable in the mixture and the expected value of the mixture in each study, respectively. We calculated on the basis of weighted values of the constituent species in monocultures following Loreau and Hector:where mi is the observed value of the selected variable of the monoculture of species i and pi is the proportion of species i density in the corresponding mixture. If a study had multiple richness levels in mixtures (for example, 1, 4, 8 and 16), lnRR was calculated for the SR levels 4, 8 and 16, respectively. When a study reported multiple types of mixtures (SR levels) and experimental years, and were calculated separately for each mixture type and experimental year.

In our dataset, standard deviation or the standard error was not reported in 42 of the 141 publications, and no single control group mean estimate was present in 81 of the remaining 99 publications with standard deviation or the standard error reported. Like in previous studies,, we employed the number of replications for weighting:where Wr is the weight associated with each lnRR observation, and Nc and Nt are the number of replications in monocultures and corresponding mixtures, respectively.

Soil total N, total inorganic N, net N mineralization rate, NO3–, NH4+ and NO3–/NH4+ were considered as our response variables and analysed separately. To validate the linearity assumption for the continuous predictors, we first graphically plotted the lnRR versus individual predictors and identified logarithmic functions as an alternative to linear functions. We also statistically compared the linear and logarithmic functions with the predictor of interest as the fixed effect, and ‘study’ as the random effect, using the Akaike information criterion (AIC). We found that the logarithmic SR in mixtures, SA and linear D resulted in lower, or similar, AIC values (Supplementary Table ). For consistency, we used logarithmic SR, SA and linear D in our final models. We used the following model to determine the effects of the ln(SR), ln(SA), D and environmental variables (E, that is, ecosystem type, MAT or AI) and their interactions with soil total N, total inorganic N, net N mineralization rate, NO3–, NH4+ and NO3–/NH4+:where βi, πstudy and ɛ are coefficients, the random effect factor of ‘study’ and sampling error, respectively. The random effect explicitly accounted for autocorrelation among observations within each study. We conducted the analysis using the restricted maximum likelihood estimation with the lme4 package. We scaled all continuous predictors (observed values minus mean and divided by one standard deviation). When continuous predictors were scaled, β0 is the overall mean lnRR at the mean ln(SR), ln(SA) and D (ref. ). The E in equation () were individually modelled for two reasons. First, these variables are inherently correlated, and simultaneous modelling would lead to strong multicollinearity. Second, simultaneous modelling would include a large number of predictors, greater than the number of studies in our metadata.

To prevent overfitting, we selected the most parsimonious model among all alternatives instead of using stepwise multiple regression, which can be biased and has multiple shortcomings. We applied the condition of keeping SR, SA and their interaction effect as they were intrinsic to the purpose of the study for assessing the effects of SR and SA in mixtures. Model selection was accomplished by using the ‘dredge’ function of the muMIn package, on the basis of the Akaike AIC. For soil total N and net N mineralization rate, there was more than one best model as the models with ΔAIC (AIC differences) ≤ 2 are considered equivalent (Supplementary Table ). However, these models contained similar terms, and we selected the models with the lowest AIC and highest weight for interpretation. For the final models of soil net N mineralization rate, inorganic N, NO3–, NH4+ and NO3–/NH4+, all terms associated with E (equation ()) were excluded. The model selection led to equation () for soil total N and equation () for soil total inorganic N, net N mineralization rate, NO3–, NH4+ and NO3-/NH4+ as the most parsimonious models, respectively:

We analysed the potential for publication bias to influence our results using Egger’s regressions test for funnel plot asymmetry on mixed-effects models, with sample size as the predictor. Egger’s test was run on the main statistical tests we performed (response ratio across the entire dataset and then the response ratio including associated predictors in equations () and () as covariates). We did not find significant publication bias that might bias our results towards significant effects according to Egger’s regression (Supplementary Table ). Collinearity among explanatory variables was examined by evaluating variance inflation factor (only models with all predictors having variance inflation factors <3 were accepted), and no multicollinearity problem was found in the most parsimonious models (Supplementary Table ). We applied Moran’s I test and the Durbin–Watson test on the residuals of equations () and () to assess whether our models could be affected by spatial and temporal autocorrelation. We implemented these tests by using the ‘ape’ and ‘DHARMa’ packages. We found that none of the regressions was affected by spatial or temporal autocorrelation (all P > 0.05, Supplementary Table ).

To further examine the effects of Es, we conducted an analysis with each environment variable individually (ecosystem type, MAT or aridity index) as the only fixed factor and study as the random factor. The analysis confirmed that there was no difference in the responses of soil total N, total inorganic N, net N mineralization rate, NO3–, NH4+ and NO3–/NH4+ to mixtures among experimental systems (Supplementary Table ). To disentangle the effects of SR and ecosystem types, we tested whether the response to SR differed with ecosystem type by conducting an analysis with the interaction of SR and ecosystem type [ln(SR) × E] as the only fixed factor and study as the random factor. We found the interaction term was insignificant for all soil N attributes studied (Supplementary Table ). To examine the effects of soil quality on the response ratio to species mixtures, we conducted an analysis with the soil pH, a proxy for soil quality, as the only fixed factor and study as the random factor; we found the responses of soil total N, inorganic N, NO3–, NH4+ and net N mineralization rate to species mixtures were not altered with soil pH (Supplementary Table ).

We used partial regressions (or predicted effects) to graphically demonstrate the effects of SA on soil N variables. Briefly, we used the residuals from modelling equations () and () plus the mean intercept coefficient (β0) plus the coefficient (β2) times SA. To graphically illustrate whether the effects of SR on lnRR differed with SA, we calculated SA-dependent SR effects as β0 + β1ln(SR) + β3ln(SR) × ln(SA) (or β5ln(SR) × ln(SA) for equation ()) using the method described by Cohen et al. at SAs of 2, 10, 20 and 30 years, which were the most common SA values in the original studies. For consistency, we chose an SA range of 0 to 30 years to present for all N variables, although the age range soil total N was much greater (Supplementary Fig. ).

Since both SR and FR are important components of biodiversity, we also tested the effects of FR on lnRR by replacing the terms of SR in equations () and () with FR. We found qualitatively similar estimates and trends for SR and FR (Supplementary Tables and ). For simplicity, we reported the results of SR. In addition, to account for N-fixing plant effects, we added the absence and presence of N-fixing plants in mixtures as a factor in equations () and ().

To provide a more easily interpretable illustration of the effects of plant diversity on total N and inorganic N over time, we compared outcomes when 16 species (maximum SR in the metadata) was reduced by 10%, 20%, 40% and 60% at the establishment over the course of 30 years for total N and inorganic N. We first defined the lnRR when the plant richness in mixtures was R1 (no SR loss) and Rα (α% SR loss at the establishment), respectively:

Then we compared the lnRR when the plant richness in mixtures was R1 and Rα by (equation ()) – (equation ()):

We assumed that the mean value of monocultures, Xc, did not vary with the number of monocultures of different species (that is, was no different from ), In this framework, we sought to subtract the modelled effects of reduced richness from the modelled effects of full richness to examine how soil total N and inorganic N are impacted as plant diversity is reduced. Using equation () to estimate this loss in soil total N and inorganic N led to the following equation:where Pα is the proportion of remaining soil total N and inorganic N under α% plant SR loss at the establishment for a period of T, and the other model terms were described in equation (). On the basis of equation (), we fitted curves for the decrease in soil total N and inorganic N over time when there was a 10%, 20%, 40% and 60% plant SR loss at the establishment.

Our analysis indicated that many of our models violated the assumption of normality on the basis of the Shapiro–Wilk test on model residuals. We thus bootstrapped the fitted coefficients by 1,000 iterations. The coefficients were significant from zero at α = 0.05 if the bootstrapped 95% CIs did not cover zero. The treatment effects were considered significant at α = 0.05 if the 95% CIs of the estimated lnRR did not cover zero. The mean effect sizes between groups were significantly different if their 95% CIs did not overlap the other’s mean. To facilitate interpretation, we transformed the lnRR and its corresponding CIs back to a percentage using . All statistical analyses were performed in R4.0.0.

Reporting Summary

Further information on research design is available in the linked to this article.

**Acknowledgements**

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**Notes**

Supplementary informationis available for this paper at [*https://doi.org/10.1038/s41893-020-00641-y.Peer*](https://doi.org/10.1038/s41893-020-00641-y.Peer) review InformationNature Sustainability thanks Markus Lange, Gabriele Midolo and the other, anonymous, reviewer(s) for their contribution to the peer review of this work.Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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[***Affront to the patron; Hardly any construction project in Germany is treated as obligingly by politicians as the planned factory of e-car manufacturer Tesla. Nevertheless, the company is not satisfied and has drawn up a list of demands***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62D0-CRC1-DY2B-S311-00000-00&context=1516831)

Die Welt (English)

April 8, 2021 Thursday

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**Section:** ECONOMY; Pg. 9; No. 81

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Daniel Zwick

**Body**

There is hardly a construction project in Germany that is treated as benevolently by German politicians and authorities as Tesla's electric car factory in Grünheide. Numerous politicians, from the Federal Minister of Economics, Peter Altmaier (CDU), to the Minister President of Brandenburg, Dietmar Woidke (SPD), boast of their good contacts with Elon Musk. They like to decorate themselves with their relations to the Tesla boss. Up to one billion euros is flowing from several funding pots.

But of all things, the US company is now taking a confrontational course with German politicians. Despite the subsidies and preferential approval procedures, Tesla supports a lawsuit against the German government, which was filed by the German Environmental Aid (DUH) at the beginning of March. The DUH, of all people, which has enjoyed a dubious reputation since the controversy over diesel driving bans.

In a ten-page letter to the Higher Administrative Court of Berlin, which is available to WELT, Tesla expresses its substantive support for the lawsuit against the German government. In the letter, the Brandenburg subsidiary of the US corporation introduces itself as an "amicus curiae" commenting on the proceedings, although such a role is not known at all in the German Code of Procedure. "Amicus Curiae" means something like "friend of the court ".

US billionaire Musk's company cites lofty goals for its political push against the German government: Tackling climate change is an extremely urgent global challenge, Musk's German employees write. Germany has "made an important contribution" with the energy turnaround and is also committed to "converting its automotive industry ".

In striking contrast, however, "German approval and planning processes date from a time when these concerns seemed less urgent," the letter says. It adds that this "discourages necessary investment in clean energy projects and infrastructure and makes it virtually impossible for Germany to meet its climate goals. "

Tesla makes the connection with its own project in Brandenburg clear at the very beginning. The Gigafactory in the ***forest*** near Berlin, with its ***targeted*** production capacity of 500,000 electric cars, could "avoid about 15 million tons of CO2 ***emissions*** on Europe's roads every year." Delaying approval by just one month would "result in over one million tons of additional CO2 ***emissions***," Tesla executives write. Eliminating unnecessary delays and speeding up the final approval decision will therefore help Germany meet its ***targets*** as set out in the Federal Climate Protection Act, they added.

Tesla also complains in the letter that "16 months after applying for the permit, there is still no timetable for issuing the final permit" for the factory in Grünheide. "This result is particularly irritating, as the basic permissibility of the project has been examined and confirmed by several courts," the letter continues. It cites several decisions by administrative courts on the Tesla factory, including the Berlin Higher Administrative Court addressed by the letter.

The US carmaker joins the general complaint about the digital backlog of German authorities. The fact that a large part of document exchange still takes place in paper form decades after the entry into the digital age is "an enormous waste of time and resources ".

Digitalisation should therefore be mandatory, Tesla demands. This also applies to public participation in decision-making, he said. Meetings in large halls reward "volume instead of substance". Instead, he says, experience with digital processes has been positive.

But instead of criticizing all this in talks with politicians and government officials, Tesla chooses the affront of supporting a DUH lawsuit against the government, of all things. On March 9, Umwelthilfe had filed a lawsuit with the Higher Administrative Court in Berlin that did not receive much attention at the time. It demands that the federal government "comply with climate ***targets*** in the energy, industry, buildings and ***agriculture*** sectors" (case number OVG 11A22/21).

For the proceedings, such a "third-party opinion" would not play a role, the court says. So what Tesla has to say about it is unlikely to matter to the judges. DUH is also not sure what to make of the unexpected support from the US carmaker. One has the statement of Tesla "with interest noted ", says managing director Sascha Müller-Kraenner. The environmental organization believes that Tesla may be hoping for a positive effect on its own approval process for the factory in Grünheide.

So far, Tesla has been building in Grünheide at its own risk; if the permit is not granted in the end, the entire factory would have to be torn down again at Tesla's expense. "I can't imagine that the process can be significantly accelerated by such letters of support," says Müller-Kraenner. Although the Americans' investment project in Brandenburg is welcomed in principle, everything must be in order during the approval process, and environmental protection requirements must of course be met.

Not all of Tesla's demands in its letter are in line with the interests of Deutsche Umwelthilfe. For example, the electric car manufacturer proposes that a fundamental distinction be made between a "sustainable" and a "non-sustainable" project. In the case of sustainable projects, the approval processes should then be streamlined and accelerated. In the process, public participation should also be limited. This cannot please DUH in particular, which regularly files lawsuits against projects on behalf of the public. "Under no circumstances should the opportunities for civil society to participate be restricted," says DUH head Jürgen Resch. "I'm not sure Tesla has the same goal as we do," says his colleague Müller-Kraenner.

To determine which projects are sustainable and which are not, for example, one could use the EU taxonomy, which has long been discussed in Brussels, Tesla writes. Whether a car factory like the one in Grünheide can really be considered a sustainable project? Yes, they believe at Tesla, you just have to include the products manufactured there in the consideration.

This is where one of the contradictions in Tesla's ten-point plan becomes clear: approval procedures are supposed to become faster and less bureaucratic, but at the same time the company proposes additions that have the opposite effect. The EU taxonomy is considered a bureaucratic monster, and the technical annex for implementing the reporting rule comprises no fewer than 593 pages. And whether a project is sustainable cannot be read directly from the data. Other criteria are needed for this. So for the basic distinction between good and bad construction projects, new regulations would first have to emerge.

It's surprising that Tesla feels badly treated at all. Long before the decision was made to locate in Grünheide, German politicians were courting the company, and since then a separate task force in Brandenburg has been trying to ***remove*** every obstacle to the construction of the Gigafactory as quickly as possible so that cars can actually be built in Grünheide from July this year. It would be a completion in record time, with just over a year and a half between the announcement in November 2019 and the start of production.

The fact that the approval process for the gigafactory is considered fast compared to other projects is primarily due to Tesla's "unprecedented willingness" to "take financial risks in particular and go beyond what is required by law," the letter says. Other companies, it says, are less willing, or even unable, to do so - which puts the brakes on the fight against climate change.

The federal government is not surprised by Tesla's move. According to WELT information, the US car manufacturer had warned its lobbyists in several affected federal ministries that they were planning a corresponding list of demands. It had already been noticed in the past few months that Tesla was stepping up its efforts to cultivate the political landscape. Musk's people have long been sitting at the table in top-level talks with Economics Minister Altmaier, for example - and occasionally ousting traditional German carmakers in the process. It is doubtful that the fundamental support of German politicians will change. The planned factory is too important. Nor is there to be any change in the planned billion-euro subsidy. Behind closed doors, it is said in government circles that Tesla is even right on some points.

Document original

**Graphic**

After a construction period of only one and a half years, the first vehicle is to be produced in the Tesla factory in Grünheide in July

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[***Federal Register: Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Threatened Species Status With Section 4(d) Rule for Suwannee Alligator Snapping Turtle Pages 18014 - 18034 [FR DOC #2021-06946]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62D0-R6Y1-F0YC-N2TN-00000-00&context=1516831)

Impact News Service

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R4-ES-2021-0007; FF09E21000 FXES11110900000 212]RIN 1018-BE80Endangered and Threatened Wildlife and Plants; 12-Month Petition Finding and Threatened Species Status With Section 4(d) Rule for Suwannee Alligator Snapping TurtleAGENCY: Fish and Wildlife Service, Interior.ACTION: Proposed rule.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Suwannee alligator snapping turtle (Macrochelys suwanniensis), a freshwater turtle species from the Suwannee River basin in Georgia and Florida, as a threatened species. After a review of the best available scientific and commercial information, we find that listing the species is warranted. Accordingly, we propose to list the Suwannee alligator snapping turtle as a threatened species with a rule issued under section 4(d) of the Act (``4(d) rule''). If we finalize this rule as proposed, it would add the species to the List of Endangered and Threatened Wildlife and extend the Act's protections to the species.DATES: We will accept comments received or postmarked on or before June 7, 2021. Comments submitted electronically using the Federal eRulemaking Portal (see ADDRESSES, below) must be received by 11:59 p.m Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by May 24, 2021.ADDRESSES: You may submit comments by one of the following methods: (1) Electronically: Go to the Federal eRulemaking Portal: [*http://www.regulations.gov*](http://www.regulations.gov). In the Search box, enter FWS-R4-ES-2021-0007, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on ``Comment Now!'' (2) By hard copy: Submit by U.S mail: Public Comments Processing, Attn: FWS-R4-ES-2021-0007, U.S Fish and Wildlife Service, MS: PRB/3W, 5275[[Page 18015]]Leesburg Pike, Falls Church, VA 22041-3803. We request that you send comments only by the methods described above. We will post all comments on [*http://www.regulations.gov*](http://www.regulations.gov). This generally means that we will post any personal information you provide us (see Public Comments, below, for more information).FOR FURTHER INFORMATION CONTACT: Jay Herrington, Field Supervisor, Northeast Florida Ecological Services Field Office; [*Jay\_Herrington@fws.gov*](mailto:Jay_Herrington@fws.gov), 904-731-3191 or Panama City Ecological Services Field Office, 1601 Balboa Avenue, Panama City, FL 32405. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.SUPPLEMENTARY INFORMATION: Executive Summary Why we need to publish a rule. Under the Act, if we determine that a species is an endangered or threatened species throughout all or a significant portion of its range, we are required to promptly publish a proposal in the Federal Register and make a determination on our proposal within 1 year. To the maximum extent prudent and determinable, we must designate critical habitat for any species that we determine to be an endangered or threatened species under the Act. Listing a species as an endangered or threatened species and designating critical habitat can only be completed by issuing a rule. What this document does. This document proposes to list the Suwannee alligator snapping turtle (Macrochelys suwanniensis) as a threatened species and to provide measures under section 4(d) of the Act that are tailored to our current understanding of the conservation needs of the Suwannee alligator snapping turtle (a ``4(d) rule''). The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that the primary threats acting on the Suwannee alligator snapping turtle include illegal harvest and collection (Factor B), nest predation (Factor C), and hook ingestion and entanglement due to bycatch associated with freshwater fishing (Factor E). Existing regulatory mechanisms (Factor D) are not adequate to address these threats. Disease (Factor C) and climate change (Factor E) might negatively influence the species, but the impacts of these threats on the species are uncertain based on current information. Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing, to the maximum extent prudent and determinable.Peer Review We prepared a species status assessment report (SSA report) for the Suwannee alligator snapping turtle. The SSA report represents the compilation and assessment of the best scientific and commercial information available concerning the status of the species, including the past, present, and future factors influencing the viability of the species (Service 2020, entire). In accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of four appropriate specialists regarding the Suwannee alligator snapping turtle, and received one response which informed this proposed rule. The purpose of peer review is to ensure that our listing determinations, critical habitat designations, and 4(d) rules are based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise in population modeling and the biology, habitat, and threats to the species. All comments received from the peer reviewers are publicly available and posted on [*http://www.regulations.gov.Information*](http://www.regulations.gov.Information) RequestedPublic Comments We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American Tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning: (1) The species' biology, range, and population trends, including: (a) Biological or ecological requirements of the species, including habitat requirements for feeding, breeding, and sheltering; (b) Historical and current range including distribution patterns; (c) Relationship between densities and habitat types; (d) Population impacts and extent of hook ingestion and entanglement associated with recreational fishing; (e) Population impacts and extent of poaching; (f) Recruitment and population impacts associated with nest and hatchling predation; (g) Historical and current population levels, and current and projected trends; and (h) Past and ongoing conservation measures for the species, its habitat, or both. (2) The spatial distribution and extent of real and perceived threats to this species. Notably, we seek any information on areas within the species' range where these threats may overlap and potentially act synergistically as well as where there may be a complete absence of threats. (3) Biological, commercial trade (including pet trade and breeding for personal collections), or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats. (4) Additional information concerning the historical and current status, range, distribution, and population size of the species, including the locations of any additional populations of the species. (5) Information, especially from the commercial and recreational fishing communities, about the design of a turtle escape or exclusion device and modified trot line techniques that would effectively eliminate or significantly reduce bycatch of alligator snapping turtles from recreational fishing. (6) Whether the measures outlined in the proposed section 4(d) rule are necessary and advisable for the conservation and management of the Suwannee alligator snapping turtle. We particularly seek comments concerning: (a) Whether we should include a provision related to excepting incidental take resulting from legal recreational or commercial fishing activities for other ***targeted*** species, in compliance with State regulations. In addition, if we include such a provision, should we also include a requirement to report to the Service injured or dead turtles resulting from such legal fishing activities. (b) Whether the provision related to excepting incidental take associated with Federal and State captive-breeding programs to support conservation efforts[[Page 18016]]for wild populations (i.e , head-starting) that use permitted brood stock and approved turtle husbandry practices in accordance with State regulations and U.S Fish and Wildlife Service policy should be revised or clarified to ***remove*** or add information including additional restrictions or deferments, or additional best management practices. (c) Whether the provisions related to excepting incidental take resulting from construction, operation, and maintenance activities; pesticide and herbicide application; and silviculture practices and forestry activities that follow best management practices should be revised or clarified to ***remove*** or add information including spatial or temporal restrictions or deferments, or additional best management practices. (d) Whether there are additional provisions the Service may wish to consider for the final section 4(d) rule in order to conserve, recover, and manage the Suwannee alligator snapping turtle, such as turtle excluder devices, limitations on road construction and other infrastructure or construction activities, riparian management activities, or wetland management activities. (7) The reasons why we should or should not designate habitat as ``critical habitat'' under section 4 of the Act (16 U.S.C 1531 et seq.), including information to inform the following factors that the regulations identify as reasons why designation of critical habitat may be not prudent: (a) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species; (b) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act; (c) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; or (d) No areas meet the definition of critical habitat. (8) Specific information on the possible risks or benefits of designating critical habitat, including risks associated with publication of maps designating any area on which this species may be located, now or in the future, as critical habitat. We specifically request information on the threats of taking or other human activity on the Suwannee alligator snapping turtle and its habitat, and the extent to which designation might increase those threats, as well as the possible benefits of critical habitat designation to the species. Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include. Please note that submissions merely stating support for, or opposition to, the actions under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made ``solely on the basis of the best scientific and commercial data available.'' You may submit your comments and materials concerning this proposed rule by one of the methods listed in ADDRESSES. We request that you send comments only by the methods described in ADDRESSES. If you submit information via [*http://www.regulations.gov*](http://www.regulations.gov), your entire submission--including any personal identifying information--will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on [*http://www.regulations.gov*](http://www.regulations.gov). Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on [*http://www.regulations.gov*](http://www.regulations.gov). Because we will consider all comments and information received during the comment period, our final determinations may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the species is endangered instead of threatened, or we may conclude that the species does not warrant listing as either an endangered species or a threatened species. In addition, we may change the parameters of the prohibitions or the exceptions to those prohibitions in the 4(d) rule if we conclude it is appropriate in light of comments and new information received. For example, we may expand the incidental-take prohibitions to include prohibiting additional activities if we conclude that those additional activities are not compatible with conservation of the species. Conversely, we may establish additional exceptions to the incidental-take prohibitions in the final rule if we conclude that the activities would facilitate or are compatible with the conservation and recovery of the species.Public Hearing Section 4(b)(5) of the Act provides for one or more public hearings on this proposal, if requested. Requests must be received by the date specified in DATES. Such requests must be sent to the address shown in FOR FURTHER INFORMATION CONTACT. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the Federal Register and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the Federal Register. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).Previous Federal Actions The Service received a petition to list 53 amphibians and reptiles across the United States, including the alligator snapping turtle (Macrochelys temminckii), as threatened or endangered species on July 11, 2012. The subsequent 90-day finding (80 FR 37568, July 1, 2015) provided that the petition was substantial, and the alligator snapping turtle's status warranted further review. On September 1, 2015, the petitioner submitted supplemental information to add to the petition that described new studies that could lead to taxonomic differentiation of the single Macrochelys species into multiple entities (Center for Biological Diversity 2015, entire). This information was considered and is described in further detail below under the Background section of the Proposed Listing Determination section in this document. New information since the time of the original petition provided sufficient evidence to split alligator snapping turtle (Macrochelys temminckii) into two separate species based on genetic and morphological differences as well as geographic isolation, resulting in alligator snapping turtle (M. temminckii) and Suwannee alligator snapping turtle (M. suwanniensis). We are considering the two species for listing independently, and this proposed rule serves as the 12-month finding for the Suwannee alligator snapping turtle (M. suwanniensis).[[Page 18017]]Supporting Documents A Species Status Assessment team composed of Service biologists prepared the SSA report for the Suwannee alligator snapping turtle (Service 2020, entire); the SSA team consulted with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of factors (both negative and beneficial) affecting the species in the past, present, and future. To ensure the scientific integrity of the analyses and information in the report, the SSA report was sent to four independent peer reviewers; one reviewer provided comments. The SSA report and other materials relating to this proposal can be found at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2021-0007.I. Proposed Listing DeterminationBackground A thorough review of the taxonomy, distribution, life history, and ecology of the Suwannee alligator snapping turtle (Macrochelys suwanniensis) is presented in the SSA report (Service 2020, pp. 5-13); however, much of this information is based on the Macrochelys genus as a whole and is not specific to the Suwannee alligator snapping turtle. Turtles in the genus Macrochelys are the largest species of freshwater turtle in North America, are highly aquatic, and are somewhat secretive. The genus includes two distinct species, M. temminckii and M. suwanniensis. Macrochelys turtles are characterized as having a large head, long tail, and an upper jaw with a strongly hooked beak. They have three raised keels with posterior elevations on the scutes of the carapace (upper shell), which is dark brown and often has algal growth that adds to their camouflage. Their eyes are positioned on the side of the head and are surrounded by small, fleshy, pointed projections that are unique to the genus. Suwannee alligator snapping turtles are primarily freshwater turtles endemic to the Suwannee River basin and found more abundantly in the middle reaches of the Suwannee River where freshwater springs contribute to an increase in productivity of the aquatic system (Enge et al. 2014, p. 36). These turtles are typically bottom-dwelling, but surface periodically to breathe (Thomas 2014, p. 60). While the species is typically found in fresh water, it can tolerate some salinity and brackish waters, as barnacles have been found on the carapace of some turtles. The species is found in a variety of habitats across its range, but all life stages rely on submerged material (i.e , deadhead logs and vegetation) as important structure for resting, foraging, and cover from predators (Enge et al. 2014, p. 39). The Suwannee River basin encompasses parts of southern Georgia and northern Florida. Main water bodies that currently or historically supported Suwannee alligator snapping turtle include the Suwannee River, Santa Fe River, New River, Alapaha River, Little River, and Withlacoochee River. Historical distribution records of the Suwannee alligator snapping turtle are sparce, however it is thought the species has and is limited to the Suwannee river basin. Individuals occupy main river channels and tributaries, when habitat is present. The Suwannee River experiences longitudinal changes in water chemistry from the low-nutrient acidic blackwater at the head to the saline delta (Ceryak et al. 1983, p. 46). Tidal variation is particularly evident during low-flow condition and can extend up to 43 kilometers (km, 26.7 miles) upstream from the mouth. Woody debris, undercut banks, and large rocks found throughout the river are important habitat during low water levels (Enge et al. 2014, p. 10). The Suwannee alligator snapping turtle is a member of the Family Chelydridae, Order Testudinata, Class Reptilia. The taxonomic history of the alligator snapping turtle is complex and continues to evolve. The species was first described in 1789 as Testudo planitia, but Gray placed it in the genus Macrochelys in 1856. Although subsequent authors referred to the genus as Macrochelys, this placement was refuted and it was believed the alligator snapping turtle should be included in the genus Macroclemys (Smith 1955, p. 16). In 1995, Webb demonstrated that the genus Macrochelys has precedence over Macroclemys, and the Society for the Study of Amphibians and Reptiles adopted this revision in 2000 (Crother et al. 2000, p. 79). Accordingly, for the purpose of this proposed rule, we will use Macrochelys as the genus name for the two distinct species, alligator snapping turtle (Macrochelys temminckii) and Suwannee alligator snapping turtle (M. suwanniensis). An abbreviated common name, Suwannee snapping turtle, may be used; however, Suwannee alligator snapping turtle is the preferred common name since the species is within the alligator snapping turtle genus and not the snapping turtle genus, Chelydra. Historically, the alligator snapping turtle (Macrochelys temminckii) was considered a single, wide-ranging species until a recent analysis of variation in morphology and genetic structure among M. temminckii specimens resulted in differentiation of three species of alligator snapping turtles: Alligator snapping turtle (M. temminckii), Apalachicola alligator snapping turtle (M. apalachicolae), and Suwannee alligator snapping turtle (M. suwanniensis) (Thomas et al. 2014, entire). Subsequent morphological and genetic comparisons did not support distinguishing Macrochelys apalachicolae from M. temminckii; however, the data supported separation of the Suwannee population as a distinct species (Folt and Guyer 2015, entire). In addition, seven rivers lie between Macrochelys suwanniensis and the most eastern population of M. temminckii where neither species has been documented (Ewert et al. 2006, pp. 60-61). This distributional gap likely resulted in the divergence of the Suwannee alligator snapping turtle due to geographical and genetic isolation as indicated by genetic and morphological distinction of M. suwanniensis (Folt and Guyer 2015, p. 449). The herpetology community, including the Society for the Study of Amphibians and Reptiles, recognizes two species of Macrochelys: (1) M. temminckii and (2) M. suwanniensis (Crother 2017, p. 88). The Turtle Taxonomy Working Group also concurs with the recognition of two species and provides evidence to support the distinction of M. suwanniensis (Rhodin et al. 2017, p. 26). Throughout this document, we provide descriptions of Suwannee alligator snapping turtle where the information is available specific to the species. We describe Suwannee alligator snapping turtle as Macrochelys suwanniensis or Suwannee alligator snapping turtle. We reference Macrochelys when describing the genus and Macrochelys temminckii when referring to the second species of the genus, alligator snapping turtle. Since the taxonomic distinction of the two Macrochelys spp. is relatively recent, we may refer to the genus, or alligator snapping turtles in general, to describe life-history traits. The Suwannee alligator snapping turtle is primarily carnivorous and forages on small fish and mussels; however, adults are opportunistic feeders and may also consume crayfish, mollusks, smaller turtles, insects, nutria, snakes, birds, and plant material such as acorns or other available vegetation (Elsey 2006, pp. 448-489). Macrochelys turtles have evolutionarily developed an anatomical feature unique to the genus that assists with their predatory foraging[[Page 18018]]strategy. These turtles have an appendage of soft tissue attached underneath the tongue that resembles a live, wiggling worm and serves as a lure to attract fish and other unsuspecting prey while the turtle is stationary with an open mouth. They have very fast reflexes and powerful jaws that aid in this type of foraging behavior. The general life stages of Macrochelys spp. can be described as egg, hatchling (first year), juvenile (second year until age of sexual maturity), and adult (age of sexual maturity through death). Each life stage has specific requirements in order to contribute to the productivity of the next life stage. They excavate nests in sandy soils or other dry substrate near freshwater sources that are within 8 to 656 feet (2.5 to 200 meters) from the shore. The incubation period for Suwannee alligator snapping turtle is between 105 to 110 days (Ernst and Lovich 2009, p. 145). Nests require temperatures of 66 to 80 degrees Fahrenheit (F) (19 to 26.5 degrees Celsius [C]), increasing to 79 to 98 degrees F (26.1 to 36.5 degrees C) as the season progresses. The sex ratio of Suwannee alligator snapping turtles in the nest is dependent on the temperature of the nest during embryonic development. The offspring's sex is influenced by the physiological mechanism--temperature-dependent sex determination--where more males are produced at intermediate incubation temperatures, and more females are produced at the two, warmer and cooler, temperature extremes (Ernst and Lovich 2009, pp. 16, 146). Alligator snapping turtles, in general, have a pivotal temperature range of 77 to 80.6 degrees F (25 to 27 degrees C) that produces more male hatchlings than females (Ewert and Jackson 1994, pp. 12-13). Once emerged from the nest, hatchlings need shallow water with riparian vegetative structure that provides canopy cover. Juveniles require small streams with mud and gravel bottoms that have submerged structures, such as tree root masses, stumps, and submerged live and dead trees that allows for foraging and protection from predators. Juvenile survival rate is estimated at only about 5 percent, with most mortality occurring in the first 2 years of life (Ernst and Lovich 2009, p. 150). Males achieve sexual maturity in 11-21 years and females in 13-21 years (Ernst and Lovich 2009, p. 144; Reed et al. 2002, p. 4). The age of sexual maturity can be influenced by the size of the turtle, as size increases are greater when food resources and other environmental conditions are more favorable. Adult Suwannee alligator snapping turtles require streams and rivers with submerged logs and undercut banks, clean water, and ample prey. Turtles found in higher quality habitat are more likely to become sexually mature at an earlier age and may also produce larger clutch sizes (Ernst and Lovich 2009, p. 145). Adult turtles require access to mates to fertilize eggs, with mating occurring underwater (Ernst and Lovich 2009, p. 144). Mating has been observed in captive alligator snapping turtles from February to October, but geographic variation within the wild population is not well understood (Reed et al. 2002, p. 4). A gravid female will search for suitable nesting habitat on ***land*** to construct a nest, avoiding low ***forested*** areas with abundant leaf litter and root mats that may cause nesting obstructions. She will excavate a cavity, deposit the eggs, and bury the eggs that are about 24 centimeters (cm) in depth in approximately 3.5 to 4 hours (Ewert 1976, p. 153; Powders 1978, p. 155; Thompson et al. 2016, entire). Once the female has completed the nest, she returns to the water, and there is no other parental care of the nest or offspring. Female alligator snapping turtles may produce a single clutch once a year or every other year at most even if the conditions are good (Reed et al. 2002, p. 4). Clutch size may vary across the species' range between 9 to 61 eggs, with a mean clutch size of 27 eggs (Ernst and Lovich 2009, p. 145). Most nesting occurs from May to July (Reed et al. 2002, p. 4). Suwannee alligator snapping turtles are long-lived species; provided suitable conditions, adults can reach carapace lengths of up to 29 inches and 249 pounds for males, while females can reach lengths of 22 inches and 62 pounds. The oldest documented Macrochelys turtle in captivity survived to at least 80 years of age, but in the wild, the species may live longer (Ernst and Lovich 2009, p. 147). The generation time for the species is around 31 years (range = 28.6-34.0 years, 95 percent confidence interval, Folt et al. 2016, p. 27).Regulatory and Analytical FrameworkRegulatory Framework Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an endangered species or a threatened species. The Act defines an endangered species as a species that is ``in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as a species that is ``likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. These factors represent broad categories of natural or human-caused actions or conditions that could influence a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We use the term ``threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ``threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ``threat'' may encompass--either together or separately--the source of the action or condition or the action or condition itself. However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ``endangered species'' or a ``threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats--in light of those actions and conditions that will ameliorate the threats--on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all the threats acting on the species. We also consider the cumulative effect of the threats as well as those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition[[Page 18019]]of an ``endangered species'' or a ``threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future. The Act does not define the term ``foreseeable future,'' which appears in the statutory definition of ``threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as the Service can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ``Reliable'' does not mean ``certain''; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions. It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.Analytical Framework The SSA report documents the results of our comprehensive biological status review, including an assessment of the potential threats to the species (Service 2020, entire). The SSA report does not represent a decision by the Service on whether the species should be proposed for listing as an endangered or threatened species under the Act. It does, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket FWS-R4-ES-2021-0007 on [*http://www.regulations.gov*](http://www.regulations.gov). To assess the Suwannee alligator snapping turtle's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability. The SSA process can be categorized into three sequential stages. During the first stage, we evaluate an individual species' life-history needs. The next stage involves an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involves making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decisions.Summary of Biological Status and Threats In this section, we review the biological condition of Suwannee alligator snapping turtle and its needs and describe the factors that influence the species' overall viability and the risks to that viability.Threats We provide information regarding past, present, and future influences, including both positive and negative, on the Suwannee alligator snapping turtle's current and future viability including illegal harvest (Factor B), bycatch (Factor E), habitat alteration (Factor A), nest predation (Factor C), climate change (Factor E), and conservation measures. The existing regulatory mechanisms (Factor D) have not been adequate to arrest the decline of the species. Additional threats such as historical commercial and recreational harvest ***targeting*** the species, disease, parasitic insects, and contaminants are described in the SSA; these additional threats may negatively affect individuals of the species or historically affected the species, particularly when compounded with other ongoing stressors or threats. However, they do not threaten the species' overall viability.Harvest (Commercial and Poaching)Commercial and Recreational Harvest Commercial and recreational turtle harvesting practices in the last century resulted in a decline of the Suwannee alligator snapping turtle across its range (Enge et al. 2014, p. 4). Commercial harvest of both species of alligator snapping turtles reached its peak in the late 1960s and 1970s when the meat was used for commercial turtle soup products and sold in large quantities for public consumption. In addition, many restaurants served turtle soup and purchased large quantities of alligator snapping turtles from trappers in the southeastern States (Reed et al. 2002, p. 5). In the 1970s, the demand for turtle meat was so high that as much as three to four tons of alligator snapping turtles (M. temminckii) were harvested from the Flint River in Georgia per day (Pritchard 1989, p. 76). The Florida Game and Fresh Water Fish Commission (now the Florida Fish and Wildlife Conservation Commission [FWC]) reported significant numbers of turtles being taken from the Apalachicola and Ochlocknee Rivers to presumably be sent to restaurants in New Orleans and other destinations (Pritchard 1989, pp. 74-75). While such large-scale ***removal*** of Macrochelys turtles occurred across the range of the genus, the population demographics of Suwannee alligator snapping turtles in Florida indicate there was likely less commercial harvesting activities in the Suwannee River drainage than elsewhere (Enge et al. 2017, p. 6; Enge et al. 2014, entire; Johnston et al. 2015, entire). Florida prohibited the commercial harvest of all Macrochelys spp. in 1972 and recreational or personal harvest in 2009; Georgia prohibited all harvest in 1992 (Service 2020, pp. 14-15). Despite the prohibitions on commercial and recreational harvest for the species, the effects from historical ***removal*** of large turtles continues to affect the species due to their low fecundity, low juvenile survival, long lifespan, and delayed maturity. Commercial harvest is not currently a threat to Suwannee alligator snapping turtle, but the effect of historical large-scale ***removal*** of large turtles is ongoing.[[Page 18020]]Illegal Harvest (Poaching) Although both Florida and Georgia have prohibited recreational harvest, there is an international and domestic demand for turtles for consumption and for herpetofauna enthusiasts who collect turtle species for pets (Stanford et al. 2020, entire). The Suwannee alligator snapping turtle is no exception; farmed, hatchling alligator snapping turtles may be sold for up to 195 U.S dollars per turtle (Lejeune et al. 2020, p. 8; MorphMarket 2020, unpaginated). Illegal harvest, or poaching, of Suwannee alligator snapping turtle may occur anywhere within its range for both the pet trade and turtle meat trade. The best available information regarding potential pressure from poaching comes from documented reports by law enforcement agencies and court cases involving the congeneric (species within the same genus) alligator snapping turtle. In a 2017 case, 3 men were convicted of collecting 60 large alligator snapping turtles (M. temminckii) in a single year in Texas and transporting them across State lines, violating the Lacey Act (Department of Justice 2017, entire). We expect that illegal harvest is affecting Suwannee alligator snapping turtles, given it has been documented on many occasions for the heterospecific alligator snapping turtle. Illegal harvest is an ongoing threat to Suwannee alligator snapping turtle because ***removing*** adult female turtles from the population lowers the viability of the species by reducing reproductive potential; in addition, the species is long-lived, slow to mature, and juvenile survival is very low making it more difficult for the historically over-harvested population to recover. Aside from the local and domestic use of turtles, the global demand for pet turtles and turtle meat continues to increase. Many species of turtles are collected from the wild as well as bred in captivity and are sold domestically and exported internationally. Macrochelys spp. are regularly exported out of the United States, typically as hatchlings or juveniles, to initiate brood stock for overseas turtle farms and for turtle collectors. According to the Service's Law Enforcement Management Information System (LEMIS), which provides reports about the legal international wildlife trade, most shipments of live alligator snapping turtles exported from 2005 to 2018 consisted of small turtles destined mostly for Hong Kong and China (Service 2018, entire). Prior to 2006, up to 23,780 M. temminckii per year were exported from the United States (70 FR 74700, December 16, 2005). In 2006, Macrochelys temminckii was listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as an Appendix III species to allow for better monitoring of exports. At the time of the CITES listing, M temminckii was a single species; thus, M. suwanniensis is included under this listing.Impacts of Harvest Because of Suwannee alligator snapping turtle's life history with delayed maturity, long generation times, and relatively low reproductive output, the species cannot sustain collection from the wild, especially of adult females, over any length of time (Reed et al. 2002, pp. 8-12). Adult turtles do not reach sexual maturity until 11 to 21 years of age. A mature female typically produces only one clutch per year consisting of 8-52 eggs (Ernst and Barbour 1989, p. 133). These turtles are characterized by low survivorship in early life stages, but surviving individuals may live many decades once they reach maturity. The life-history traits of the species (low fecundity, late age of maturity, and low survival of nests and juveniles) contribute to the population's slow response rebound after historical over-exploitation. Therefore, population growth rates are extremely sensitive to the harvest of adult females. Adult female survivorship less than 98 percent per year is considered unsustainable, and a further reduction of this adult survivorship will generally result in significant local population declines (Reed et al. 2002, p. 9), though dynamics likely vary across the species' range. These data underscore how influential adult female mortality is on the ability of the species to maintain viable populations. Although regulatory harvest restrictions have decreased the number of Suwannee alligator snapping turtles harvested, populations have not necessarily increased in response. This lag in population response is likely due to the demography of the species--specifically delayed maturity, long generation times, and relatively low reproductive output. The Suwannee alligator snapping turtle population remains low despite commercial and recreational harvest prohibitions (Florida Fish and Wildlife Conservation Commission 2017, p. 6).Bycatch Suwannee alligator snapping turtles can be killed or harmed incidentally during fishing and other recreational activities. Some of these threats include fish hook ingestion, drowning when hooked on trotlines (a fishing line strung across a stream with multiple hooks set at intervals) and limb lines, or bush hooks, (single hooks hung from branches), jug lines (line with a hook affixed to a floating jug) along with injuries and drowning when entangled in various types of fishing line. Hoop nets are also used to capture catfish and baitfish and are made up of a series of hoops with netting and funnels where fish enter but are unable to escape through the narrow entry point. The nets are left submerged and may entrap small Suwannee alligator snapping turtles that enter the traps and are unable to escape. Boats and boat propeller strikes may also injure or kill Suwannee alligator snapping turtles; however, this effect is not limited to fishing boats. Actively used or discarded fishing line and hooks pose harm to Suwannee alligator snapping turtles. They can ingest baited fishhooks and attached fishing line and, depending on where ingested hooks and line lodge in the digestive tract, they can cause harm or death (Enge et al. 2014, pp. 40-41). For example, hooks and line can cause gastrointestinal tract blockages, and the hooks can puncture the digestive organs, leading to mortality (Enge et al. 2014, pp. 40-41). Fishhooks have been found in the gastrointestinal tracts of radiographed Suwannee alligator snapping turtles (Enge et al. 2014, entire; Thomas 2014, pp. 42-43). Trotlines also negatively affect Suwannee alligator snapping turtles. Trotlines are a series of submerged lines with hooks off a longer line. Trotline fishing involves leaving the lines unattended for extended periods, before returning to check them. Limblines and bush hooks are similar to trot lines in that they are typically set and left unattended; however, they only use a single hook. The turtles can become entangled in the lines and drown, as well as ingest trotline hooks and lines, also causing drowning or internal injuries. Bycatch from trotlines that resulted in mortality of Macrochelys turtles has been well documented. Dead turtles have been found on lines that had seemingly been abandoned (Moore et al. 2013, p. 145). The lines and hooks may also become dislodged from their place of attachment when left unattended, becoming aquatic debris that remains in the waterway for extended periods of time and may continue to be an entanglement hazard for many species, including Suwannee alligator snapping turtles. Another stressor associated with recreational fishing and boating is harm[[Page 18021]]caused by boat propeller strikes. Collisions with boat propellers by unsuspecting surfacing or submerged turtles can injure them resulting in extensive damage to their carapaces, though effects on population demographic rates are unknown (Enge et al. 2014, p. 41).Habitat Alteration Suwannee alligator snapping turtle aquatic and nesting habitats have been altered by anthropogenic disturbances. Changes in the riparian or nearshore areas affect the amount of suitable soils for nesting sites because the species constructs nests on ***land*** near the water. Riparian cover is important as it moderates in-stream water temperatures and dissolved oxygen levels. In addition to affecting the distribution and abundance of alligator snapping turtle prey species, these microhabitat conditions affect the snapping turtles directly. Moderate temperatures and sufficient dissolved oxygen levels allow the turtles to remain stationary on the stream bottom for longer periods, increasing the ambush foraging opportunities. Changes in the riparian structure may affect the microclimate and conditions of the associated water body, directly affecting the foraging success of the turtles. Activities and processes that can alter habitat include dredging, deadhead logging (***removal*** of submerged or partially submerged snags, woody debris and other large vegetation for wood salvage), ***removal*** of riparian cover, channelization, stream bank erosion, siltation, and ***land*** use adjacent to rivers (e.g , clearing ***land*** for ***agriculture***). These activities negatively influence habitat suitability for Suwannee alligator snapping turtles. Erosion can change the stream bank structure affecting the substrate that may be suitable for nesting or accessing nesting sites. Siltation affects water quality and may reduce the health and availability of prey species. Channelization destroys the natural benthic habitat and also affects the water depth and normal flow. Submerged obstacles may be removed during the channelization, which affects the microhabitat dynamics within the waterway and ***removes*** important structure for alligator snapping turtles to use for resting, foraging, and cover from predators. While channelization within the species' range does not regularly occur, it is not prohibited. Deadhead logs and fallen riparian woody debris, where present, provide refugia during low-water periods and resting areas for all life stages and support important feeding areas for hatchlings and juveniles (Enge et al. 2014, p. 40; Ewert et al. 2006, p. 62). Suwannee alligator snapping turtle habitat is also influenced by water availability and quantity as well as water quality across its range. Ground water withdrawals in the Florida portion of the species' range are managed by the Suwannee River Water Management District (SRWMD); withdrawals increased by 64 percent between 1975 and 2000, mostly for irrigation. Most withdrawals in the basin occur in ***agricultural*** areas along the Suwannee River during the spring (March through May) (Thom et al. 2015, p. 2). Water withdrawals may reduce flow in some streams, effectively isolating some turtles from the rest of the population or making immature turtles more vulnerable to predators. Additionally, reduced water levels may impact prey abundance and distribution through restricting habitat connectivity, reducing dissolved oxygen levels, and increasing water temperatures. Water quality may also be a factor for Suwannee alligator snapping turtles as contaminants enter the aquatic systems through runoff. The Lower Suwannee River's middle and lower basins are directly impacted by nutrients, including nitrates. ***Agricultural*** practices are the main source of nitrates, which specifically come from fertilizers and in some cases from manure and other waste products. They introduce nitrates to the river and groundwater (i.e , springs) through surface runoff and groundwater seepage. Groundwater seepage transports nitrates to the aquifer, which then reemerge through springs and other groundwater discharge, especially during low flow periods (Pittman et al. 1997, entire; Katz et al. 1999, entire; FDEP 2003; Thom et al. 2015, p. 2). The direct effects of water quality and water quantity on Suwannee alligator snapping turtle have not been quantified; however, as the human population that relies on water systems in the species' range continues to increase, the indirect effects across the entire range, coupled with other stressors, is likely to further reduce the species' viability. Underscoring the potential severity of this threat, Florida's human population is anticipated to grow from nearly 21.5 million in 2019 to more than 24.0 million by 2030 (Rayer and Wang 2020, p. 9). The public water supply demand will increase with increased human population growth. All counties within the species' range in Florida (Columbia, Union, Bradford, Alachua, Gilchrist, Levy, Dixie, Lafayette, Suwannee, Madison, and Hamilton Counties) are part of the SRWMD supply area and are projected to increase in public water supply demand by an average of 11.29 percent increase in millions of gallons of water per day from 2010 to 2035 (SRWMD 2015, p. 42). In addition, the human population in these counties will experience an average of 17.25 percent population growth from the year 2010 to 2035 (SRWMD 2015, p. 43). As the human population increases, other threats to the species and its habitat are likely to increase. For example, recreational use of the Suwannee River will more than likely continue to rise, which will increase human encounters with Suwannee alligator snapping turtle through incidental bycatch or boat strikes. Also, more development may result in an increase in contaminated runoff and declines in water quality.Nest Predation Nest predation rates for Macrochelys spp. are high. Raccoons (Procyon lotor) are common nest predators, but nine-banded armadillos (Dasypus novemcinctus), Virginia opossums (Didelphis virginiana), bobcats (Lynx rufus), and river otters (Lontra canadensis) may also depredate nests (Ernst and Lovich 2009, p. 149; Ewert et al. 2006, p. 67; Holcomb and Carr 2013, p. 482). Additional nonnative species found within the species' range that may depredate nests include feral pigs (Sus scrofa) and invasive red imported fire ants (Solenopsis invicta) (Pritchard 1989, p. 69). Although not documented in Suwannee alligator snapping turtle nests, fire ants are prevalent across the species' range, and predation by fire ants was the suspected culprit in the failure of alligator snapping turtle (M. temminckii) nests in Louisiana (Holcomb 2010, p. 51). Beyond nest failure, some hatchlings endured wounds inflicted by fire ants that led to the loss of a limb or tail, which reduced their mobility and their chance of survival (Holcomb 2010, p. 72). The recovery of the species from historical overharvest depends on successful reproduction and survival of young. The currently low population size does not allow for absorbing the impact of elevated nest predation. The degree of added threat from the newer, introduced nest predators is unknown, but we can conclude that the overall threat from nest predation is greater than it was in the past because of the introduced predators. Coupled with other threats, nest predation will continue to negatively affect the species' overall viability.[[Page 18022]]Climate Change Climate change may also affect Suwannee alligator snapping turtle to varying degrees, but the extent of impact is influenced by certain geographical factors, including proximity to the coast and latitudinal thermogradients. Climate change may affect Suwannee alligator snapping turtle in several ways. First, increased water withdrawal for human use (i.e , potable water and ***agriculture*** irrigation) and reduced precipitation may directly and indirectly impact habitat, food, and water availability throughout the Suwannee river basin. In addition, available water will be affected as greater evaporation will occur with continued warming temperatures. Furthermore, increased temperatures may have physiological impacts on sex ratios because these turtles have temperature-dependent sex determination, and higher temperatures may skew the sex ratio. In the southeastern United States, temperatures are predicted to warm by 4-8 [deg]F (2.2-4.4 [deg]C) by 2100 (Carter et al. 2014, p. 399). Temperature determines the sex of the Macrochelys developing embryos; certain nest temperatures result in primarily male hatchlings with females produced at temperatures of the two extremes of the intermediate male-producing temperatures. Females are produced when the nest temperatures are either cooler or warmer than the temperature threshold for male development. In order to develop mixed ratios of both sexes, fluctuating temperatures near the intermediate and extremes are ideal. In addition to temperature effects on sex ratio, temperature has been associated with nest viability, with highest viability in nests with intermediate sex ratios (produced at the male-producing intermediate temperature range with fluctuations of warmer or cooler temperatures for female-producing temperatures during the incubation period) and lowest in nests with female-biased sex ratios (Ewert and Jackson 1994, pp. 28-29). Thus, warming temperatures might lead to Suwannee alligator snapping turtle nests with strongly female-biased sex ratios. These skewed sex ratios may result in declining viability as mating behaviors are altered and other issues with unbalanced populations arise. Collectively, these impacts from reduced precipitation and increased temperature would reduce the quality or availability of suitable habitat for the Suwannee alligator snapping turtle (Thom et al. 2015, p. 126). Climate change impacts on the Suwannee alligator snapping turtle will likely act in concert with and exacerbate other threats and stressors' impacts.Other Stressors Other stressors that may affect Suwannee alligator snapping turtles include disease, nest parasites, contaminants from urban and ***agricultural*** runoff, and historical recreational harvest, but none of these stressors rise to the level of a threat. These stressors may act on individuals or have highly localized impacts., While each is relatively uncommon, these stressors may exacerbate the effects of other ongoing threats. Additional information on these stressors acting on the species is available in the species' SSA in the Factors Influencing Viability section (Service 2020, pp. 14-20). It includes historical and current threats that have caused and are causing a decline in the species' viability. The primary threats currently acting on the species include illegal harvest, nest predation, and hook ingestion/entanglement. These primary threats are not only affecting the species now but are expected to continue impacting the species and were included in the species' future condition projections in the SSA (Service 2020, pp. 30-45).Regulatory Mechanisms Several State and Federal regulatory mechanisms protect the Suwannee alligator snapping turtle and its habitat.Clean Water Act Section 401 of the Federal Clean Water Act (CWA) requires that an applicant for a Federal license or permit provide a certification that any discharges from the facility will not degrade water quality or violate water-quality standards, including State-established water quality standard requirements. Section 404 of the CWA establishes programs to regulate the discharge of dredged and fill material into waters of the United States. Permits to fill wetlands; to install, replace, or ***remove*** culverts; to install, repair, replace, or ***remove*** bridges; or to realign streams or water features that are issued by the Florida Department of Environmental Protection or U.S Army Corps of Engineers under Nationwide, Regional General Permits, or Individual Permits include: Nationwide Permits are for ``minor'' impacts to streams and wetlands and do not require an intense review process. The impacts allowed under Nationwide Permits usually include projects affecting stream reaches less than 150 feet (45.72 m) in length, and wetland fill projects up to 0.50 acres (0.2 hectare). Mitigation is usually provided for the same type of wetland or stream impacted and is usually at a 2:1 ratio to offset losses. Regional General Permits are for various specific types of impacts that are common to a particular region; these permits will vary based on location in a certain region/State. Individual permits are for the larger, higher impact, and more complex projects. These require a complex permit process with multi-agency input and involvement. Impacts in these types of permits are reviewed individually, and the compensatory mitigation chosen may vary depending on the project and types of impacts. The Clean Water Act regulations ensure proper mitigation measures are applied to minimize the impact of activities occurring in streams and wetlands where the species occurs. These regulations contribute to the conservation of the species by minimizing or mitigating the effects of certain activities on Suwannee alligator snapping turtles and their habitat.Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Suwannee alligator snapping turtle is included under Macrochelys spp., in the CITES Appendix III species list. Macroclemys [=Macrochelys] temminckii was listed as an Appendix III species under CITES. At the time the species was added to the list in 2006, the genus was a single species described as Macroclemys and synonymous with Macrochelys (70 FR 74700, December 16, 2005). Both species, alligator snapping turtle and Suwannee alligator snapping turtle, are protected under this regulation because they were included as a single entity at the time of the CITES Appendix III listing. CITES requires permits for exports of Appendix III species as well as annual reporting; annual reports must include the number of exported individuals of listed species. These requirements help control and document legal, international trade. Thus, Appendix-III listings lend additional support to State wildlife agencies in their efforts to regulate and manage these species, improve data gathering to increase knowledge of trade in the species, and strengthen State and Federal wildlife enforcement activities to prevent poaching and illegal trade. While the CITES reporting indicates the number of turtles exported with other relevant data, the information required for the export reports does not always accurately identify the source[[Page 18023]]stock of the exported turtle(s). Most alligator snapping turtles that were exported between 2005 and 2018 were identified as ``wild'' individuals; however, many were likely from farmed parental stock (Service 2018, entire). The discrepancy in reporting the actual source of the internationally exported turtles does not allow us to easily evaluate the impact of export on Suwannee alligator snapping turtles. Additionally, there are no reporting requirements to track domestically traded alligator snapping turtles, which are not included in CITES reporting.National Wildlife Refuges Approximately 5 percent of the Suwannee alligator snapping turtle's range includes areas within two National Wildlife Refuges (NWR), Okefenokee in Georgia and Lower Suwannee in Florida. These Refuges are managed by the Service to conserve native wildlife species and their habitats and are protected from future development. Both NWRs have comprehensive conservation plans (CCP) that ensure each NWR is managed to fulfill the purpose(s) for which it was established. Okefenokee NWR is at the northernmost proximity of the species' range and is a freshwater wetland. There are only a few anecdotal reports within Okefenokee NWR. There have been no systematic surveys conducted within the swamp, so the extent of use by the species of that area has not yet been documented. However, the paucity of documented and anecdotal records from the surrounding areas would indicate that the species is not common or widespread at this location. The Okefenokee NWR CCP includes a strategy within their wildlife management goal to ``develop and implement surveys to determine distribution and population status of amphibians and reptiles, particularly those species that are threatened, endangered, or species of special concern.'' The CCP also includes an objective to ``identify factors influencing declines in the refuge's fishery by examining water chemistry, groundwater withdrawals, water quality, pH levels, invertebrate populations and the physical environment. Evaluate feasibility of restoring the fish population (Service 2006, pp. 84-86).'' This knowledge would clearly benefit management of the Suwannee alligator snapping turtle. The Lower Suwannee NWR is at the mouth of the Suwannee River where it feeds into the Gulf of Mexico. Twenty miles of the Suwannee River is within the refuge and is suitable habitat for Suwannee alligator snapping turtles, albeit less so as salinity increases the closer the river gets to the Gulf of Mexico. The species is considered common within the Refuge, and nesting has been confirmed; however, the species is not commonly seen (due to their ability to burrow into the river or creek banks, or sitting on the bottom and staying submerged until surfacing for air is needed), and cryptic coloration when submerged makes detection of the species very difficult (Woodward 2021, pers. comm.). The Lower Suwannee NWR CCP includes management actions that may benefit the species and provides goals for wildlife, habitat, and landscape management. The CCP's objectives and strategies provide that the refuge monitor and manage wildlife populations, manage the habitats for threatened and endangered species and species of special concern in the State of Florida, and promote interagency and private landowner cooperation (Service 2001, pp. 11-22). The Lower Suwannee River NWR provides logistical, operational, in-kind, and financial support to FWC's Suwannee alligator snapping turtle team to conduct surveys on the refuge.Department of Defense--Moody Air Force Base Moody Air Force Base is near Valdosta, Georgia, and has many freshwater ponds and a large lake, Mission Lake, that drains into the Grand Bay system. Suwannee alligator snapping turtles do not commonly occur on Moody Air Force Base, but they are occasionally found. The Base's Integrated Natural Resources Management Plan (INRMP) describes Macrochelys as occurring on the Base; however, there are no management activities described directly for the species in the INRMP. The Department of Defense ensures INRMPs are consistent with the Sikes Act Improvement Act of 1997, as amended through 2010 (16 United States Code [U.S.C ] 670a et seq.), which requires the preparation, implementation, update, and review of an INRMP for each military installation in the United States and its territories with significant natural resources.State Protections The Suwannee alligator snapping turtle is State-listed in both Florida and Georgia as a threatened species. The Florida Fish and Wildlife Conservation Commission (FWC) directs staff to evaluate all species listed as Threatened or Species of Special Concern as of September 1, 2010, as required by rule 68A-27.0012 Florida Administrative Code, which makes it illegal to take, possess, or sell the Suwannee alligator snapping turtle, as it is a protected species. Since the original 2010 biological status review, two species of alligator snapping turtle were differentiated based upon genetic and skeletal differences (Thomas et al. 2014, entire), necessitating new biological status reviews of both species. During FWC's 2017 biological assessment of Macrochelys, it was determined by the biological review group that M. suwanniensis was distinct and warranted listing as Threatened based upon IUCN Red List criteria (Enge et al. 2017. p. 3). Florida developed a Species Action Plan (SAP) that includes all Macrochelys spp. due to their similarity in appearance, vulnerability to deliberate human take, incidental take with fishing gear, pollution, riverine habitat alteration, and nest predation (FWC 2018, p. iii). The objectives of the SAP include: Habitat Conservation and Management, Population Management, Monitoring and Research, Rule and Permitting Intent, Law Enforcement, Incentives and Influencing, Education and Outreach, and Coordination with Other Entities (FWC 2018, pp. 10-27). Implementation of the Macrochelys spp. SAP is ongoing (FWC 2018, entire). FWC has established a team of biologists, the Suwannee alligator snapping turtle team, who continue to study the species to better understand the species and population trends. Both Macrochelys suwanniensis and M. temminckii are found in Georgia, but their ranges do not overlap. Georgia listed M. temminckii as threatened in 1992, which at the time included both species, and continues to cover both species as threatened. State law protects threatened animal species by prohibiting their harassment, capture, killing, sale, and purchase; and destruction of their habitat on public ***land*** (Georgia Administrative Code section 391-4-10-.06). In the State's Wildlife Action Plan, the Department of Natural Resources indicates they intend to conduct genetic, taxonomic, and reproductive studies of high-priority species (GDNR 2015, p. D-5). Current State regulations are intended to minimize the impact of poaching and also contribute to the conservation of the species through public outreach. Because of the life history of the species with generation times up to 30 years, recovery from historical impacts to the population take greater time to be rebuild a healthy, sustainable population.[[Page 18024]]State and Federal Stream Protections (Deadhead Logging) Structural features within the water are important components of the habitat for Suwannee alligator snapping turtles. Submerged and partially submerged vegetation provide feeding and sheltering areas for all age classes. The structural diversity and channel stabilization created by instream woody debris provides essential habitat for spawning and rearing aquatic species (Bilby 1984, p. 609 and Bisson et al. 1987, p. 143). Snag or woody habitat was reported as the major stable substrate in southeastern Coastal Plain sandy-bottom streams and a site of high invertebrate diversity and productivity (Wallace and Benke 1984, p. 1651). Wood enhances the ability of a river or stream ecosystem to use the nutrient and energy inputs and has a major influence on the hydrodynamic behavior of the river (Wallace and Benke 1984, p. 1643). One component of this woody habitat is deadhead logs, which are sunken timbers from historical logging operations. Deadhead logging is the ***removal*** of submerged cut timber from a river or creek bed and banks. However, current State regulations minimize the impact of deadhead logging on Suwannee alligator snapping turtle. Florida allows deadhead logging only with proper permits from the Florida Department of Environmental Protection, the consideration of which includes assessment of impacts on wildlife. Further, the State prohibits deadhead logging in some of the waterways in the species' range. Georgia is not currently processing permits; therefore, deadhead logging is not currently being permitted in any of its waterways.State and Federal Stream Protections (Buffers and Permits) A buffer such as a strip of trees, plants, or grass along a stream or wetland naturally filters out dirt and pollution from rainwater runoff before it enters rivers, streams, wetlands, and marshes. This vegetation not only serves as a filter for the aquatic system, but the riparian cover influences microhabitat conditions such as in-stream water temperature and dissolved oxygen levels. These habitat conditions not only influence the distribution and abundance of alligator snapping turtle prey species but also directly affect Suwannee alligator snapping turtles. Moderate temperatures and sufficient dissolved oxygen levels allow the turtles to remain stationary on the stream bottom for longer periods, increasing their ambush foraging opportunities. Loss of riparian vegetation and canopy cover result in increased solar radiation, elevation of stream temperatures, loss of allochthonous (organic material originating from outside the channel) food material, and ***removal*** of submerged root systems that provide habitat for alligator snapping turtle prey species (Allan 2004, pp. 266-267). The Georgia Erosion and Sediment Control Act restricts disturbance and trimming of vegetation within a 25-ft (7.62-m) buffer adjacent to creeks, streams, rivers, saltwater marshes, and most lakes and ponds, and the Georgia Planning Act requires some local governments to adopt a 100-ft (30.48-m) buffer. Georgia also has a non-point water pollution source management program under which the State established and updates a Nonpoint Source Management Plan; this plan sets long-term goals and short-term activities for the State, partners, and stakeholders to address non-point source pollution. Although not focused on buffers per se, the Florida Surface Water Improvement and Management Act addresses statewide non-point source pollution impacts to waterbodies on a landscape scale and partners with Federal, State, and local governments, and the private sector to restore damaged ecosystems and prevent pollution from storm water runoff (Florida Administrative Code, Rule: 62-43.010).Conservation Measures In this section, we describe conservation measures in place for Suwannee alligator snapping turtle. Many efforts are directed to Macrochelys in general; however, we are describing below those that affect only Suwannee alligator snapping turtle.Suwannee River Water Management District (SRWMD) Water conservation measures restricting lawn and landscaping irrigation can benefit the Suwannee alligator snapping turtle by limiting water withdrawal, which directly benefits the turtle through maintaining available habitat and supporting habitat for prey species, and by reducing runoff of fertilizers and other turf management chemicals that could disrupt or alter water chemistry in the streams. The SRWMD manages the water and other related resources within the range of the Suwannee alligator snapping turtle including the Suwannee, Withlacoochee, Alapaha, Santa Fe, and Ichetucknee Rivers within Florida. The agency monitors the water quantity and quality by regular testing and reporting. It also implements water-use restrictions to conserve freshwater resources of springs and rivers within the SRWMD. Unnecessary water use is discouraged, and landscape irrigation restrictions are implemented as needed such as limiting watering to twice per week based on a District water conservation measures that apply to residential landscaping, public or commercial recreation areas, and businesses that are not regulated by a District-issued water use permit (SRWMD 2021, unpaginated). Landscape irrigation accounts for the largest percentage of household water use in the State of Florida. Mandatory lawn and landscape watering measures are in effect throughout the SRWMD. These restrictions contribute to maintaining healthy groundwater level and flows.Current Condition The current condition for Suwannee alligator snapping turtle considered the current abundance, current threats, and conservation actions as in the context of what is known about its historical range. In order to determine species-specific population and habitat factors along with threats and conservation actions acting on the species, expert elicitation was used in the absence of available related information. Species experts independently provided relevant information related to the species for which each were familiar. To describe Suwannee alligator snapping turtle's resiliency, redundancy, and representation for the current condition analysis, we assessed the species as a single population, because there is evidence that the turtles may move between the Suwannee and Santa Fe Rivers. The entire species is estimated to have an abundance of 2,000 turtles across its entire range in Georgia and Florida (Service 2020, p. 25). The current major threats acting on the Suwannee alligator snapping turtle include fishing bycatch, illegal harvest (poaching), nest predation, habitat alteration, and climate change. Other stressors acting on the species include disease, insect parasitism, and contaminants. The species is listed in Florida and Georgia as threatened on each State's threatened and endangered species list. When evaluating range expansion or constriction, recent surveys have confirmed minimal change in the known, limited historical range. The resiliency of the single Suwannee alligator snapping turtle population is described according to its abundance, threats, and range expansion or contraction. Current abundance was the assessment for current resilience, along with information about current threats, conservation actions, and distribution serving as auxiliary information about[[Page 18025]]the causes and effects of current versus historical abundances. There is little information with which to make rigorous comparisons between current and historical abundances; however, population depletions historically occurred for consumption and cumulated through the 1970s when turtles and turtle meat were exported regionally for commercial use. Information about the magnitude of the changes in abundance over time come from anecdotal observations by trappers (Pritchard 1989, pp. 74, 76, 80, 83). The historical large-scale ***removal*** of large, reproductive turtles from the population for commercial harvest continue to affect the species and its' ability to rebound. Therefore, as a result of the historical and ongoing threats, as described above, the species currently (resiliency) encompasses a single population with an estimated abundance of 2,000 turtles across most of its historical range in Georgia and Florida. Additional information regarding current condition descriptions are included in the SSA report (Service 2020, pp. 26-28). The home range for Suwannee alligator snapping turtles has been reported between 243 m and 2,013 m (Thomas 2014, pp. 41-42). Turtles are not confined to any part of their range as long as there are no physical barriers; while this species is aquatic with the exception of nesting, these turtles are capable of moving across ***land*** if necessary as conditions become unsuitable or resources are diminished. When describing the species' representation, for the purposes of the SSA in evaluating the species' current and future viability, the species consisted of a single representative unit. The best available science regarding the species indicates there is no genetic or environmental condition variation across the species' range that would allow for delineating additional representative units. Representation, which measures a species' adaptive potential in the face of natural or anthropogenic changes, is inherently low for this species because the best available information shows it lacks significant genetic variation within its single population. In addition, there are no physical barriers inhibiting movement within the range that bring about genetic divergence over time. The Suwannee alligator snapping turtle's redundancy is likewise limited to the single population, with an estimated abundance of 2,000 turtles, across its historical range. Redundancy is related to a species' response to a catastrophic event. While there is only a single population, it is widely distributed across the historical range; therefore, the chance of a catastrophic event affecting the entire species is very low. In summary, the overall current condition of the species' viability is affected by the residual effects of historical overharvest, historical and ongoing impacts from incidental limb line/bush hook and recreational fishing bycatch and/or hook ingestion, illegal harvest, habitat alteration, nest predation, and the species' life history (i.e , low annual recruitment and delayed sexual maturity). Because of these threats, and particularly the legacy effects of historical harvest, the overall current condition is a single population with an estimated abundance of 2,000 turtles across most of its historical range. The species' resiliency is likely lower than it was historically as a result of the loss of reproductive females and the species' life history (long-lived, late age to sexual maturity, low intrinsic growth rate). However, the species was not well studied historically, so there is little information (anecdotal observations) from with which to make comparisons between historical and current abundance estimates. Redundancy and representation are limited and low, respectively, since the species is considered a single population with little genetic variability or no physical barriers to movement.Future Condition The future condition of Suwannee alligator snapping turtle is described in detail in the SSA report (Service 2020, pp. 30-45). When evaluating the species' future viability, we considered the current condition of the species and the threats acting on the species to develop a model to determine future trends of species' estimated abundance. We applied six plausible scenarios that factored in the estimated abundance and threats acting on the species to project the future resiliency of the species (Table 1). Three scenarios consider conservation actions to be applied, while the remaining three scenarios project conditions with no conservation actions. To assess future conditions and the viability of the Suwannee alligator snapping turtle, we constructed a female-only, stage-structured matrix population model to project the population dynamics over 50 years. Species experts identified five primary potential threats that were likely to reduce stage-specific survival probabilities: Commercial fishing bycatch (includes entanglement, drowning, or otherwise dying from interaction with fishing gear; influenced hatchling, juvenile, and adult survival), recreational fishing bycatch (has the same impacts as commercial fishing bycatch; influenced juvenile and adult survival), hook ingestion (surviving a bycatch event but enduring the lingering effects of an ingested hook; influenced juvenile and adult survival), illegal collection (i.e , poaching; influenced hatchling, juvenile, and adult survival), and subsidized nest predators (influenced nest survival). The subsidized nest predator threat reflects additional nest depredation beyond what would be expected from common nest mesopredators (e.g , raccoons and opossums), with fire ants (Solenopsis spp.) being the primary nest predator. We used the best available information from the literature to parameterize the population matrix and elicited data from species experts to quantify stage-specific initial abundance, the spatial extent of threats, and threat-specific percent reductions to survival. To account for potential uncertainty in the effects of each threat, the six future scenarios were divided along a spectrum: Threat-induced reductions to survival were decreased by 25 percent, were unaltered, or were increased by 25 percent. To simulate conservation actions, the spatial extent of each threat was either left the same or reduced by 25 percent (Table 1). We used a fully stochastic projection model that accounted for uncertainty in demographic parameters to predict future conditions of the Suwannee alligator snapping turtle units under the six different scenarios. We then used the model output to predict the probability of extinction and quasi-extinction. Quasi-extinction is defined here as the probability that the Suwannee alligator snapping turtle population declined to less than 5 percent of the abundance in year one of the simulation (e.g , starting abundance).[[Page 18026]] Table 1--Description of Six Future Scenarios Modeled for the Suwannee Alligator Snapping Turtle's Single Population; Scenario Names Are Given in Quotation Marks------------------------------------------------------------------------ Conservation absent Conservation present------------------------------------------------------------------------Decreased Threat Magnitude.. ``Decreased ``Decreased Threats Threats'' + '' Impact of threats: Impact of threats: Reduced 25% Spatial Reduced 25% Spatial extent of threats: extent of threats: Expert-elicited. Reduced 25%.Expert-Elicited Threat ``Expert-Elicited ``Expert-Elicited Magnitude. Threats'' Threats + '' Impact of threats: Impact of threats: Expert-elicited Expert-elicited Spatial extent of Spatial extent of threats: Expert- threats: Reduced elicited. 25%.Increased Threat Magnitude.. ``Increased ``Increased Threats Threats'' + '' Impact of threats: Impact of threats: Reduced 25% Spatial Increased 25% extent of threats: Spatial extent of Expert-elicited. threats: Reduced 25%.------------------------------------------------------------------------ Suwannee alligator snapping turtle abundance was predicted to decline over the next 50 years in all six scenarios. The single population's resiliency measure also declined as abundance declined. Given the high uncertainties parameterized in the model, the species does not have a high likelihood of extinction in the basin within 50 years. However, quasi-extinction is very likely to occur in both decreased threats scenarios (after an average of 35 to 40 years), very likely to occur in both expert-elicited scenarios (after an average of 28 to 35 years), and virtually certain in both increased threats scenarios (after an average of 2 to 30 years). Resiliency continues to decline despite conservation action implementation and prohibitions on harvest. Representation and redundancy were already inherently low and limited, respectively, with a single population representing the species with little to no genetic variation or physical barriers to movement, and this limited redundancy and low representation did not change under any of the scenarios. We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. To assess the current and future condition of the species, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.Determination of Suwannee Alligator Snapping Turtle Status Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an endangered species as a species that is ``in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as a species that is ``likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The Act requires that we determine whether a species meets the definition of endangered species or threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence.Status Throughout All of Its Range After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we found that the species current condition encompasses a single population with an estimated abundance of 2,000 turtles (resiliency) distributed across most of its historical range (redundancy), and therefore, this species is not currently on the brink of extinction. Historical activities that included ***removal*** of turtles for consumption through recreational and commercial harvest continue to suppress the viability of the species despite current harvest prohibitions. There are currently about 2,000 individuals distributed throughout the entire species' range across southern Georgia and northern Florida in the Suwannee River basin (Service 2020, p. 27). Surveys indicate an overall declining population trend; however, recruitment is occurring, and juvenile to adult ratios are consistent with general predictions for long-lived turtles (Folt et al. 2016, p. 29). The threats that are acting on the species contribute to a decline in the species' viability; however, the species currently occupies much of its historical range. Given the species' longevity, the likely impacts of existing threats, and the current population size, the species is not currently in danger of extinction throughout its range. Due to the delayed age of sexual maturity and a generation time of about 28 years, the species is slow to recover from historical harvest pressures that reduced the species' viability. As the genus was recently split, the specific impact of large-scale harvest on Suwannee alligator snapping turtles is unknown; however, for Macrochelys temminckii, 22 years after M. temminckii commercial harvest ended in Georgia, surveys conducted during 2014 and 2015 in Georgia's Flint River revealed no significant change in abundance since 1989 (King et al. 2016, entire). We expect commercial harvest had a similar impact on the Suwannee alligator snapping turtle as it did on the alligator snapping turtle. Thus, despite prohibition of legal harvest of the Suwannee alligator snapping turtle in Georgia and Florida, the Suwannee alligator snapping turtle population will similarly be slow to recover. The species has experienced severe depletion in the past when the species was heavily harvested, primarily for consumption, prior to prohibitions. This past large-scale ***removal*** of large, adult turtles continues to affect the current demographics because the species has a relatively long lifespan, late age to maturity, and low fecundity with production of a single clutch every 1-2 years. The current recruitment rate has declined because of past commercial[[Page 18027]]harvest practices, which caused the large-scale loss of adult females that have the highest reproductive potential; however, successful reproduction is occurring. The species is not currently in danger of extinction due to commercial harvest; however, the species' resiliency is lower than it was historically as a result of the loss of reproductive females, low juvenile survival, and the species' life-history traits (long-lived, late age to sexual maturity, low intrinsic growth rate). The current estimated population size of 2,000 turtles provides sufficient contribution to the species' current viability through successful reproduction, albeit at a lower recruitment rate than historically, that the species is currently not in danger of extinction. Thus, after assessing the best available information, we conclude that Suwannee alligator snapping turtle is not currently in danger of extinction throughout all of its range, and endangered species status is not appropriate. When evaluating the future viability of the species, we found that the threats currently acting on the species are expected to continue across its range into the future, resulting in greater reduction of the number and distribution of reproductive individuals. This species is highly dependent upon adult female survival to maintain viable populations. Existing and ongoing threats affecting adult female survival are projected to reduce recruitment to an extent that the single population will continue to decline in the foreseeable future. While there is uncertainty regarding the rate at which population declines will occur, these threats are projected to drive the species towards extinction unless reduced. The best available information shows that the species' viability is expected to decline with the projected quasi-extinction projected to occur within the next 50 years (Service 2020, p. 41). Based on modeling results, which addressed uncertainty regarding the extent and severity of threats, resiliency is expected to decline dramatically under all scenarios. Time to quasi-extinction for the population in the models was less than 50 years for all scenarios. Regardless of whether the projected timeframe to quasi-extinction is fully accurate, the projected loss of resiliency across the range of the species will place the Suwannee alligator snapping turtle at risk of extinction across all of its range due to the inability of this species to effectively reproduce and maintain viable populations in the coming decades. Based on this information, we determine the appropriate timeframe for assessing whether this species is likely to become in danger of extinction in the foreseeable future is 50 years. Additional information regarding the model and future scenarios is available in the SSA Report, Future Conditions section (Service 2020, pp. 38-44). Recreational harvest of Macrochelys spp. was prohibited in Georgia and Florida, in 1992 and 2009 respectively, and both alligator snapping turtle species were listed as threatened under State law in both Georgia (1992) and Florida (2018). Nest predation and illegal collection are the largest unmitigated threats at this point, although these only affect approximately 10 percent and 30 percent of the range respectively according to expert elicitation. These threats based on the projection of future conditions cause about a 20-year shift in the species' resiliency, indicating these factors will act faster on the generations in the foreseeable future. There are additional environmental stressors within the Suwannee basin that include development and future climate change impacts (elevated nest temperatures, increased flooding, increased water withdrawals, etc.). Development may increase runoff of contaminants and erosion contributing to degradation of the water quality and suitable aquatic and nesting habitats. These secondary environmental stressors, such as disease, insect parasites, and contaminants from urban and ***agricultural*** runoff, would have compounding impacts that would further reduce the likelihood of continued existence of the species in the foreseeable future. Despite the implementation of the conservation actions described in the Regulatory Mechanisms and Conservation Measures sections of this proposed rule, the lag in the species' response to historical over-harvesting indicates other factors may be acting on the species or additional conservation actions are needed. The future conditions projections, which include three conservation-based scenarios, based on the female-only matrix population model indicate a 95 percent decline in 50 years and quasi-extinction in approximately 40 years under the most optimistic scenario. The model includes two conservation actions (release of 30 head-started juveniles per year or opportunistic release of 12 adults per year, each for 10 years). However, captive-rearing and release practices, including head-start programs that raise hatchlings through the first couple of years prior to release, have yet to be applied to Suwannee alligator snapping turtles to augment the species within its range. Therefore, given the future projections and threats projected to act on the Suwannee alligator snapping turtle, the species is likely to become in danger of extinction within the foreseeable future, even when considering the most optimistic scenario that includes conservation actions. Thus, after assessing the best available information, we conclude that Suwannee alligator snapping turtle is likely to become in danger of extinction in the foreseeable future throughout all of its range.Status Throughout a Significant Portion of Its Range Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in Center for Biological Diversity v. Everson, 2020 WL 437289 (D.D.C Jan. 28, 2020) (Center for Biological Diversity), vacated the aspect of the Final Policy on Interpretation of the Phrase ``Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ``Endangered Species'' and ``Threatened Species'' (79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range--that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the ``significance'' question or the ``status'' question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range. Following the court's holding in Center for Biological Diversity, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e , endangered). In undertaking this analysis for Suwannee alligator snapping turtle, we choose to address the status question first. We consider information pertaining to the geographic distribution of both the species and the threats that the species[[Page 18028]]faces to identify any portions of the range where the species is endangered. For Suwannee alligator snapping turtle, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the following threats: Illegal harvest (poaching), bycatch, habitat alteration, nest predation, and climate change. We also considered the cumulative effects acting on the species with additional stressors such as disease, parasites, and contaminants. In the current condition analysis, as described in the SSA report, expert elicitation values were provided to better understand the occurrence of the threats and the collective amount of the species' range affected (Service 2020, p. 27). The impact of the threats was estimated as a proxy for the magnitude of the threats in terms of the amount of the entire species' range affected; these estimates do not indicate the spatial distribution of the threats. Rather, they estimate the percentages of the total amount of the species' range affected by each threat noted. Bycatch from incidental hooking affects 30-75 percent of the species' range, illegal harvest affects 20-55 percent of the species' range, and nest predation affects 5-10 percent of the species' range; however, the impact of each threat is spread out and not concentrated. Therefore, we found no concentration of threats in any portion of the Suwannee alligator snapping turtle's range at a biologically meaningful scale. Thus, there are no portions of the species' range where the species has a different status from its rangewide status. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This finding is consistent with the courts' holdings in Desert Survivors v. Department of the Interior, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D Cal. Aug. 24, 2018), and Center for Biological Diversity v. Jewell, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).Determination of Status Our review of the best scientific and commercial data available indicates that the Suwannee alligator snapping turtle meets the definition of a threatened species. Therefore, we propose to list the Suwannee alligator snapping turtle as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.Available Conservation Measures Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below. The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems. Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. The plan may be revised to address continuing or new threats to the species as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened (``downlisting'') or ***removal*** from protected status (``delisting''), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan for Suwannee alligator snapping turtle will be available on our website ([*http://www.fws.gov/endangered*](http://www.fws.gov/endangered)), or from our Panama City Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT). Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g , restoration of native vegetation), research, protective regulations, adjustments to fishing techniques to reduce bycatch, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal ***lands*** because their range may occur primarily or solely on non-Federal ***lands***. Achieving recovery of these species requires cooperative conservation efforts on private, State, and Tribal ***lands***. If Suwannee alligator snapping turtle is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Florida and Georgia would be eligible for Federal funds to implement management actions that promote the protection or recovery of the Suwannee alligator snapping turtle. Information on our grant programs that are available to aid species recovery can be found at: [*http://www.fws.gov/grants*](http://www.fws.gov/grants). Although the Suwannee alligator snapping turtle is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for the species. Additionally, we invite you to submit any new information on the species whenever it becomes available and any information you may have for recovery planning purposes (see FOR FURTHER INFORMATION CONTACT). Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to[[Page 18029]]jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service. Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph may include but are not limited to management and any other landscape-altering activities on Federal ***lands*** administered by the U.S Fish and Wildlife Service, U.S ***Forest*** Service, and Department of Defense (Moody Air Force Base); issuance of section 404 Clean Water Act permits by the U.S Army Corps of Engineers; construction and maintenance of roads or highways by the Federal Highway Administration; and dams that produce hydropower by the Federal Energy Regulatory Commission. It is our policy, as published in the Federal Register on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. The discussion below regarding protective regulations under section 4(d) complies with our policy.II. Proposed Rule Issued Under Section 4(d) of the ActBackground Section 4(d) of the Act contains two sentences. The first sentence states in part that the Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S Supreme Court has noted that statutory language like ``necessary and advisable'' demonstrates a large degree of deference to the agency (see Webster v. Doe, 486 U.S 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states in part that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9. The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife or include a limited taking prohibition (see Alsea Valley Alliance v. Lautenbacher, 2007 U.S Dist. Lexis 60203 (D. Or. 2007); Washington Environmental Council v. National Marine Fisheries Service, 2002 U.S Dist. Lexis 5432 (W.D Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see State of Louisiana v. Verity, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, ``once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species'' (H.R Rep. No. 412, 93rd Cong., 1st Sess. 1973). Exercising this authority under section 4(d), we have developed a proposed rule that is designed to address the Suwannee alligator snapping turtle's specific threats and conservation needs. Although the statute does not require us to make a ``necessary and advisable'' finding with respect to the adoption of specific prohibitions under section 9, we find that this proposed rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the Suwannee alligator snapping turtle. As discussed under Summary of Biological Status and Threats, we have concluded that the Suwannee alligator snapping turtle is likely to become in danger of extinction within the foreseeable future primarily due to include illegal harvest (poaching), nest predation, habitat alteration, and hook ingestion and entanglement due to bycatch associated with recreational fishing of some species of freshwater fish. The provisions of this proposed 4(d) rule would promote conservation of the Suwannee alligator snapping turtle by discouraging illegal harvest by prohibiting take and implementing use of best management practices for activities in freshwater wetlands and riparian areas to minimize habitat alteration to the maximum extent practicable. The provisions of this proposed rule include some of the many tools that we would use to promote the conservation of Suwannee alligator snapping turtle. This proposed 4(d) rule would apply only if and when we make final the listing of Suwannee alligator snapping turtle as a threatened species. For purposes of this proposed rule, a captive Suwannee alligator snapping turtle, whether alive or dead, and any part or product, includes only those in captivity at the time of the listing or any turtle that is hatched in captivity.Provisions of the Proposed 4(d) Rule Based on the provisions of this 4(d) rule, which provide for the conservation of the species, the following actions would be prohibited across the range of the species: Importing or exporting wild-caught individuals; take (as set forth at 50 CFR 17.21(c)(1) with exceptions as discussed below); possession, sale, delivery, carrying, transporting, or shipping of unlawfully taken specimens from any source; delivering, receiving, transporting, or shipping wild-caught individuals in interstate or foreign commerce in the course of commercial activity; and selling or offering for sale wild-caught or farm brood stock individuals in interstate or foreign commerce. We also include several exceptions to these prohibitions, which along with the prohibitions are set forth under Proposed Regulation Promulgation, below. Under the Act, ``take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulation at 50 CFR 17.3 Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. This proposed 4(d) rule would provide for the conservation of Suwannee alligator snapping turtle by prohibiting intentional and incidental take, except[[Page 18030]]as otherwise authorized or permitted. Prohibiting take of the species resulting from activities, including, but not limited to: Illegal harvest (poaching), hook ingestions and entanglement due to bycatch associated with irresponsible commercial and recreational fishing of some species of freshwater fish (particularly as a result of unlawful activities and/or abandonment of equipment), and habitat alteration, will provide for the conservation of the species. The inadequacy of regulatory mechanisms also influences the viability of the species. Regulating these activities under a 4(d) rule would prevent continued declines in population abundance and decrease synergistic, negative effects from other threats; this regulatory approach will provide for the conservation of the species by improving resiliency of the single population.Prohibitions Due to the life-history characteristics of Suwannee alligator snapping turtle, specifically delayed maturity, long generation times, and relatively low reproductive output, this species cannot sustain significant collection from the wild, especially of adult females (Reed et al. 2002, pp. 8-12). An adult female harvest rate of more than 2 percent per year is considered unsustainable, and harvest of this magnitude or greater will result in significant local population declines (Reed et al. 2002, p. 9). Although both Florida and Georgia prohibit commercial and recreational harvest of Suwannee alligator snapping turtles, due to the species' demography, the overall population has not recovered from prior extensive loss of individuals due to past over-exploitation. Other protection and conservation measures vary between States. Habitat alteration is also a concern for the Suwannee alligator snapping turtle, as the species is endemic to the Suwannee River basin and its river ecosystems, including tributary waterbodies and associated wetland habitats (e.g , swamps, lakes, reservoirs, etc.), where structure (e.g , tree root masses, stumps, submerged trees, etc.) and a high percentage of canopy cover is more often selected over open water (Howey and Dinkelacker 2009, p. 589). Suwannee alligator snapping turtles spend the majority of their time in aquatic habitat; overland movements are generally restricted to nesting females and juveniles moving from the nest to water (Reed at al. 2002, p. 5). The primary causes for habitat alteration include actions that change hydrologic conditions to the extent that dispersal and genetic interchange are impeded. Some examples of activities that may alter the habitat include dredging, deadhead logging, clearing and snagging, ***removal*** of riparian cover, channelization, in-stream activities that result in stream bank erosion and siltation (e.g , stream crossings, bridge replacements, flood control structures, etc.), and changes in ***land*** use within the riparian zone of waterbodies (e.g , clearing ***land*** for ***agriculture***). Deadhead logs and fallen riparian woody debris provide refugia during low-water periods (Enge et al. 2014, p. 40), resting areas for all life stages (Ewert et al. 2006, p. 62), and important feeding areas for hatchlings and juveniles. The species' habitat needs concentrate around a freshwater ecosystem that supplies both shallower water for hatchlings and juveniles and deeper water for adults, with associated ***forested*** habitat that is free from inundation for nesting and provides structure within the waterbody. Based on the provisions of this proposed 4(d) rule, the following actions would be prohibited across the range of the species: Importing or exporting wild-caught individuals; take (as set forth at 50 CFR 17.21(c)(1) with exceptions); possession, sale, delivery, carrying, transporting, or shipping of unlawfully taken specimens from any source; delivering, receiving, transporting, or shipping wild-caught individuals in interstate or foreign commerce in the course of commercial activity; and selling or offering for sale wild-caught or first generation progeny of wild-caught individuals (currently in captivity) in interstate or foreign commerce.Exceptions to the Prohibitions We are proposing several exceptions to the prohibitions: Take incidental to any otherwise lawful activity caused by Federal and State captive breeding programs to support conservation efforts for wild populations with permitted, brood stock; construction, operation, and maintenance activities; pesticide and herbicide use; and silviculture practices and forestry activities that implement industry and/or State-approved best management practices accordingly; and maintenance dredging that affects previously disturbed portions of the maintained channel.. Captive Breeding for Conservation--The Service recognizes that captive breeding could provide an avenue for species conservation (i.e , captive rearing, head-starting, and reintroductions) by supplementing depleted populations. This includes head-starting programs, where turtles are bred and raised beyond the hatchling phase to improve survival, then released into the wild. Captive rearing for the purposes of head-starting hatchlings to release back into the wild can help mitigate losses from nest predation and parasitic insects, as well as provide individuals for reintroduction into areas with depleted turtle numbers. Such activities can help bolster population numbers by improving overall juvenile survival and may also increase genetic diversity. When brood stock is legally acquired and permitted, with proper pedigree management and disease surveillance, Federal and State agencies can implement head-start programs without putting undue stress on the wild population. All captive production programs for the purpose of reintroducing Suwannee alligator snapping turtles to the wild must also develop a Captive Propagation Plan in accordance with the Service's Captive Propagation Policy (65 FR 56916, September 20, 2000). In addition, captive breeding for conservation purposes should apply kinship-based pedigree management to avoid consequences of inbreeding or inadvertently introducing turtles with deleterious alleles into the wild population. Thus, incidental take associated with Federal and State captive-breeding programs to support conservation efforts for wild populations (i.e , head-starting) would be excepted from the prohibitions when conducted using permitted brood stock and following approved turtle husbandry practices in accordance with State regulations and U.S Fish and Wildlife Service policy Best Management Practices for Implementing Actions That Occur Near- or In-Stream--Implementing best management practices to avoid and/or minimize the effects of habitat alterations in areas that support Suwannee alligator snapping turtles would provide additional measures for conserving the species by reducing direct and indirect effects to the species. We considered that certain construction, forestry, and pesticide/herbicide management activities that occur near- and in-stream may result in ***removal*** of riparian cover or ***forested*** habitat, changes in ***land*** use within the riparian zone, or stream bank erosion and/or siltation. These actions and activities may have some minimal level of take of the Suwannee alligator snapping turtle, but any such take is expected to be rare and insignificant and is not expected to negatively impact the species' conservation and recovery efforts. Rather, we expect they would have a net beneficial effect on the species.[[Page 18031]]Construction, operation, and maintenance activities such as installation of stream crossings, replacement of existing in-stream structures (e.g , bridges, culverts, water control structures, boat launches, etc.), operation and maintenance of existing flood control features (or other existing structures), and directional boring, when implemented with industry and State-approved standard best management practices will have minimal impacts to Suwannee alligator snapping turtles and their habitat. In addition, silviculture practices and forestry management activities that follow State-approved best management practices to protect water and sediment quality and stream and riparian habitat will not impair the species' conservation. Lastly, invasive species ***removal*** activities, particularly through pesticide and herbicide application, are considered beneficial to the native ecosystem and are likely to improve habitat conditions for the species; therefore, pesticide and herbicide application that follow the chemical label and appropriate application rates would not impair the species' conservation. These activities should have minimal impacts to Suwannee alligator snapping turtles if industry and/or State-approved best management practices are implemented. These activities and management practices should be carried out in accordance with any existing regulations, permit and label requirements, and best management practices to avoid or minimize impacts to the species and its habitat. Thus, under this proposed 4(d) rule, incidental take associated with the following activities are excepted: (1) Construction, operation, and maintenance activities that occur near- and in-stream, such as installation of stream crossings, replacement of existing in-stream structures (e.g , bridges, culverts, water control structures, boat launches, etc.), operation and maintenance of existing flood control features (or other existing structures), and directional boring, when implemented with industry and/or State-approved best management practices for construction, (2) Pesticide and herbicide application that follow the chemical label and appropriate application rates, and, (3) Silviculture practices and ***forest*** management activities that use State-approved best management practices to protect water and sediment quality and stream and riparian habitat. Maintenance Dredging of Navigable Waterways--We considered that maintenance dredging activities generally disturb the same area of the waterbody in each cycle; thus, there is less likelihood that suitable turtle habitat (e.g , submerged logs, cover, etc.) occurs in the maintained portion of the channel. Accordingly, incidental take associated with maintenance dredging activities that occur within the previously disturbed portion of the navigable waterway is excepted from the prohibitions as long as they do not encroach upon suitable turtle habitat outside the maintained portion of the channel and provide for the conservation of the species. Tribal employees--When acting in the course of their official duties, Tribal employees designated by the Tribe for such purposes, working in the range of the species, may take alligator snapping turtle for the following purposes: (A) Aiding or euthanizing sick or injured alligator snapping turtles; (B) Disposing of a dead specimen; and (C) Salvaging a dead specimen that may be used for scientific study. Such take must be reported to the local Service field office within 72 hours, and specimens may be disposed of only in accordance with directions from the Service. State-licensed wildlife rehabilitation facilities--When acting in the course of their official duties, State licensed wildlife rehabilitation facilities may take alligator snapping turtle for the purpose of aiding or euthanizing sick or injured alligator snapping turtles. Such take must be reported to the local Service field office within 72 hours, and specimens may be retained and disposed of only in accordance with directions from the Service. We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32 With regard to threatened wildlife, a permit may be issued for the following purposes: Scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act. We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Service in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Service shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve Suwannee alligator snapping turtle that may result in otherwise prohibited take without additional authorization. We are also considering an exception for incidental take of the Suwannee alligator snapping turtle associated with bycatch from otherwise lawful recreational and commercial fishing. We note that Suwannee alligator snapping turtle bycatch from recreational and commercial fishing with hoop nets and trot lines (and varieties including jug lines, bush hooks, and limb lines) is a concern for the conservation of the species due to its effects on species abundance, particularly in light of the species' life-history traits. However, there is limited information on the magnitude, temporal, and spatial distribution of this threat across the species' range. It is important to ensure that fishing activities take into consideration the need to prevent accidental turtle deaths from the use of such fishing gear, and we will work with the States to identify measures and revisions to existing regulations to reduce bycatch of Suwannee alligator snapping turtle. If we conclude that the measures and/or revisions to existing regulations would provide for the conservation of the species, we may include a provision in the final 4(d) rule excepting incidental take associated with legal recreational or commercial fishing activities for other ***targeted*** species, in compliance with State regulations, if such an exception is appropriate in light of comments and new information received. Also, in order to better understand threats associated with bycatch related to otherwise lawful fishing, we are considering adding a provision to the 4(d) rule that will require all injured or dead Suwannee alligator snapping turtles resulting from bycatch from recreational or commercial fishing (for[[Page 18032]]other ***targeted*** species) in accordance with State regulations be reported to the Service within 72 hours. We specifically request comments on these provisions we are considering. Future conservation efforts may be appropriate through advances in fishing gear technology that implement effective turtle escape or exclusion devices for hoop nets or modified trot lines (including limb lines and jug lines) that would reduce or eliminate turtle bycatch. Thus, we are requesting information from the public, especially the commercial and recreational fishing communities, to design a turtle escape or exclusion device and modified trot line techniques that would effectively eliminate or significantly reduce bycatch of alligator snapping turtles from recreational fishing. Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the Suwannee alligator snapping turtle. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service, where appropriate. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see Information Requested, above). Since we are proposing a threatened status for the Suwannee alligator snapping turtle and this proposed rule outlines the protections in section 9(a)(1) of the Act that we are extending to this species pursuant to section 4(d), we are identifying those activities that would or would not constitute a violation of either section 9(a)(1), and accordingly, this proposed 4(d) rule. Based on the best available information, at this time, the excepted activities as discussed above would not be considered to result in a violation this 4(d) rule. On the other hand, based on the best available information, if this proposed rule is adopted, the following actions may potentially result in a violation this rule: (1) Unauthorized handling, collecting, possessing, selling, delivering, carrying, or transporting of the Suwannee alligator snapping turtle, including interstate transportation across State lines and import or export across international boundaries. (2) Unreported incidents of dead or injured turtles from bycatch associated with commercial or recreational fishing in accordance with State regulations; or bycatch due to fishing activities not in accordance with State regulations. (3) Non-release of incidentally hooked or entangled turtles from commercial or recreational fishing gear, considering human safety concerns; (4) Destruction/alteration of the species' habitat by ***removing*** deadhead logs or changing the hydrology of an occupied waterbody not in according to local, State, or Federal regulations or relevant best management practices; and (5) Discharge of chemicals or fill material into any waters in which Suwannee alligator snapping turtle is known to occur. Questions regarding whether specific activities would constitute a violation of this rule should be directed to the Panama City Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).III. Critical HabitatBackground Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (a) Essential to the conservation of the species, and (b) Which may require special management considerations or protection; and (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e , range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g , migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the Federal Register on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.Prudency Determination Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12), require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances: (i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species; (ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act; (iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for[[Page 18033]]a species occurring primarily outside the jurisdiction of the United States; (iv) No areas meet the definition of critical habitat; or (v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.Increased Degree of Threat to the Suwannee Alligator Snapping Turtle After evaluating the status of the species and considering the threats acting on the species, we find the designation of critical habitat would not be prudent for Suwannee alligator snapping turtle because the species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of such threat to the species. Many species of aquatic turtles, including alligator snapping turtle species, are collected for the pet trade and personal consumption in the United States and internationally. The Suwannee alligator snapping turtle is declining throughout its range as a consequence of factors including collection of live adult turtles from the wild for human consumption and for the pet trade. Adult alligator snapping turtles are harvested for local human consumption and for use in the specialty meat trade both domestically and internationally. Prior to 2006, up to 23,780 M. temminckii per year were exported from the United States (70 FR 74700, December 16, 2005). Harvest and trade of mature, breeding adults can rapidly become unsustainable because of the species' life history and reproductive strategy. When recreational and commercial harvest were both allowed for Suwannee alligator snapping turtles, the over-exploitation over several decades severely depleted many local subpopulations and altered the demographic structure (70 FR 74701, December 16, 2005). Designation of critical habitat requires the publication of maps and a narrative description of specific critical habitat areas in the Federal Register. We are concerned that designation of critical habitat would more widely announce the exact locations of Suwannee alligator snapping turtles and their highly suitable habitat that may facilitate poaching and contribute to further declines of the species' viability. Moreover, as species become rarer and more difficult to obtain, the monetary value increases, thus driving increased collection pressure on remaining wild individuals. We anticipate that listing Suwannee alligator snapping turtle under the Act may promote further interest in black market sales of the turtles and increase the likelihood that Suwannee alligator snapping turtles will be sought out for turtle meat consumption and also for the pet trade as demand rises. The ***removal*** of the species by taking is expected to increase if we identify critical habitat; thus, we find that designation of critical habitat for Suwannee alligator snapping turtle is not prudent.Required DeterminationsClarity of the Rule We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must: (1) Be logically organized; (2) Use the active voice to address readers directly; (3) Use clear language rather than jargon; (4) Be divided into short sections and sentences; and (5) Use lists and tables wherever possible. If you feel that we have not met these requirements, send us comments by one of the methods listed in ADDRESSES. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.National Environmental Policy Act (42 U.S.C 4321 et seq.) We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C 4321 et seq.), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244).Government-to-Government Relationship With Tribes In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal ***lands*** are not subject to the same controls as Federal public ***lands***, to remain sensitive to Indian culture, and to make information available to Tribes. Upon the initiation of the SSA process, we contacted Tribes within the range of Suwannee alligator snapping turtle and additional Tribes of interest to inform them of our intent to complete an SSA for the species that would inform the species' 12-month finding. In addition, as described above under Tribal employees, the proposed rule would authorize certain take by Tribes. As we move forward with this listing process, we will continue to consult with Tribes on a government-to-government basis as necessary.References Cited A complete list of references cited in this rulemaking is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) in Docket No. FWS-R4-ES-2021-0007 and upon request from the Panama City Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).Authors The primary authors of this proposed rule are the staff members of the Service's Species Assessment Team and the Panama City Ecological Services Field Office.List of Subjects in 50 CFR Part 17 Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Proposed Regulation Promulgation Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:PART 17--ENDANGERED AND THREATENED WILDLIFE AND PLANTS01. The authority citation for part 17 continues to read as follows: Authority: 16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.02. In Sec. 17.11(h), add an entry for ``Turtle, Suwannee alligator snapping''[[Page 18034]]to the List of Endangered and Threatened Wildlife in alphabetical order under Reptiles to read as set forth below:Sec. 17.11 Endangered and threatened wildlife.\* \* \* \* \* (h) \* \* \*---------------------------------------------------------------------------------------------------------------- Listing citations and Common name Scientific name Where listed Status applicable rules---------------------------------------------------------------------------------------------------------------- \* \* \* \* \* \* \* Reptiles \* \* \* \* \* \* \*Turtle, Suwannee alligator Macrochelys Wherever found.... T [Federal Register snapping. suwanniensis. CITATION OF THE FINAL RULE]; 50 CFR 17.42(k). \4d\ \* \* \* \* \* \* \*----------------------------------------------------------------------------------------------------------------03. Amend Sec. 17.42 by adding paragraph (k) to read as set forth below:Sec. 17.42 Special rules--reptiles.\* \* \* \* \* (k) Suwannee alligator snapping turtle (Macrochelys suwanniensis)--(1) Prohibitions. The following prohibitions that apply to endangered wildlife also apply to Suwannee alligator snapping turtle. Except as provided under paragraph (k)(2) of this section and Sec. Sec. 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species: (i) Import or export, as set forth at Sec. 17.21(b) for endangered wildlife. (ii) Take, as set forth at Sec. 17.21(c)(1) for endangered wildlife. (iii) Possession and other acts with unlawfully taken specimens, as set forth at Sec. 17.21(d)(1) for endangered wildlife. (iv) Interstate or foreign commerce in the course of commercial activity, as set forth at Sec. 17.21(e) for endangered wildlife. (v) Sale or offer for sale, as set forth at Sec. 17.21(f) for endangered wildlife. (2) Exceptions from prohibitions. In regard to this species, you may: (i) Conduct activities as authorized by a permit under Sec. 17.32 (ii) Take, as set forth at Sec. 17.21(c)(2) through (4) for endangered wildlife. (iii) Take as set forth at Sec. 17.31(b). (iv) Possess and engage in other acts with unlawfully taken wildlife, as set forth at Sec. 17.21(d)(2) for endangered wildlife. (v) Take incidental to an otherwise lawful activity caused by: (A) Federal and State captive-breeding programs to support conservation efforts for wild populations that use permitted brood stock and approved turtle husbandry practices in accordance with State regulations and U.S Fish and Wildlife Service policy. (B) Construction, operation, and maintenance activities that occur near- and in-stream, such as installation of stream crossings, replacement of existing in-stream structures (e.g , bridges, culverts, water control structures, boat launches, etc.), operation and maintenance of existing flood control features (or other existing structures), and directional boring, when implemented with industry and/or State-approved best management practices for construction. (C) Pesticide and herbicide application that follow the chemical label and appropriate application rates. (D) Silviculture practices and ***forest*** management activities that use State-approved best management practices to protect water and sediment quality and stream and riparian habitat. (E) Maintenance dredging activities that remain in the previously disturbed portion of the maintained channel. (vi) When acting in the course of their official duties, Tribal employees designated by the Tribe for such purposes may take Suwannee alligator snapping turtle for the following purposes: (A) Aiding or euthanizing sick or injured Suwannee alligator snapping turtles; (B) Disposing of a dead specimen; and (C) Salvaging a dead specimen that may be used for scientific study. Such take must be reported to the local Service field office within 72 hours, and specimens may be disposed of only in accordance with directions from the Service. (vii) State-licensed wildlife rehabilitation facilities, when acting in the course of their official duties, may take Suwannee alligator snapping turtle for the purpose of aiding or euthanizing sick or injured Suwannee alligator snapping turtles. Such take must be reported to the local Service field office within 72 hours and specimens may be retained and disposed of only in accordance with directions from the Service.Martha Williams,Principal Deputy Director, Exercising the Delegated Authority of the Director, U.S Fish and Wildlife Service.[FR Doc. 2021-06946 Filed 4-6-21; 8:45 am]BILLING CODE 4333-15-P

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[***-University of Connecticut: Op-Ed: American Environmentalism's Racist Roots Have Shaped Global Thinking About Conservation***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60V9-BM91-F0K1-N1SR-00000-00&context=1516831)

ENP Newswire

September 15, 2020 Tuesday

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**Body**

The United States is having a long-overdue national reckoning with racism. From criminal justice to pro sports to pop culture, Americans increasingly are recognizing how racist ideas have influenced virtually every sphere of life in this country.

This includes the environmental movement. Recently the Sierra Club - one of the oldest and largest U.S. conservation organizations - acknowledged racist views held by its founder, author and conservationist John Muir. In some of his writing, Muir described Native Americans and Black people as dirty, lazy and uncivilized. In an essay collection published in 1901 to promote national parks, he assured prospective tourists that 'As to Indians, most of them are dead or civilized into useless innocence.'

Acknowledging this record, Sierra Club Executive Director Michael Brune wrote in July 2020: 'As defenders of Black life pull down Confederate monuments across the country, we must...reexamine our past and our substantial role in perpetuating white supremacy.'

This is a salutary gesture. However, I know from my research on conservation policy in places like India, Tanzania and Mexico that the problem isn't just the Sierra Club.

American environmentalism's racist roots have influenced global conservation practices. Most notably, they are embedded in longstanding prejudices against local communities and a focus on protecting pristine wildernesses. This dominant narrative pays little thought to indigenous and other poor people who rely on these ***lands*** - even when they are its most effective stewards.

Racist legacies of nature conservation

Muir was not the first or last American conservationist to hold racist views. Decades before Muir set foot in California's Sierra Nevada. John James Audubon published his 'Birds of America' engravings between 1827 and 1838. Audubon was a skilled naturalist and illustrator - and a slaveholder.

Audubon's research benefited from information and specimens collected by enslaved Black men and Indigenous people. Instead of recognizing their contributions, Audubon referred to them as 'hands' traveling along with white men. The National Audubon Society has removed Audubon's biography from its site, referring to Audubon's involvement in the slave trade as 'the challenging parts of his identity and actions.' The group also condemned 'the role John James Audubon played in enslaving Black people and perpetuating white supremacist culture.'

Theodore Roosevelt, who is widely revered as the first environmental president, was an enthusiastic hunter who led the Smithsonian-Roosevelt African Expedition to Kenya in 1909-1910. During this 'shooting trip,' Roosevelt and his party killed more than 11,000 animals, including elephants, hippopotamuses and white rhinos.

The predominant view is that Roosevelt's love of hunting was good for nature because it fueled his passion for conservation. But this paradigm underpins what I see as a modern racist myth: the view that trophy hunting - wealthy hunters buying government licenses to shoot big game and keep whatever animal parts they choose - pays for wildlife conservation in Africa. In my assessment, there is little evidence to support such claims about trophy hunting, which reinforce exploitative models of conservation by ***removing*** local communities from ***lands*** set aside as hunting reserves.

Ecologist Aldo Leopold, who is viewed as the father of wildlife management and the U.S. wilderness system, was an early proponent of the argument that overpopulation is the root cause of environmental problems. This view implies that economically less-developed nations with large populations are the biggest threats to conservation.

Contemporary advocates of wildlife conservation, such as Britain's Prince William, continue to rely on the trope that 'Africa's rapidly growing human population' threatens the continent's wildlife. Famed primatologist Jane Goodall also blamed our current environmental challenges in part on overpopulation.

However, the argument that population growth alone is responsible for environmental damage is problematic. Many studies have concluded that conspicuous consumption and the energy-intensive lifestyles of wealthy people in advanced economies have a much larger impact on the environment than actions by poor people. For example, the richest 10% of the world's population produces almost as much greenhouse gas ***emissions*** as the bottom 90% combined.

Local communities are often written out of popular narratives on nature conservation. Many documentaries, such as the 2020 film 'Wild Karnataka,' narrated by David Attenborough, entirely ignore local Indigenous people, who have nurtured the natural heritages of the places where they live. Some of the most celebrated footage in wildlife documentaries made by filmmakers like Attenborough is not even shot in the wild. By relying on fictional visuals, they reproduce racialized structures that render local people invisible.

Fortress Conservation

The wilderness movement founded by Anglo-American conservationists is institutionalized in the form of national parks. Writer and historian Wallace Stegner famously called national parks 'the best idea we ever had. Absolutely American, absolutely democratic, they reflect us at our best rather than our worst.'

But many national parks and other ***lands*** set aside for wilderness conservation are also the ancestral homelands of Native peoples. These communities were forced off their ***lands*** during European colonization of North America.

Similar injustices continued to unfold even after independence in other parts of the world. When I analyzed a data set of 137 countries, I found that the largest areas of national parks were set aside in countries with high levels of economic inequality and poor or nonexistent democratic institutions. The poorest countries - including the Republic of the Congo, Namibia, Tanzania and Zambia - had each set aside more than 30% of national territories exclusively for wildlife and biodiversity conservation.

This happens because corrupt government officials and commercial tourism and safari operators can benefit from it. So do hunters, researchers and documentary filmmakers from the Global North, even as local communities are forbidden from hunting bush meat for family consumption.

Critics call this strategy 'fortress conservation.' According to some estimates, Indigenous and rural communities protect up to 80% of global biodiversity, but receive little benefit in return.

Better Models

Correcting this legacy can happen only by radically transforming its exclusionary approach. Better and scientifically robust strategies recognize that low-intensity human interventions in nature practiced by Indigenous peoples can conserve landscapes more effectively than walling them off from use.

For example, I have studied ***forested*** regions of central India that are home to Indigenous Baiga communities. Baigas practice subsistence farming that involves few or no chemical fertilizers and controlled use of fire. This form of ***agriculture*** creates open grasslands that support endangered native herbivores like deer and antelopes. These grasslands are the main habitat for India's world-renowned Kanha National Park and Tiger Reserve.

Ecologists have shown that natural landscapes interspersed with low-intensity subsistence ***agriculture*** can be most effective for biodiversity conservation. These multiple-use landscapes provide social, economic and cultural support for Indigenous and rural communities.

My research shows that when governments enact socially just nature conservation policies, such as community forestry in Mexico, they are better able to handle conflicts over use of these resources. Socially just nature conservation is possible under two main conditions: Indigenous and rural communities have concrete stakes in protecting those resources and can participate in policy decisions.

Nonetheless, conservation institutions and policies continue to exclude and discriminate against Indigenous and rural communities. In the long run, it is clear to me that conservation will succeed only if it can support the goal of a dignified life for all humans and nonhuman species.

Originally published in The Conversation.

[Editorial queries for this story should be sent to [*newswire@enpublishing.co.uk*](mailto:newswire@enpublishing.co.uk) ]

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[***Federal Register: Endangered and Threatened Wildlife and Plants; Reclassification of the Red-Cockaded Woodpecker From Endangered to Threatened With a Section 4(d) Rule Pages 63474 - 63499 [FR DOC #2020-21510]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6118-7DF1-F0YC-N47D-00000-00&context=1516831)

Impact News Service

October 8, 2020 Thursday

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R4-ES-2019-0018; FXES11130900000-190-FF09320000]RIN 1018-BE09Endangered and Threatened Wildlife and Plants; Reclassification of the Red-Cockaded Woodpecker From Endangered to Threatened With a Section 4(d) RuleAGENCY: Fish and Wildlife Service, Interior.ACTION: Proposed rule.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service), propose to reclassify the red-cockaded woodpecker (Dryobates (= Picoides) borealis) as a threatened species with a rule issued under section 4(d) of the Endangered Species Act of 1973 (Act), as amended. If we finalize this rule as proposed, it would reclassify the red-cockaded woodpecker from endangered to threatened on the List of Endangered and Threatened Wildlife (List). This proposal is based on a thorough review of the best available scientific and commercial data, which indicate that the species' status has improved such that it is not currently in danger of extinction throughout all or a significant portion of its range. We are also proposing a rule under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of the red-cockaded woodpecker. In addition, we correct the[[Page 63475]]List to reflect that Picoides is not the current scientifically accepted generic name for this species. We seek information, data, and comments from the public regarding this proposal.DATES: We will accept comments received or postmarked on or before December 7, 2020. Comments submitted electronically using the Federal eRulemaking Portal (see ADDRESSES, below) must be received by 11:59 p.m Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by November 23, 2020.ADDRESSES: You may submit comments by one of the following methods: (1) Electronically: Go to the Federal eRulemaking Portal: [*http://www.regulations.gov*](http://www.regulations.gov). In the Search box, enter FWS-R4-ES-2019-0018, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rule box to locate this document. You may submit a comment by clicking on ``Comment Now!'' (2) By hard copy: Submit by U.S mail or hand-delivery to: Public Comments Processing, Attn: FWS-R4-ES-2019-0018, U.S Fish and Wildlife Service, MS: JAO/1N, 5275 Leesburg Pike, Falls Church, VA 22041-3803. We request that you send comments only by the methods described above. We will post all comments on [*http://www.regulations.gov*](http://www.regulations.gov). This generally means that we will post any personal information you provide us (see Information Requested, below, for more information). Availability of supporting materials: This proposed rule and supporting documents (including the species status assessment report and references cited) are available at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018 and at the Southeast Regional Office (see FOR FURTHER INFORMATION CONTACT).FOR FURTHER INFORMATION CONTACT: Aaron Valenta, Chief, Division of Restoration and Recovery, U.S Fish and Wildlife Service, Southeast Regional Office, 1875 Century Boulevard, Atlanta, GA 30345; telephone 404-679-4144. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.SUPPLEMENTARY INFORMATION:Executive Summary Why we need to publish a rule. Under the Act, a species may warrant reclassification from endangered to threatened if it no longer meets the definition of an endangered species. The red-cockaded woodpecker is listed as endangered, and we are proposing to reclassify it as threatened because we have determined it is no longer in danger of extinction throughout all or a significant portion of its range. However, we have determined that the species meets the definition of a threatened species, in that it is in danger of extinction in the foreseeable future throughout all of its range. We may only list, reclassify, or delist a species by issuing a rule to do so; therefore, for the red-cockaded woodpecker, we must first publish a proposed rule in the Federal Register to reclassify the species and request public comments on the proposal. Furthermore, take prohibitions of section 9 of the Act can only be applied to threatened species by issuing a section 4(d) rule. Finally, we are changing the scientific name of the red-cockaded woodpecker in the List of Endangered and Threatened Wildlife from Picoides borealis to Dryobates borealis, and such action can only be taken by issuing a rule. The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species based on any one or a combination of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. The factors for downlisting a species (changing its status from endangered to threatened) are the same as for listing it. We have determined that the red-cockaded woodpecker is no longer at risk of extinction and, therefore, does not meet the definition of endangered, but it is still affected by the following current and ongoing stressors to the extent that the species meets the definition of a threatened species under the Act: Lack of suitable roosting, nesting, and foraging habitat due to legacy effects from historical logging, incompatible ***forest*** management, and conversion of ***forests*** to urban and ***agricultural*** uses (Factor A). Fragmentation of habitat, with resulting effects on genetic variation, dispersal, and connectivity to support demographic populations (Factor A). Stochastic events such as hurricanes, ice storms, and wildfires, exacerbated by the environmental effects of climate change (Factor E). Small populations (Factor E). We are also proposing a section 4(d) rule. When a species is listed as threatened, section 4(d) of the Act allows for the issuance of regulations that are necessary and advisable to provide for the conservation of the species. Accordingly, we are proposing a 4(d) rule for the red-cockaded woodpecker that would, among other things, prohibit incidental take associated with actions that would result in the further loss or degradation of red-cockaded woodpecker habitat, including impacts to cavity trees, actions that would harass red-cockaded woodpeckers during breeding season, and use of insecticides near clusters. The section 4(d) rule would also prohibit incidental take associated with the installation of artificial cavities and inspections of cavity contents, unless covered under a section 10(a)(1)(A) permit. The section 4(d) rule would also, among other things, except from prohibitions incidental take associated with conservation or habitat restoration activities carried out in accordance with a Service- or State-approved management plan providing for red-cockaded woodpecker conservation, incidental take associated with red-cockaded woodpecker management and military training activities on Department of Defense installations with a Service-approved integrated natural resources management plan, certain actions that would harm or harass red-cockaded woodpeckers during breeding season associated with existing infrastructure that are not increases in the existing activities, and activities authorized by a permit under Sec. 17.32 Peer Review. In accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of six appropriate specialists regarding the species status assessment (SSA) report that informed this proposed rule. The purpose of peer review is to ensure that our reclassification determination is based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise in: (1) The life history and population dynamics of the red-cockaded woodpecker; (2) fire ecology and ***forest*** habitat conditions; and (3) conservation management.Information Requested We intend that any final action resulting from this proposed rule will be based on the best scientific and[[Page 63476]]commercial data available and be as accurate and as effective as possible. Therefore, we request comments and information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested party concerning this proposed rule. We particularly seek comments on: (1) Information concerning the biology and ecology of the red-cockaded woodpecker. (2) Relevant data concerning any stressors (or lack thereof) to the red-cockaded woodpecker, particularly the effects of habitat loss, small populations, habitat fragmentation, and hurricanes and other severe natural events. (3) Current or planned activities within the geographic range of the red-cockaded woodpecker that may negatively impact or benefit the species. (4) Reasons why we should or should not reclassify the red-cockaded woodpecker from an endangered species to a threatened species under the Act (16 U.S.C 1531 et seq.). (5) Information about current or proposed ***land*** management plans and conservation plans for the red-cockaded woodpecker, and whether they may negatively impact or benefit the species, including the likelihood of such plans and their associated management activities persisting into the future. (6) Information on regulations that are necessary and advisable for the conservation and management of the red-cockaded woodpecker and that the Service can consider in developing a 4(d) rule for the species, including whether the measures outlined in the proposed 4(d) rule are necessary and advisable for the conservation of the red-cockaded woodpecker. We particularly seek comments concerning: (a) The extent to which we should include any of the section 9 prohibitions in the 4(d) rule, including whether there are additional activities or management actions that should be prohibited or excepted from the prohibitions for incidental take of the red-cockaded woodpecker; (b) Whether it is appropriate to prohibit use of insecticides and herbicides on standing pine trees within 0.50 mile from the center of an active cavity tree cluster, including whether the spatial area covered by this prohibition is appropriate; (c) Whether it is appropriate to prohibit operations conducted near active cavity trees that render cavity trees unusable to red-cockaded woodpeckers, and what types of operations and actions should be included in this prohibition; (d) Whether any other forms of take should be excepted from the prohibitions in the 4(d) rule, including activities that should be excepted from the prohibitions for incidental take of the red-cockaded woodpecker once a property is being managed in accordance with a Service- or State-approved management plan, and what factors should be included in a Service- or State-approved management plan; (e) What additional conditions, if any, should be placed upon State-approved management plans such that they provide adequate protection to red-cockaded woodpeckers, for example, the type and extent of monitoring and reporting to the Service; (f) Whether an exception should be made for habitat regeneration activities without a Service- or State-approved management plan, and what limiting conditions should be placed on such activities; (g) Whether it is appropriate to except from the prohibitions red-cockaded woodpecker management and military training activities on Department of Defense installations with a Service-approved integrated natural resources management plan; (h) Whether the installation of artificial cavities should be excepted from the prohibitions for incidental take of red-cockaded woodpecker for individuals who have completed training and have achieved a certain level of proficiency, and what that training and proficiency should be; and, (i) Whether there are additional provisions the Service may wish to consider for the 4(d) rule in order to conserve, recover, and manage the red-cockaded woodpecker. Please include sufficient information (such as scientific journal articles, or other credible publications) to allow the Service to verify any scientific or commercial information you include. (7) Whether the red-cockaded woodpecker warrants delisting. Please note that submissions merely stating support for or opposition to the listing action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made ``solely on the basis of the best scientific and commercial data available.'' You may submit your comments and materials concerning this proposed rule by one of the methods listed in ADDRESSES. We request that you send comments only by the methods described in ADDRESSES. If you submit information via [*http://www.regulations.gov*](http://www.regulations.gov), your entire submission--including any personal identifying information--will be posted on the website. If your submission is made via hard copy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on [*http://www.regulations.gov*](http://www.regulations.gov). Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on [*http://www.regulations.gov*](http://www.regulations.gov), or by appointment, during normal business hours, at the U.S Fish and Wildlife Service, Southeast Regional Office (see FOR FURTHER INFORMATION CONTACT).Public Hearing Section 4(b)(5)(E) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in DATES. Such requests must be sent to the address shown in FOR FURTHER INFORMATION CONTACT. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the Federal Register at least 15 days before the hearing.Previous Federal Actions The red-cockaded woodpecker was listed as endangered on October 13, 1970 (35 FR 16047) under the Endangered Species Conservation Act of 1969, and received Federal protection with the passage of the Endangered Species Act in 1973. The most recent revision to the red-cockaded woodpecker recovery plan was released on January 27, 2003 (USFWS 2003, entire; see 68 FR 13710, March 20, 2003). The latest 5-year review was completed on October 5, 2006 (USFWS 2006 entire); that 5-year review did not recommend changing the classification of the red-cockaded woodpecker. However, since the 5-year review, we have acquired new information and conducted a thorough analysis, documented in an SSA report (USFWS 2020, entire). We also initiated another 5-year review for the species on August 6, 2018 (83 FR 38320); because we have determined the species now meets the definition of a threatened species under the Act, this proposed rule will equate to our 5-year review.[[Page 63477]]Background A thorough review of the taxonomy, life history, ecology, and overall viability of the red-cockaded woodpecker is presented in the SSA report (USFWS 2020, entire; available at [*https://www.fws.gov/southeast*](https://www.fws.gov/southeast)/ and at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018). Below is a summary of the information presented in the SSA report. For further details, please refer to the SSA report.Species Description and Needs The red-cockaded woodpecker is a territorial, non-migratory bird species that makes its home in mature pine ***forests*** in the southeastern United States. Once a common bird distributed contiguously across the southeastern United States, the red-cockaded woodpecker's rangewide estimates made around the time of listing in 1970 indicated a decline to fewer than 10,000 individuals (approximately 1,500 to 3,500 active clusters; an aggregate of cavity trees used by a group of woodpeckers for nesting and roosting) in widely scattered, isolated, and declining populations (Jackson 1971, pp. 12-20; Jackson 1978, entire; USFWS 1985, p. 22; Ligon et al. 1986, pp. 849-850). Due to changes in how red-cockaded woodpecker populations have been defined and surveyed over the years and with more comprehensive surveys over time, it is difficult to make accurate comparisons today with the species' status when it was listed. The species continued to decline even after listing until the early-1990s. However, by 1995, the red-cockaded woodpecker population had increased to about 4,694 active clusters or active territories rangewide (Costa and Walker 1995, p. 86). Today, the Service's conservative estimate is about 7,800 active clusters rangewide (USFWS 2020, pp. 14, 106-108), between 2 and 5 times the number of clusters at the time of listing. Red-cockaded woodpeckers were once common throughout open, fire-maintained pine ecosystems, particularly longleaf pine that covered approximately 92 million acres before European settlement (Frost 1993, p. 20). The birds inhabited the open pine ***forests*** of the Southeast from New Jersey, Maryland, and Virginia to Florida, and west to Texas and north to portions of Oklahoma, Missouri, Tennessee, and Kentucky (Jackson 1971, entire). Original pine ***forests*** were old and open, and contained a structure dominated by two layers, a canopy and diverse herbaceous ground cover, maintained by frequent low-intensity fire (Brockway et al. 2006, pp. 96-98). Both the longleaf pine and other open pine ecosystems were eliminated from much of their original range because of early (1700s) European settlement, widespread commercial timber harvesting, and the naval stores/turpentine industry (1800s). Early to mid-1900 commercial tree farming, urbanization, and ***agriculture*** contributed to further declines. Much of the remaining habitat is very different from the vast, historical pine ***forests*** in which the red-cockaded woodpecker evolved. The second growth longleaf pine ***forests*** of today, rather than being dominated by centuries-old trees as the original ***forests*** were, are just reaching that age (90-100 years) required to meet all the needs of the red-cockaded woodpecker. Furthermore, in many cases, the absence of fire has caused the original open savannahs to degrade into dense pine/hardwood ***forest***. Much of today's ***forest*** is young and dense, and dominated by loblolly pine, with a substantial hardwood component and little or no herbaceous groundcover (Noel et al. 1998, entire; Frost 2006, pp. 37-38). Nesting and roosting habitat of red-cockaded woodpeckers varies across the species' range. The largest populations tend to occur in the longleaf pine woodlands and savannahs of the East Gulf Coastal Plain, South Atlantic Coastal Plain, Mid-Atlantic Coastal Plain, and Carolina Sandhills (Carter 1971, p. 98; Hooper et al. 1982, entire; James 1995, entire; Engstrom et al. 1996, p. 334). The shortleaf/loblolly ***forests*** of the Piedmont, Cumberlands, and Ouachita Mountain regions (Mengel 1965, pp. 306-308; Sutton 1967, pp. 319-321; Hopkins and Lynn 1971, p. 146; Steirly 1973, p. 80) are another important habitat type. Red-cockaded woodpeckers also occupy a variety of additional pine habitat types at the edges of their range, including slash (Pinus elliottii), pond (P. serotina), pitch (P. rigida), and Virginia pines (P. virginiana) (Steirly 1957, entire; Lowery 1974, p. 415; Mengel 1965, pp. 206-308; Sutton 1967, pp. 319-321; Jackson 1971, pp. 12-20; Murphy 1982, entire). Where multiple pine species exist, red-cockaded woodpeckers appear to prefer longleaf pine (Lowery 1974, p. 415; Hopkins and Lynn 1971, p. 146; Jackson 1971, p. 15; Bowman and Huh 1995, pp. 415-416). The red-cockaded woodpecker is a relatively small woodpecker. Adults measure 20 to 23 centimeters (8 to 9 inches) and weigh roughly 40 to 55 grams (1.5 to 1.75 ounces) (Jackson 1994, p. 3; Conner et al. 2001, pp. 53-54). Both male and female adult red-cockaded woodpeckers are black and white with a ladder back and large white cheek patches. These cheek patches distinguish red-cockaded woodpeckers from all other woodpeckers in their range. The red ``cockade'' of the species' common name is actually a tiny red streak on the upper cheek of males that is very difficult to see in the field. Red-cockaded woodpeckers were first described as Picus borealis (Vieillot 1807, p. 66). The species' English common name is a reference to the several red feathers on the cheek of males, which are briefly displayed when the male is excited (Wilson 1810, p. 103). The original rule identifying the red-cockaded woodpecker as an endangered species (35 FR 16047; October 13, 1970) listed its scientific name as Dendrocopus borealis, based on the American Ornithological Union (AOU) 1946 22nd supplement to the 4th AOU checklist edition (AOU 1947, p. 449). The AOU 6th edition (AOU 1982, p. 10CC) classified the species as Picoides borealis, the scientific name under which the red-cockaded woodpecker is currently identified in the Federal List of Endangered and Threatened Wildlife (List). The AOU has since merged with the Cooper Ornithological Society and is now known as the American Ornithological Society (AOS). In the recent 59th supplement to the AOS' checklist of North American birds, the AOS Committee on Classification and Nomenclature (Committee) changed the classification of Picoides borealis to Dryobates borealis (Chesser et al. 2018, pp. 798-800). In doing so, the Committee considered, among other data, results of phylogenetic analyses with nuclear and mitochondrial DNA (Weibel and Moore 2002a, entire; Weibel and Moore 2002b, entire; Winkler et al. 2014, entire; Fuchs and Pons 2015, entire; Shakya et al. 2017, entire) indicating that the genus Picoides was not monophyletic (descended from a common evolutionary ancestor or ancestral group). As a result, the genus Picoides was retained for the American three-toed woodpecker (P. dorsalis) and the black-backed woodpecker (P. arcticus), but all other North American woodpeckers formerly in Picoides were transferred to Dryobates. We accept the change of the red-cockaded woodpecker's classification from Picoides borealis to Dryobates borealis, and in this rulemaking, we amend the scientific name to match the currently accepted AOS nomenclature. Red-cockaded woodpeckers live in groups that share, and jointly defend,[[Page 63478]]territories throughout the year. Group living is a characteristic of their cooperative breeding system. In cooperative breeding systems, some mature adults forego reproduction and instead assist in raising the offspring of the group's breeding male and female (Emlen 1991, entire). In red-cockaded woodpecker groups, these helpers are typically male, and participate in incubation, feeding, and brooding of nestlings and in feeding of fledglings, as well as territory defense, nest defense, and cavity excavation (Lennartz et al. 1987, entire). A potential breeding group may consist of zero to as many as five helpers, but most potential breeding groups consist of only a breeding pair plus one to two helpers. A red-cockaded woodpecker group occupying and defending its territory usually consists of a potential breeding group. A red-cockaded woodpecker group in about 10 percent of cases consists of single-male that defends its territory while awaiting an adult breeding female. Red-cockaded woodpeckers are highly monogamous (Haig et al. 1994b, entire). Group living, however, strongly affects population dynamics. While not actively breeding themselves, helpers provide a pool of replacement breeders and thereby act as a buffer between mortality and productivity. In other words, the number of groups within a red-cockaded woodpecker population is not strongly affected by either productivity or mortality in the previous year. Instead, the number of helpers is affected by these variables, while the number of potential breeding groups remain constant. Young birds either disperse in their first year or remain on the natal territory and become a helper. First-year dispersal is the dominant strategy for females, but both strategies are common among males (Walters et al. 1988, pp. 287-301; Walters and Garcia 2016, pp. 69-72). Male helpers may become breeders by inheriting breeding status on their natal territory or by dispersing to fill a breeding vacancy at another territory (Walters et al. 1992, p. 625). When helpers move, it is usually to an adjacent or nearby territory; they rarely disperse across more than two territories (Kesler et al. 2010, entire). Female helpers almost never inherit the breeding position on their natal territory, instead relying on dispersal to neighboring territories to become breeders. Although some young birds disperse long distances (more than 100 kilometers (km) in a few cases; Conner et al. 1997c, entire; Ferral et al. 1997, entire; Costa and DeLotelle 2006, pp. 79-83), typical dispersal distance of juvenile females is only two territories from the natal site, with 90 percent dispersing one to four territories from the natal site (Daniels 1997, pp. 59-61; Daniels and Walters 2000a, pp. 486-487; Kesler et al. 2010, entire). Juvenile males are even more sedentary; about 70 percent of males remain on their natal territory or an immediately adjacent territory at age one, mostly as helpers with a few as breeders (Walters 1991, pp. 508-510; Daniels 1997, p. 66; Kesler et al. 2010, pp. 1339-1340; Conner et al. 2001 p. 143). Red-cockaded woodpeckers are unique among North American woodpeckers in that they nest and roost in cavities they excavate in living pines (Steirly 1957, p. 282; Jackson 1977, entire). Cavities are an essential resource for red-cockaded woodpeckers throughout the year, because the birds use them for roosting year-round, as well as nesting seasonally. Each individual in a group has its own roost cavity, and the group usually nests in the breeding male's cavity. The aggregation of active and inactive cavity trees within the area defended by a single group is termed the cavity tree cluster (Conner et al. 2001, p. 106). This aggregation of cavity trees is dynamic, changing in shape as new cavity trees are added through excavation and existing cavity trees are lost to death or a neighboring group. Excavation of cavities in live pines is an extremely difficult task, making a cluster of cavity trees an extremely valuable resource. Expansion into new territories, therefore, happens more frequently through ``budding,'' or the splitting of an existing territory with cavity trees into two, rather than ``pioneering,'' or the construction of a new cavity tree cluster. The development of techniques to construct artificial cavities (Copeyon 1990, entire; Allen 1991, entire) offset the lack of natural cavities and provided managers a new tool to greatly increase cavity availability, especially after storms. Red-cockaded woodpeckers readily adopt these artificial cavities. Thousands of artificial cavities have been installed since the early 1990s, and most populations are currently dependent on the installation and maintenance of artificial cavities for their viability. Red-cockaded woodpeckers require open pine woodlands and savannahs with large, old pines for nesting and roosting. Old pines are required as cavity trees because cavity chambers must be completely within the heartwood to prevent pine resin in the sapwood from entering the chamber (Conner et al. 2001, pp. 79-155); a tree must be old and large enough to have sufficient heartwood to contain a cavity. In addition, old pines have a higher incidence of the heartwood decay that greatly facilitates cavity excavation. Cavity trees must be in open stands with little or no hardwood midstory and few or no overstory hardwoods. Hardwood encroachment on cavity trees resulting from fire suppression is a well-known cause of cluster abandonment. Fire suppression also affects foraging. Over 75 percent of the red-cockaded woodpecker's diet consists of arthropods. Individuals generally capture arthropods on and under the outer bark of live pines and in dead branches of live pines. A large proportion of the arthropods on pine trees crawl up into the trees from the ground, which implies the condition of the ground cover is an important factor influencing abundance of prey for red-cockaded woodpecker (Hanula and Franzreb 1998, entire). The density of pines has a negative relationship with arthropod abundance and biomass, likely due at least in part to the negative effect of pine density on ground cover, from which some of the prey comes (Hanula et al. 2000, entire). Arthropod abundance and biomass also increase with the age and size of pines (Hooper 1996, entire; Hanula et al. 2000, entire), which is another reason older pines are so critical to this species. Accordingly, suitable foraging habitat generally consists of mature pines with an open canopy, low densities of small pines, a sparse hardwood or pine midstory, few or no overstory hardwoods, and abundant native bunchgrass and forb groundcovers. Frequent fire likely increases foraging habitat quality by reducing hardwoods and by increasing the abundance and perhaps nutrient value of prey (James et al. 1997, entire; Hanula et al. 2000, entire; Provencher et al. 2002, entire). Thus, frequent growing season fire may be critical in providing red-cockaded woodpeckers with abundant prey. Home ranges of red-cockaded woodpeckers vary from 40.5 to 161.9 hectares (ha) (100 to 400 acres (ac)) per group, depending on the quality of foraging habitat. Red-cockaded woodpecker groups in high-quality habitat, particularly old growth or restored, fire-maintained habitat, exhibit much smaller home range and territory sizes than groups in fire-suppressed habitat (Nesbitt et al. 1983, entire; Engstrom and Sanders 1997, entire). The fitness of red-cockaded woodpecker groups also increases where foraging areas are burned regularly, resulting in sparse hardwood midstory and an abundant grass and forb groundcover.[[Page 63479]]Given the historical loss of significant portions of its native habitat, and generations of fire suppression degrading remaining old growth and new second-growth habitat, aggressive management of habitat through prescribed burning and other vegetation manipulation is key to the conservation strategy of red-cockaded woodpeckers. In addition, the small amount of old growth habitat that remains still has potential to attract woodpeckers if prescribed burning and other tools are deployed to reduce the midstory; therefore, these habitats should also be aggressively managed. Currently, red-cockaded woodpeckers are distributed largely as discrete populations, with large gaps of unoccupied ***land*** between. An improvement from the species' status at the time of listing, these gains are due to intensive management implemented beginning in the 1990s. Except in rare instances, these populations remain dependent on conservation actions, such as prescribed fire, ***forest*** management with compatible silviculture, placement and maintenance of artificial cavities within existing clusters, creation of new recruitment clusters using artificial cavities and translocation, and monitoring of population and habitat conditions.Summary of Stressors and Conservation Measures Affecting the Species Section 4(a)(1) of the Act directs us to determine whether any species is an endangered species or a threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. The factors for downlisting a species (changing its status from endangered to threatened) are the same as for listing it. In the SSA report, we review the factors (i.e , threats, stressors) that could be affecting the red-cockaded woodpecker now or in the future. However, in this proposed rule, we will focus our discussion on those factors that could meaningfully impact the status of the species. Below is a summary of those factors. The results of the SSA report are discussed later in this proposed rule. For further information, see the SSA report (USFWS 2020, entire). The primary risk factor (i.e , stressor) affecting the status of the red-cockaded woodpecker remains the lack of suitable habitat (Factor A). Wildfire, pine beetles, ice storms, tornadoes, hurricanes, and other naturally occurring disturbances that destroy pines used for cavities and foraging are stressors for the red-cockaded woodpecker (Factor E), especially given the high number of very small woodpecker populations (Factor E) (USFWS 2020, pp. 38-39, 81-83, 103, 119-127). Increases in number and severity of major hurricanes (Bender et al. 2010, entire; Knutson et al. 2010, entire; Walsh et al. 2014, pp. 41-42), is expected to increase in response to global climate change, and this could also disproportionately affect the smaller, less resilient woodpecker populations (Factor E). With rare exception, the vast majority of red-cockaded woodpecker populations remain dependent on artificial cavities due to the absence of sufficient old pines for natural cavity excavation and habitat treatments to establish and maintain the open, pine-savannah conditions favored by the species (Factor E). These populations will decline without active and continuous management to provide artificial cavities and to sustain and restore ***forest*** conditions to provide suitable habitat for natural cavities and foraging similar to the historical conditions (Conner et al. 2001, pp 220-239, 270-299; Rudolph et al. 2004, entire).Habitat Loss and Degradation The primary remaining threats to the red-cockaded woodpecker's viability have the same fundamental cause: Lack of suitable habitat. Historically, the significant impacts to red-cockaded woodpecker habitat occurred as a result of clearcutting, incompatible ***forest*** management, and conversion to urban and ***agricultural*** ***lands*** uses. These impacts have been significantly curtailed and replaced by beneficial conservation management that sustains and increases populations; however, stressors caused by adverse historical practices still linger, including insufficient numbers of cavities, low numbers of suitable old pines, habitat fragmentation, degraded foraging habitat, and small populations. These lingering impacts can negatively affect the ability of populations to grow, even when populations are actively managed for growth, as the carrying capacity of suitable ***forest*** areas across much of the range can be quite low. However, restoration activities such as prescribed fire and strategic placement of recruitment clusters can reduce gaps between populations and increase habitat and population size toward current carrying capacity. These activities are occurring across the range of the red-cockaded woodpecker on properties actively managed for red-cockaded woodpecker conservation. Currently, stressors to the species resulting from exposure to habitat modification or destruction are minimal, especially when compared to historical levels. Periodically, military training on Department of Defense installations requires clearing of red-cockaded woodpecker habitat for construction of ranges, expansion of cantonments, and related infrastructure, but these installations have management plans to sustain and increase red-cockaded woodpecker populations. In addition, silvicultural management on Federal, State, and private ***lands*** also occasionally results in temporary impacts to habitat; for example, red-cockaded woodpecker habitat may be unavoidably, but temporarily, adversely affected in old, even-aged loblolly pine stands that require regeneration prior to stand senescence to sustain a matrix of future suitable habitat for a net long-term benefit. Similarly, red-cockaded woodpecker habitat may be temporarily destroyed in areas where offsite loblolly, slash, or other pines are removed and replaced by the more fire-tolerant native longleaf pine. However, the net result of these activities is a long-term benefit, as the goal is to restore these areas to habitat preferred by woodpeckers.Natural Disturbances Wildfire, pine beetles, ice storms, tornadoes, and hurricanes are naturally occurring disturbances that destroy pines used for cavities, with subsequent reductions to population size unless management actions are taken to reduce or ameliorate adverse impacts by providing artificial cavities, reducing hazardous fuels, and restoring ***forests*** to suitable habitat following these events. These disturbances can also destroy or degrade foraging habitat and cause direct mortality of woodpeckers. Small populations are the most vulnerable to these disturbances. See the SSA report for more information about these natural disturbances (USFWS 2020, pp. 119-127). Habitat destruction caused by hurricanes is the most acute and potentially catastrophic disturbance because hurricanes can impact entire populations. According to the SSA report, of the 124 current demographic populations, about 63 populations in the East Gulf Coastal Plain, West Gulf Coastal Plain, the lower portion of the Upper West Gulf Coastal Plain, and[[Page 63480]]Florida Peninsula ecoregions are vulnerable to potential catastrophic impacts of hurricanes, particularly major hurricanes. Most (56 populations; 89 percent) of these 63 populations are identified as low or very low resiliency in the SSA report (see Summary of the SSA Report, below), which means they face a significant risk from hurricanes. In addition, the frequency and intensity of Atlantic basin hurricanes, particularly major Category 4 and 5 storms, are expected to increase in response to global climate change during the 21st century (Bender et al. 2010, entire; Knutson et al. 2010, entire; Walsh et al. 2014, pp. 41-42), although the location and frequency of future storms affected by climate change relative to particular red-cockaded woodpecker populations cannot be precisely predicted. While larger populations (greater than 400 active clusters) are the most likely to withstand a strike by a major hurricane without extirpation (e.g , Hooper et al. 1990, entire; Hooper and McAdie 1995, entire; Watson et al. 1995, entire), smaller populations are more vulnerable to individual hurricanes, as well as to the effects of recurring storms depleting cavity trees and foraging habitat with reductions in population size. However, these populations may be able to withstand and persist after hurricanes if biologists and ***land*** managers implement prompt, effective post-storm recovery actions, such as installing artificial cavities, reducing hazardous fuels, and restoring ***forests*** to suitable habitat. Such actions have been occurring after storm events for managed populations, such as the quick response after Hurricane Michael in October 2018.Conservation Management The reliance on artificial cavities and active habitat management is not just restricted to post-hurricane recovery efforts. With the potential exception of several ecologically unique populations in pond pine and related habitat on organic soils in northeast North Carolina, none of the current or estimated future populations is capable of naturally persisting without ongoing management, for reasons discussed previously. Fortunately, most sites have active management, such as prescribed fire, artificial cavity installation, and habitat restoration to maintain these populations across the range of the species. Other proactive management that must be maintained for the species to continue to persist and expand includes translocations into small populations. Most (108) of the current 124 demographic populations are small (fewer than 99 active clusters) with inherently very low or low resiliency. These are the most vulnerable to future extirpation due to stochastic demographic and environmental factors and inbreeding depression. Inbreeding depression in small, fragmented populations of up to 50 to 100 active clusters without adequate immigration can further increase the probability of decline and future extirpation; for these populations, red-cockaded woodpecker translocation programs reduce risks of adverse inbreeding impacts. In addition, as noted in the SSA report (see Summary of the SSA Report, below), while resiliency is moderate for 10 of the current populations with 100 to 249 active clusters and 6 populations exhibit high or very high resiliency, potential adaptive genetic variation is still expected to decline in all red-cockaded woodpecker populations (Bruggeman 2010, p. 22, appendix B pp. 39-42; Bruggeman et al. 2010, entire; Bruggeman and Jones 2014, pp. 29-33). This is because genetically effective (Ne) populations of 1,000 or more individuals are needed to avert the loss of genetic variation in a species (e.g , Lande 1995, entire; Allendorf and Ryman 2002, p. 73-76). These large population sizes do not exist in red-cockaded woodpecker populations because not all birds in an active cluster may be breeders (Reed et al. 1988, entire, 1993, entire). Possible exceptions may be the two largest current red-cockaded woodpecker populations at Apalachicola National ***Forest***/St. Marks National Wildlife Refuge/Tate's Hell State ***Forest*** (858 active clusters, ~764 potential breeding groups (PBG)) and North Carolina Sandhills (781 active clusters, ~695 PBGs). A PBG is a concept introduced in the 2003 recovery plan (see Recovery Plan and Recovery Implementation, below), to describe a cluster with a potentially breeding adult male and female, with or without adult helpers or successfully fledging young. An active cluster can be either a PBG or a single territorial bird. So, for example, a red-cockaded woodpecker population of 310-390 PBGs probably represents a genetically effective population of only 500 (Reed et al. 1993, p. 307). Effective management programs to sustain even the smallest populations are critical to reduce the risks of inbreeding, establish genetic connectivity among fragmented populations, and maintain ecological diversity and life-history demographic variation as patterns of representation within and across broad ecoregions. Because of the outstanding work of our conservation partners, and their ongoing commitment to continue implementing proactive management to benefit the red-cockaded woodpeckers, we expect many of these activities, as articulated in individual management plans, to continue.Conservation Measures That Benefit the Species As noted above, the red-cockaded woodpecker is a conservation-reliant species and responds well to active management. The vast majority of properties on public ***lands*** harboring red-cockaded woodpeckers have implemented management programs to sustain or increase populations consistent with population size objectives in the recovery plan or other plans. Plans are specific to each property or management unit, but generally contain the same core features. The most comprehensive plans call for intensive cavity management with the installation of artificial cavities to offset cavity loss in existing territories, maintenance of sufficient suitable cavities to avoid loss of active territories, and creation of new territories with recruitment clusters and artificial cavities in restored or suitable habitat to increase population size. These cavity management activities are necessary until mature ***forests*** are restored with abundant old pines 65 and more years of age for natural cavity excavation. Managers are also reducing fragmentation by restoring and increasing habitat with strategic placement of recruitment clusters to reduce gaps within and between populations. Furthermore, red-cockaded woodpecker subadults from large or stable donor populations are translocated to augment growth of small, vulnerable populations. Additionally, managers are implementing silviculturally compatible methods to sustain, restore, and increase habitat with an increased use of effectively prescribed fire. Finally, managers are implementing monitoring programs looking at both habitat and populations to provide feedback for effective management. The future persistence of the species will require these management actions to continue. In the SSA, we identified 124 current demographic populations with a total of 7,794 active clusters. Seventy-one of the 124 currently delineated red-cockaded woodpecker populations occur on ***lands*** solely owned and managed by Federal agencies with 4,033 current active clusters. Seven additional populations with 2,026 active clusters occur on ***lands*** that are under mixed Federal and State ownership but are predominately managed by Federal agencies. Thirty-one populations are on ***lands*** managed[[Page 63481]]solely by State agencies with 557 active clusters. Thus, 88 percent of delineated populations with 6,059 active clusters (78 percent of all 7,794 active clusters in 124 populations) are on ***lands*** managed entirely by Federal and State agencies with statutes to require management plans addressing the conservation of natural resources. Two populations occur in a matrix of public and private ***lands***, mostly Federal and State properties, with 816 active clusters. One population with 20 active clusters is managed by a State agency and private landowner. Twelve populations with 342 active clusters reside entirely on private ***lands***, of which 10 populations with 295 active clusters are managed by landowners enrolled in the safe harbor program. Also, most of the private landowners are enrolled in the safe harbor program in the two previously described populations with a matrix of mostly public ***lands*** with some private ***lands***. Landowners with safe harbor agreements (SHA) manage about 375 active clusters in all or parts of 12 populations. There are additional active clusters of red-cockaded woodpeckers on nongovernmental ***lands***, enrolled in SHAs, but, as noted above, we did not have adequate data to spatially delineate all of these demographic populations on these ***lands***. Of the 933 active clusters managed by safe harbor landowners in eight states (Alabama, Florida, Georgia, Louisiana, North Carolina, South Carolina, Texas and Virginia), demographic populations with respective population sizes have not been delineated for about 558 active clusters. Below is a summary of the types of management plans that include elements directed at red-cockaded woodpecker management and conservation. Note that the numbers of populations below do not necessarily add up to the 124 current demographic populations identified in the SSA report, because some populations cross property boundaries and are managed by more than one landowner.Department of Defense Within the range of the red-cockaded woodpecker, the Department of Defense (DOD) manages habitat for 14 populations, of which 5 are in the moderate to very high resiliency categories, and 9 low to very low resiliency. The Sikes Act (16 U.S.C 670 et seq.) requires DOD installations to conserve and protect the natural resources within their boundaries. Integrated natural resources management plans (INRMPs) are planning documents that outline how each military installation with significant natural resources will manage those resources, while ensuring no net loss in the capability of an installation to support its military testing and training mission. Within the range of the red-cockaded woodpecker, all DOD installations have current INRMPs that address protection and recovery of the species, both through broader landscape-scale ecosystem stewardship and more specific management activities ***targeted*** directly at red-cockaded woodpecker conservation. These activities include providing artificial cavities to sustain active clusters, installing recruitment clusters to increase population size, sustaining and increasing habitat through compatible ***forest*** management and prescribed fire, and increasing the number and distribution of old pines for natural cavity excavation. Each installation has a red-cockaded woodpecker property or population size objective with provisions for monitoring. For most installations, a schedule is available for reducing certain military training restrictions in active clusters in response to increasing populations and attaining population size thresholds.U.S ***Forest*** Service The U.S ***Forest*** Service manages habitat for 49 red-cockaded woodpecker populations on 17 National ***Forests*** and the Savannah River Site Unit (owned by the Department of Energy but managed by the U.S ***Forest*** Service). Of these populations, 10 have moderate to very high resiliency and 39 identified as having low or very low resiliency. Under the National ***Forest*** Management Act of 1976 (16 U.S.C 1600 et seq.), National ***Forests*** are required to develop plans that provide for multiple use and sustained yield of ***forest*** products and services, which includes timber, outdoor recreation, range, watershed, fish and wildlife, and wilderness resources. These plans, called ``***land*** and resource management plans'' (LRMPs) and their amendments, have been developed for every National ***Forest*** in the current range of the red-cockaded woodpecker. However, LRMPs are not always up to date. The LRMPs for National ***Forests*** in three States (Louisiana, North Carolina, and Texas) predate the Service's 2003 recovery plan. Nevertheless, all National ***Forests*** (even those with outdated LRMPs) have implemented management strategies to protect and manage red-cockaded woodpecker habitat and increase populations. Current LRMPs approved prior to the 2003 recovery plan were developed in coordination with the ***Forest*** Service's 1995 regional plan for managing the red-cockaded woodpecker on southern National ***Forests*** (U.S ***Forest*** Service 1995, entire). The 1995 regional plan includes most of the new and integrated management methods (Rudolph et al. 2004, entire) to sustain and increase populations as incorporated in the recovery plan. These include installing artificial cavities, increasing population size with recruitment clusters, and restoring suitable habitat with ***forest*** management treatments and prescribed fire. Some of the more recent LRMPs, such as for National ***Forests*** in Mississippi, are more broadly programmatic, but incorporate the 2003 recovery plan by reference for appropriate conservation methods and objectives.U.S Fish and Wildlife Service The National Wildlife Refuge System manages 10 National Wildlife Refuges with red-cockaded woodpeckers, which includes all or part of 19 populations. We considered three of these populations to be moderate to very high resiliency in the SSA report, while 16 have low to very low resiliency. Under the National Wildlife Refuge System Improvement Act of 1997 (Pub. L. 105-57), refuges prepare comprehensive conservation plans (CCPs), which provide a blueprint for how to manage for the purposes of each refuge; address the biological integrity, diversity, and environmental health of a refuge; and facilitate compatible wildlife-dependent recreation. National Wildlife Refuges have assigned population objectives from the 2003 recovery plan through their CCPs or as stepped down or modified in habitat management plans. Specific tasks in these plans include installation of artificial cavities; translocation; establishing recruitment clusters; population monitoring; prescribed fire; and silvicultural treatments, such as mid-story ***removal***, thinning of younger stands, and, where necessary, increasing stand age diversity with regeneration of pine stands.National Park Service The National Park Service (NPS) manages two red-cockaded woodpecker populations, one with low and the other with very low resilience, on Big Cypress National Preserve (Preserve) in Florida. The NPS's plans do not include specific provisions for red-cockaded woodpecker management; however, at the Preserve, the NPS conducts prescribed fire to maintain and improve the south Florida slash pine ***forest*** communities that support the species. The NPS also allows Florida Fish and Wildlife Conservation Commission[[Page 63482]]biologists to conduct red-cockaded woodpecker surveys, monitor, periodically install a limited number artificial cavities, and conduct translocations on occasion. From surveys and monitoring by the Florida Fish and Wildlife Conservation Commission, 75 percent of all cavity trees within the Preserve consist of natural cavities, which is an unusually high number relative to other populations, reflecting the predominately old condition of the Big Cypress south Florida slash pine ***forests*** (Spikler 2019, pers. comm).State ***Lands*** The States of Arkansas, Florida, Georgia, Louisiana, North Carolina, Oklahoma, South Carolina, Texas, and Virginia have red-cockaded woodpecker populations on State-owned ***lands***. All or parts of 40 currently delineated populations occur on State ***lands***. Seven populations on or partially on State ***lands*** have moderate to very high resiliency, while 32 populations have low to very low resiliency. These properties range from State ***Forest*** Service or ***Forest*** Commission holdings to Department of Wildlife, Department of Natural Resources, and State Park Service properties. The mission, and therefore the extent and type of management, of each unit varies. For example, some State ***lands*** are managed generally to provide ecosystem benefits, such as managing pine-dominated ***forests*** with prescribed fire. However, other State properties implement proactive conservation management specifically for the red-cockaded woodpecker. For example, the Florida Fish and Wildlife Conservation Commission manages all of its properties under the umbrella of the Florida Red-cockaded Woodpecker Management Plan, with other specific plans for the agency's wildlife management areas.Other ***Lands*** Eight states have a Service-approved programmatic safe harbor agreement program with a section 10(a)(1)(A) enhancement of survival permit under the Act to enroll non-Federal landowners that voluntarily provide beneficial management. Of 459 enrolled non-federal landowners, one is for a State property and all others are private nongovernmental ***lands***. All or parts of 12 currently delineated demographic populations are covered under a current SHA. Again, we are aware of additional active clusters covered under SHAs, but we lack the data to delineate them as demographic populations. Safe harbor agreements are partnerships between landowners and the Service involving voluntary agreements under which the property owners receive formal regulatory assurances from the Service regarding their management responsibilities in return for contributions to benefit the listed species. For the red-cockaded woodpecker, this includes voluntary commitments by landowners to maintain and enhance red-cockaded woodpecker habitat to support baseline active clusters, which is the number of clusters at the time of enrollment, and additional above-baseline active clusters that increase in response to beneficial management. Beneficial management includes the maintenance and enhancement of existing cavity trees and foraging habitat through activities such as prescribed fire, mid-story thinning, seasonal limitations for timber harvesting, and management of pine stands to provide suitable foraging habitat and cavity trees. Because above-baseline active clusters and habitat covered under these plans can be returned to ``baseline'' conditions, any population growth on ***lands*** covered by SHAs may not be permanent. In addition, enrolled landowners can terminate their agreement at any time. However, fewer than 5 of the 459 enrolled landowners have ever used their permit authorities to return the number of active clusters to baseline conditions, and only 12 landowners have terminated their agreement. There currently are 241 active above-baseline clusters in the program. In summary, the red-cockaded woodpecker is a conservation-reliant species, but one that responds very well to active management. The majority of red-cockaded woodpecker populations are managed under plans that address population enhancement and habitat management to sustain or increase populations, and to meet the 2003 recovery plan objectives for primary core, secondary core, and essential support populations. We expect these property owners will continue to implement their respective management plans, partially because, even if we reclassify the red-cockaded woodpecker as a threatened species, the woodpecker would remain protected under the Act.Summary of Biological Status As described in the preceding section, the Act directs us to determine whether any species is an endangered or a threatened species because of any of the factors listed in section 4(a)(1) affecting the species' continued existence. The SSA report documents the results of our comprehensive biological status review for the red-cockaded woodpecker, including an assessment of the potential stressors to the species. The SSA report does not represent a decision by the Service on whether the species should be listed as an endangered or a threatened species under the Act. It does, however, provide the scientific basis for our regulatory decision, which involves the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found on the Southeast Region's website at [*https://www.fws.gov/southeast*](https://www.fws.gov/southeast)/ or at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018.Summary of SSA Report To assess the red-cockaded woodpecker's viability, we used the three conservation biology principles of resiliency, representation, and redundancy (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, random fluctuations in birth rates or annual variation in rainfall); representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes); and redundancy supports the ability of the species to withstand catastrophic events (for example, hurricanes). In general, the more redundant and resilient a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the red-cockaded woodpecker's ecological requirements for survival and reproduction at the individual, population and species, and described the beneficial and risk factors influencing the species' viability. The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We utilized this[[Page 63483]]information to inform our regulatory decision. For the red-cockaded woodpecker to maintain viability, its populations or some portion thereof must be resilient. The SSA assessed resiliency at the population level, primarily by evaluating the current population size as the number of active clusters and secondarily by the associated past growth rate. Red-cockaded woodpecker resiliency primarily depends upon a single factor: Amount of managed suitable habitat. Historically, impacts to the red-cockaded woodpecker occurred as a result of clearcutting, incompatible ***forest*** management, and conversion to urban and ***agricultural*** ***lands*** uses. While these impacts have been significantly curtailed and replaced by beneficial conservation management, legacy stressors stemming from these historical impacts still remain, including: (1) Insufficient numbers of natural cavities and suitable, abundant old pines for natural cavity excavation; (2) habitat fragmentation and its effects on genetic variation, dispersal, and connectivity to support demographic populations; (3) lack of suitable foraging habitat for population growth and expansion; and (4) small populations. Intensive management is ongoing to ameliorate these threats. Representation can be measured by the breadth of genetic or environmental diversity within and among populations and gauges the probability that a species is capable of adapting to environmental changes. The SSA evaluated representation based on the extent and variability of habitat characteristics across the geographical range of the species and characterized representative units for the red-cockaded woodpecker using ecoregions. This analysis generally followed the approach to representation used in the species' recovery plan (USFWS 2003, pp. 148, 152-155). A genetic analysis of material prior to 1970 in eight ecoregions indicates the species appears to have been a single genetic unit or population without significant genetic structure or differentiation (Miller et al. 2019, entire). The best available rangewide genetic data indicate a loss of genetic variation after 1970 with development of significant contemporary genetic structure among ecoregions. This structuring is most likely in response to fragmentation of this historically more widespread and abundant species, reduced dispersal between populations and regions, and genetic drift (Stangel et al. 1992, entire; Haig et al. 1994a, p. 590; Haig et al. 1996, p. 730; Miller et al. 2019, entire). However, the similarity of genetic parameters between the 1992-1995 and 2010-2014 periods indicates that a further significant loss of genetic diversity with an increase in differentiation among ecoregions may have been ameliorated by conservation management that began in the 1990s to rapidly increase populations and translocate individuals from large populations to augment small populations (Miller et al. 2019, entire). Mitochondrial DNA haplotype diversity has declined significantly since the pre-1970s, but not to extent of a loss of any phylogenetically distinct lineages that may represent evolutionarily significant units (Miller et al. 2019, p. 9-10). For the red-cockaded woodpecker to maintain viability, the species also needs to exhibit some degree of redundancy. Measured by the number of populations, their resiliency, and their distribution, redundancy increases the probability that the species has a margin of safety to withstand, or can bounce back from, catastrophic events. The SSA reported redundancy for red-cockaded woodpeckers as the total number and resilience of population segments and their distribution within and among representative units.Current ConditionResiliency In the SSA report, we identified 124 demographic populations across the range of the red-cockaded woodpecker for which sufficient data were available to complete the SSA analyses for the recent past to current condition. We acknowledge there are other small occurrences of red-cockaded woodpeckers, particularly on private ***lands***; however, spatial data for these other occurrences were incomplete, so for purposes of the SSA analysis, and subsequently throughout this proposed rule, we focused only on these 124 demographic populations that could be spatially delineated. The SSA categorizes two important parameters related to current population resiliency: Current population size and associated population growth rate. Population resilience size categories are defined as follows: Very low (fewer than 30 active clusters); low (30 to 99 active clusters); moderate (100 to 249 active clusters); high (250 to 499 active clusters); and very high (greater than or equal to 500 active clusters). Population resilience size-classes were derived from spatially explicit individual-based models and simulations for this species (Letcher et al. 1998, entire; Walters et al. 2002, entire), the performance of which have been reasonably validated with reference to actual populations (Schiegg et al. 2005, entire; Walters et al. 2011, entire). We also considered subsequent modifications of these models and simulations that incorporated adverse effects of inbreeding depression on population persistence and growth (Daniels et al. 2000, entire; Schiegg et al. 2006, entire). These models were developed from extensive actual biological data and specifically designed to incorporate the dynamics of the red-cockaded woodpecker's cooperative breeding system that are not accurately represented in other types of population models (Zieglar and Walters 2014, entire). These models simulated populations of different initial sizes under natural conditions without any limiting habitat and cavity conditions that could impair population growth. We consider these results as indicators of inherent resilience because effects of conservation management actions to sustain and increase populations were not simulated. These beneficial management practices would include installation of recruitment clusters with artificial cavities to induce new red-cockaded woodpecker groups and translocation to augment the size and growth of small populations. The vast majority of the 124 current populations have been and currently are subject to specific conservation management actions for this species, including recruitment clusters. Thus, the inherent resilience size-classes derived from population models and simulations have been further qualified by actual growth rates as indicators of effects of beneficial management for this conservation-reliant species. Populations with very low resiliency (fewer than 30 active clusters) are the most vulnerable to future extirpation following stochastic events with declining growth and future extirpation likely in 50 years. Populations with low resiliency (30 to 99 active clusters) are more persistent, but remain vulnerable to declining growth, inbreeding depression, and extirpation. Inbreeding depression reduces red-cockaded woodpecker egg hatching rates and survival of fledglings (Daniels and Walters 2000a, entire). Inbreeding in red-cockaded woodpeckers is a consequence of breeding among close relatives in response to naturally short dispersal distances of related birds among nearby breeding territories exacerbated by small populations and fragmentation among populations that reduce immigration rates of unrelated individuals (Daniels and Walters 2000a, entire; 2000b, entire; Daniels et al. 2000, entire; Schiegg et al. 2002, entire; 2006, entire). The consequences of inbreeding[[Page 63484]]depression further reduce population growth rates and increase the probabilities of extirpation in populations in sizes up to about 100 active clusters (Daniels et al. 2000, entire; Schiegg et al. 2006, entire). The largest populations in this class may have long-term average growth rates ([lambda] or lambda) near 1.0 (a [lambda] of 1.00 is considered stable, less than 1.00 is declining, and greater than 1.00 is increasing), but with slow rates of decline and a high risk of inevitable future extirpation. The moderate resiliency category (100 to 249 active clusters) is a large transitional class. Smaller populations without inbreeding likely will experience a slow decline, but without extirpation in 25 to 50 years because at least some territories will survive, although as much smaller and more vulnerable populations. The largest populations in this class may be relatively stable or nearly so. Populations with a high resiliency (250 to 499 active clusters) on average should be stable except perhaps for the very smallest that may have average growth rates slightly less than 1.00 In high resiliency populations, adverse demographic effects of inbreeding depression are not expected. Populations in the very high resiliency class (greater than or equal to 500 active clusters) are stable and the most resilient, with average growth rates of 1.0 or slightly greater. Based on the most recent data, 3 red-cockaded woodpecker populations fall within the very high category (totaling 2,143 clusters); 3 are high (1,364 total clusters); 10 are moderate (1,555 total clusters); 37 are low (1,923 total clusters); and 71 are very low (809 total clusters). In short, of the estimated 7,794 active clusters distributed among 124 populations across the range of the species, 5,062, or 65 percent, are in 16 moderate to very high resiliency populations. The second resiliency parameter measured in the SSA was growth rate of the populations. For the SSA, there were only sufficient GIS data to delineate past demographic populations with population size data to compute past-to-current growth rates for 98 of the 124 populations. Of these 98 populations, the SSA determined that 13 (13.3 percent) were declining ([lambda] <1.00), 19 (19.4 percent) were stable ([lambda] = 1.00-1.02), and 66 (67.3 percent) were increasing ([lambda] >1.02). Combining growth rates with population sizes of these 98 populations, growth rates have been stable to increasing for all of those moderate, high, and very high resiliency populations where growth rate could be measured. At the other end, of the 86 very low and low resiliency populations where growth rate could be measured, 73 populations demonstrated stable and positive growth rates, with several populations showing very high growth rates. This is indicative of the positive effects of red-cockaded woodpecker conservation management programs on these locations and the ability of such management to offset inherently low or very low population resilience. Growth rates are decreasing in only 13 (15 percent) of the low and very low resiliency populations where growth rate could be measured. Current population conditions in the SSA report were derived from the number and location of active clusters primarily in 2016 and 2017. These conditions did not take into account Hurricane Michael, which came ashore near Mexico Beach, Florida, on October 10, 2018, as a Category 4 storm. More than 1,500 cavity trees were blown down or damaged in populations in the Apalachicola National ***Forest***, Silver Lake Wildlife Management Area (WMA), Jones Ecological Research Center, and Tate's Hell State ***Forest*** (Dunlap 2018, entire; McDearman 2018, entire). These represented three demographic populations: Apalachicola National ***Forest***-St. Marks NWR-Tate's Hell State ***Forest***, Jones Ecological Research Center, and Silver Lake WMA. The effects of Hurricane Michael did not change current conditions for these populations in terms of their resilience size-classes as described in the SSA report, and as summarized here. After this hurricane, 870 clusters were rapidly assessed in Apalachicola National ***Forest*** where 1,410 cavity trees were damaged or blown down, followed by the installation of 682 artificial cavities (Dunlap 2018, entire). In 2018, prior to this hurricane, the Apalachicola National ***Forest*** population survey estimate was 833 active clusters (Casto 2018, p. 4). After the hurricane, the 2019 survey estimate was 857 active clusters (Casto 2019, p. 9). At Silver Lake WMA, 154 cavity trees were damaged or lost; however, within two weeks of the storm more than 90 artificial cavities were installed (Burnham 2019a, p. 9). The pre-storm population was 36 active clusters and 32 potential breeding groups, with a post-storm decline to 33 active clusters and 28 potential breeding groups (Burnham 2019b, p. 6). About 24 percent of all cavity trees at the Jones Ecological Research Center were damaged or destroyed (Rutledge 2019, p. 13). The pre-storm Jones Center population was 38 active clusters with 34 potential breeding groups (Henshaw 2019, p. 4). Post-storm, after installation of artificial cavities, there were 40 active clusters with 31 potential breeding groups (Henshaw 2019, p. 4). At Tate's Hell State ***Forest***, about 23 of 527 cavity trees among 61 active clusters and 51 PBGs were blown down (Alix 2018, pers. comm.). After post-storm management, the Tate's Hell State ***Forest*** currently consists of 64 active clusters and 54 PBGs (Alix 2019, pers. comm.). Overall, the total decline in number of active clusters from all of these properties is minor, demonstrating that with prompt, active management, the vulnerability of these populations to stochastic events can potentially be reduced. Additional intermediate and long-term habitat restoration treatments at these properties are still required to reduce hazardous fuels from large and small woody debris, restore habitat, and implement reforestation or regeneration in the most severely damaged pine stands. Overall, we do not anticipate that Hurricane Michael will affect long-term viability of these populations. However, we will continue to evaluate the success of the emergency, intermediate, and long-term response efforts. In summary, although most of red-cockaded woodpecker populations for which we have data are still small, and remain vulnerable to stochastic events and possibly inbreeding depression, the vast majority of populations are showing stable or increasing growth rates, and the majority of birds and clusters occur in a few large, resilient populations. Of the 98 populations for which trend data are available, only 13 percent are declining. In addition, over 65 percent of red-cockaded woodpecker clusters are currently in moderate to very high resiliency populations.Representation We evaluated representation based on the extent and variability of habitat characteristics across the species' geographical range. For the red-cockaded woodpecker, the SSA report characterizes representative units using ecoregions, which align with the recovery units identified in the recovery plan (USFWS 2003, pp. 145-161). These ecoregions are broad areas defined by physiography, topography, climate, and major historical and current ***forest*** types and thus serve as surrogates for the variability of habitat characteristics across the species' range, such as ecology, life history, geography, and genetics. There are currently 13 ecoregions containing at least one red-cockaded woodpecker population: (1) Cumberland Ridge and Valley; (2) Florida Peninsula (= South/Central Florida); (3) East Gulf Coastal Plain; (4) Mid-Atlantic Coastal Plain; (5) Ouachita[[Page 63485]]Mountains; (6) Piedmont; (7) South Atlantic Coastal Plain; (8) Sandhills; (9) Upper East Gulf Coastal Plain; (10) Upper West Gulf Coastal Plain; (11) West Gulf Coastal Plain; and (12) Gulf Coast Prairie and Marshes and (13) Mississippi River Alluvial Plain, two ecoregions that the SSA includes that were not represented in the recovery plan because they only have one small population each. In the SSA report, figures 20 and 24 provide maps illustrating the ecoregions (USFWS 2019, pp. 91, 109), and figure 25 includes the historical county records for the range of the species (USFWS 2020, p. 116). The historical range of the red-cockaded woodpecker included the entire distribution of longleaf pine ecosystems, but the species also inhabited open shortleaf, loblolly, slash pine, and Virginia pine ***forests***, especially in the Ozark-Ouachita Highlands and the southern tip of the Appalachian Highlands with occasional occurrences noted for New Jersey, Pennsylvania, Maryland, and Ohio (Costa and Walker 1995, pp. 86-87). Red-cockaded woodpeckers no longer occur in six ecoregions (Ozarks, Central Mixed Grass Prairies, Cross Timbers and Southern Mixed Grass Prairies, Northern Atlantic Coast, Central Appalachian ***Forest***, and Southern Blue Ridge). The recovery plan did not consider recovery in these areas to be essential to the conservation of the species. The remaining 13 ecoregions still contain red-cockaded woodpeckers. In these ecoregions, red-cockaded woodpeckers occupy a wide variety of pine-dominated ecological settings scattered across a broad geographic range. Considerable geographic variation in habitat types exists, illustrating the species' ability to adapt to a wide range of ecological conditions within the constraints of mature or old growth, southern pine ecosystems. However, of these 13 ecoregions, only 4 currently have populations that are considered to have high or very high resiliency (East Gulf Coastal Plain, South Atlantic Coastal Plain, Sandhills, and Mid-Atlantic Coastal Plain), and 6 have populations that are low or very low resiliency (Florida Peninsula, Ouachita Mountains, Cumberland Ridge and Valley, Piedmont, Gulf Coast Prairie and Marshes, and Mississippi River Alluvial Plain). Of those six, the latter four have only one or two populations each, meaning these ecoregions, and the ecology, life history, geography, and genetics they represent, are particularly vulnerable to stochastic events. However, five of the six populations in these four ecoregions all demonstrate stable or increasing growth rates (growth rate for the sixth, Mitchell Lake in the Piedmont Ecoregion, could not be measured), primarily because they are being actively managed. In summary, the species no longer persists in six ecoregions where it was historically present. However, it is still currently represented in the 13 remaining ecoregions, and this level of representation has not decreased further since the 2003 recovery plan revision, which did not consider the extirpated ecoregions necessary for recovery. Nevertheless, while populations persist in the 13 ecoregions, many of the ecoregions contain only populations that have low or very low resiliency, and four ecoregions only have one or two populations, which are all of low or very low resiliency, making them vulnerable to stochastic events.Redundancy In the SSA report, redundancy for red-cockaded woodpeckers is characterized by the number of resilient populations and their distribution within each ecoregion. Of the 124 current populations, there are 3 populations that have very high resiliency, 3 with high, 10 with moderate, 37 with low, and 71 with very low resiliency. As noted above, 4 of 13 ecoregions currently harbor high or very high resiliency populations: East Gulf Coastal Plain (2 populations), Mid-Atlantic Coastal Plain (1 population), Sandhills (2 populations), and South Atlantic Coastal Plain (1 population). In terms of redundancy, only two ecoregions, East Gulf Coastal Plain and Sandhills, have more than one population classified as having high or very high resiliency, and only these two ecoregions also have more than two populations classified as having moderate to very high resiliency. Redundancy of smaller populations is higher with a greater number of populations in the moderate, low, and very low resiliency categories within and across ecoregions. Four ecoregions (South Atlantic Coastal Plain, Mid-Atlantic Coastal Plain, West Gulf Coastal Plain, and Upper East Gulf Coastal Plain) have two populations exhibiting moderate to high resiliency, and thus some level of redundancy in terms of resilient populations. Most of the populations in these regions have moderately resiliency. The greatest number of current populations reside in the Mid-Atlantic Coastal Plain (24) and Florida Peninsula (22), although most of these are in the very low and low resiliency class. However, even for the more resilient populations, habitat fragmentation has resulted in wide gaps between ***forested*** areas, meaning there is little connectivity between populations. Across the range of the red-cockaded woodpecker, the populations with the most resiliency (high or very high) populations tend to be in the eastern half of the range and in coastal or near coastal ecoregions rather than interior. Florida Peninsula and the western ecoregions currently only have populations in the moderate to very low resiliency categories. This concentration of the more resilient populations in coastal and near coastal areas could affect the species' ability to withstand catastrophic events such as hurricanes. Particularly for these populations, post-storm management actions are critical, as they can mitigate cavity loss and reduce hazardous fire fuels. In summary, a species needs a suitable combination of all three characteristics (resiliency, representation, and redundancy) for long-term viability. Based on our analysis of the three factors, the red-cockaded demonstrates some degree of stability in all three factors. The species' viability is reduced over historical levels, but habitat conditions and population numbers are improving. In terms of resiliency, most of the populations are still quite small, but the vast majority are stable or even growing. The species has not lost any representative populations since the 2003 revised recovery plan, and while a few ecoregions still only contain one or two populations, most of these populations are stable or growing. Finally, there is a fair degree of redundancy within ecosystems across the range of the species, although, again, most of these populations are still quite small and are isolated from each other. The improving viability of the red-cockaded woodpecker has been largely due to intensive, extensive management, including actions immediately after large storm events to offset cavity loss and reduce hazardous fuels. Without this intervention, many populations, especially the low and very low resilience populations, likely would have been extirpated.Future Conditions Our analysis of stressors and risk factors, as well as the past, current, and future influences on what the red-cockaded woodpecker needs for long-term viability, revealed that the primary predictor of future viability of the species is the continuation of active management (including cavity management, midstory treatment such as prescribed fire, and translocation efforts).[[Page 63486]] We assessed future red-cockaded woodpecker population growth, population size (active clusters), and resiliency by first modeling past trends and variation in population size of demographically delineated populations as affected by factors including management treatments (e.g , number of artificial cavities, recruitment clusters, birds received by translocations, and frequency of prescribed fire and mid-story hardwood control), dominant pine species, the density of active clusters, and parameters to account for unexplained sources of variation to population size by this procedure (USFWS 2020, chapter 6 and appendix 2). We obtained historical information for 87 demographically delineated populations and were also able to extrapolate missing data for certain populations by imputation with an expectation-maximization algorithm (USFWS 2020, appendix 1). Populations were separately modeled as small (6 to 29 clusters), medium (30 to 75 clusters), and large (more than 75 clusters) classes. Populations with fewer than six active clusters were not modeled because of high variation in growth rates. For past growth rate of small populations, the most important variables were the number of new recruitment clusters, number of new artificial cavities in previously existing clusters (cavity management), midstory treatments by prescribed fire or mechanical methods, number of red-cockaded woodpeckers translocated into the population, and dominant pine type. Translocation had the greatest positive effect on growth of any management technique. For medium populations, recruitment clusters and midstory treatments by prescribed fire were significant management covariates. The best model for large populations included recruitment clusters, cavity management, and spatial configuration of active clusters. In all cases, effects of recruitment clusters, cavity management, midstory treatment, and translocation were positive. We then used the best assessed future growth and conditions for each red-cockaded woodpecker population to assess viability under four future 25-year management scenarios: Low management, medium management, high management, and the ``Manager's Expectation.'' In the Manager's Expectation scenario, we elicited estimates for red-cockaded woodpecker conservation management treatments (e.g , number of artificial cavities, number of recruitment clusters, midstory treatments, prescribed fire frequency, translocation, etc.) from property biologists, foresters, and managers. For the low management scenario, values for each management covariate (e.g , cavity management, prescribed fire treatments, number of recruitment clusters, midstory hardwood treatment, translocation) were set to zero. However, this scenario does not reflect no management, but rather, the absence of management techniques specific to red-cockaded woodpeckers and instead a reliance on ecosystem management. Thus, some baseline habitat management, which would indirectly provide some nesting and foraging habitat, would be expected under the low management scenario. However, because most of the past populations for which we had sufficient data have been actively managed more aggressively than this scenario, we were unable to accurately model this type of minimal baseline habitat management. Therefore, future simulated population growth in the low management scenario is probably overestimated. Management covariate parameters for the medium management scenario assume the average of the past parameters employed to conserve red-cockaded woodpeckers over the past 20 years will continue into the future. For the high management scenario, management treatments for simulated populations reflect the parameter values in the 90th percentile of all past population treatments, as if populations were more intensely and extensively managed. The high management scenario thus represents projections of what might potentially be achieved should the species be systematically managed more intensively across its range than it has been in the past. The Manager's Expectation scenario was based on what the experts, described above, thought was the most likely annual future number of recruitment clusters, artificial cavities, prescribed fire treatments, and other management parameters at 5-year intervals for a 25-year period. We chose to project 25 years into the future because the combination of species' response to natural factors and management and the ability of managers to accurately predict future management treatments becomes highly uncertain at longer intervals. The red-cockaded woodpecker is a conservation-reliant species of naturally fire-dependent, open, and mature to old southern pine ***forests***. These ***forest*** conditions do not currently occur without management due to the history of fire-exclusion, incompatible ***forest*** management, and other ***land*** uses. Planning and successfully implementing management and treatments for each active cluster and population requires extensive resources that are difficult for managers to accurately predict for longer than 25 years. In addition to a population's response to management, there is natural variation in nest success, number of fledglings, survival of young-of-year and adults, and cooperative breeding dynamics with replacement of adult breeders by other birds dispersing from other territories. In turn, this affects annual variation in population size (active clusters) and patterns of population growth or decline. Simulations of future population conditions under different management scenarios included effects of some management treatments, though not all, as model parameters. However, effects of these management treatment parameters did not account for all sources of annual variation affecting population size that still occurred in the model and simulations. Because of the variation in future simulated population size at 25 years (USFWS 2020, appendix 2), future estimates of population size after 25 years are more uncertain. Table 1 summarizes the model outputs for the four scenarios at the end of the 25-year simulation period. Data from 106 of the 124 current populations were available for future simulations. Of those 106 populations, initial populations with fewer than 6 active clusters were not simulated unless they demographically merged with other populations to create new, larger populations during the 25-year period. In addition, the total number of simulated future populations at year 25 are not equal among management scenarios because of the different number of initial populations that demographically merge to establish new populations. In other words, a lower number of populations at the end than the start for each scenario does not mean that all those populations were extirpated, rather some of the populations increased and merged to create new, larger populations. Therefore, the initial starting number of populations, and predicted number of populations at the end of the simulation period, varied. We also compare the results of current and future population resiliency classes as percentages in this proposed rule rather than absolute numbers because of this variation. Furthermore, although the initial starting numbers varied for each of the scenarios for the reasons discussed above, we present the current condition of the 124 demographic populations as the starting place for each of these scenarios. The current condition (Past-to-Current in Table 1) for these[[Page 63487]]populations are: 57.3 percent have very low resiliency, 29.8 percent have low, 8.1 percent have moderate, 2.4 percent have high, and 2.4 percent have very high. For more details on the model, please see the SSA report (USFWS 2020, pp. 130-136, appendix 1, appendix 2). Table 1--Resilience Summary Based on Current Condition and Population Simulations Under 4 Future Management Scenarios---------------------------------------------------------------------------------------------------------------- Population resilience category percentages Model series/scenario ------------------------------------------------------------------------------- Very low Low Moderate High Very high----------------------------------------------------------------------------------------------------------------Past-to-Current................. 57.3 29.8 8.1 2.4 2.4Future Low...................... 61.7 14.8 11.1 6.2 6.2Future Medium................... 25.0 45.2 15.5 8.3 6.0Future High..................... 22.2 39.5 21.0 11.1 6.2Future Manager's................ 28.6 42.9 14.3 8.3 5.9---------------------------------------------------------------------------------------------------------------- Low management scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 81 simulated demographic populations are: 6.2 percent of populations (5) very high; 6.2 percent (5) high; 11.1 percent (9) moderate; 14.8 percent (12) low; and 61.7 percent (50) very low. The low management scenario projects a modest increase in the percentage of current populations of moderate to very high resiliency from about 13 percent (16) to about 24 percent (19) of the 81 simulated populations compared to current conditions, but the majority of the populations that currently have low resiliency decline sufficiently to transition into the very low resiliency category. The projected outcome of this scenario clearly demonstrates the dependence of red-cockaded woodpecker population resiliency on intensive, species-specific management. Medium management scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 84 simulated demographic populations are: 6.0 percent of populations (5) very high; 8.3 percent (7) high; 15.5 percent (13) moderate; 45.2 percent (38) low; and 25.0 percent (21) very low. The medium management scenario projected a more substantial increase in the percentage of populations of moderate to very high resiliency from about 13 percent (16) to about 30 percent (25) of the populations. At the other end, the percentage of low and very low resiliency populations decreased. High management scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 81 demographic populations are as follows: 6.2 percent of populations (5) very high; 11.1 percent (9) high; 21.0 percent (17) moderate; 39.5 percent (32) low; and 22.2 percent (18) very low. The high management scenario projected an even more substantial increase in the percentage of populations of moderate to very high resiliency, increasing to about 38 percent (31) of the populations. However, the ***land*** base available for conservation has a substantial effect on the growth of these populations under this scenario. For example, none of the populations with low or very low resiliency in this scenario has the carrying capacity on their respective managed properties to transition to a higher resiliency category, regardless of the intensive management reflected in this scenario. Thus, there are 50 red-cockaded woodpecker populations that, in the absence of acquisition of additional habitat for population expansion, will always remain small regardless of the management efforts. Manager's Expectation scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 84 demographic populations are: 5.9 percent of the populations (5) very high; 8.3 percent (7) high; 14.3 percent (12) moderate; 42.9 percent (36) low; and 28.6 percent (24) very low. The results are very similar to the medium management scenario. Future Representation and Redundancy of the Species: Under all management scenarios, five populations in four ecosystems are predicted to have very high resiliency (East Gulf Coastal Plain (2), Sandhills (1), Mid-Atlantic Coastal Plain (1), and South Atlantic Coastal Plain (1)). Under the Manager's Expectation and medium management scenarios, seven populations in five ecosystems are considered to have high resiliency (East Gulf Coastal Plain (2), South Atlantic Coastal Plain (1), Sandhills (2), Upper West Gulf Coastal Plain (1), and West Gulf Coastal Plain (1)). Also, compared to current conditions, the greater number of future high and very high resiliency populations are more widely distributed among ecoregions and include the western geographic range; however, over the whole range of the woodpecker, the occurrence of high and very high resiliency populations is most concentrated in the East Gulf Coastal Plain and Sandhills ecoregions. Only two ecoregions (Cumberland Ridge and Valley and Gulf Coast Prairie and Marshes) have no simulated populations of moderate to very high resiliency in the Manager's Expectation, medium management, and high management scenarios, compared to six ecoregions (Florida Peninsula, Ouachita Mountains, Cumberland Ridge and Valley, Piedmont, Gulf Coast Prairie and Marshes, and Mississippi River Alluvial Plain) that currently do not have moderate to very high resiliency populations. The one current population in the Mississippi River Alluvial Plain ecoregion was not simulated in the future. In the low management scenario, four ecoregions (Cumberland Ridge and Valley, Gulf Coast Prairie and Marshes, Ouachita Mountains, and Piedmont) that currently only have low or very low resiliency populations are not projected to gain any moderate to very high resiliency populations at 25 years. Summary: The total number of simulated populations at 25 years varied slightly among the management scenarios because of a different number of initial populations that demographically merged during simulations to establish new and larger populations. Results of the Manager's Expectation and medium management scenarios were most similar, while the low management and high management scenarios represented more extreme future resiliency conditions. These simulations, particularly for the low management and high management scenarios, illustrate the extent to which the red-cockaded woodpecker is a conservation-reliant species that responds positively or negatively to management, and how successful management can sustain small populations with low or very low resiliency. In all scenarios, most populations at year 25 were still in the[[Page 63488]]very low, low, and moderate resiliency categories. However, the majority of populations were projected to be stable or increasing in all but the low management scenario, highlighting how successful management can sustain even small populations, albeit with a greater inherent risk in response to poor or insufficient management. The low management scenario illustrates that without adequate species-level management, in contrast to ecosystem management alone, very little increase in the number of moderate to very high resiliency populations can be expected and small populations of low or very low resiliency are unlikely to persist. The high management scenario represents the limit of what can be accomplished given the current ***land*** base and carrying capacity to support populations. However, management at current levels, as represented by the medium management scenario, further increases the number of moderate to very high resiliency populations and projects that small populations can be preserved. In addition, at current (or greater) levels of future management, redundancy and representation are expected to improve significantly in response to increasing populations. Because, if we reclassify the red-cockaded woodpecker as a threatened species, the woodpecker would remain protected under the Act, current levels of management are expected to continue into the future.Recovery and Recovery Plan Implementation The original red-cockaded woodpecker recovery plan was first issued by the Service on August 24, 1979. A first revision was issued on April 11, 1995, and the second, and current, revision on January 27, 2003. The 2003 recovery plan provided management guidelines fundamental to the conservation and recovery of red-cockaded woodpeckers. The Service continues to strongly encourage the application of these guidelines to the management of woodpecker populations on public and private ***lands***. As explained in Conservation Measures that Benefit the Species, above, implementation of the recovery plan has been carried out through the incorporation of management guidelines into various Federal and State ***land*** management plans. In addition to the management guidelines, the 2003 recovery plan provides guidelines to private landowners to follow on private ***lands*** occupied by red-cockaded woodpeckers. The 2003 recovery plan provides guidelines for installing artificial cavities; management of cavity trees and clusters; translocation; silviculture; and prescribed fire under the management guidelines, and guidelines for managing foraging habitat on private ***lands*** are provided under the private ***land*** guidelines. After the issuance of the 2003 recovery plan, two additional sets of foraging guidelines were developed (USFWS 2005, entire). As described in the 2005 guidance, the recovery standard for good quality foraging habitat is intended for recovery management to sustain and increase populations. The recovery plan contains both downlisting and delisting criteria. The recovery criteria in the 2003 recovery plan are based on 39 designated populations in different viability size classes. Although these were not the only red-cockaded woodpecker populations known at the time, they were selected as recovery populations because of anticipated future management by their management agencies or entities, the estimated future capacity of the properties, and their geographic distribution within and among recovery units (e.g , ecoregions). Each of these designated populations have a future population size objective with various potential roles toward achieving the downlisting and delisting criteria in the recovery plan. The populations are distributed within 11 recovery units or ecoregions that represent broad patterns of ecological and potential genetic variation and that enhance immigration to reduce the loss of genetic variation (e.g , representation), with multiple populations to reduce risks of catastrophic impacts of periodic hurricanes, and adverse stochastic demographic, environmental, and genetic factors (e.g , redundancy). The 39 designated recovery populations are either primary core (13), secondary core (10), or essential support (16), according to recovery population size potential breeding group (PBG) objectives. As described above, a PBG is a cluster with a potentially breeding adult male and female, with or without adult helpers or successfully fledging young. An active cluster can be either a PBG or a single territorial bird. Further discussion of these terms, along with the rationale for each delisting and downlisting criterion, can be found in the recovery plan (USFWS 2003, pp. 140-145). Further detail on the specific populations required to meet each criterion can also be found in the recovery plan. Downlisting may be achieved by having a total of 20 designated recovery populations fulfilling the following criteria. Qualifying populations with the largest population sizes are listed for each criterion when a specific population is not required. No particular population may satisfy more than one criterion. Downlisting Criterion 1: There is one stable or increasing population of 350 PBGs (400 to 500 active clusters) in the Central Florida Panhandle. This criterion has been met. In our 2006 5-year review (USFWS 2006), we identified that part of one of the five properties (Apalachicola Ranger District-Apalachicola National ***Forest***) comprising the Central Florida Panhandle Primary Core population alone had 451 PBGs. Now, there are 909 active clusters representing about 809 PBGs for the Central Florida Panhandle Primary Core population. The average growth rate for this population is increasing. Downlisting Criterion 2: There is at least one stable or increasing population containing at least 250 PBGs (275 to 350 active clusters) in each of the six following recovery units: Sandhills, Mid-Atlantic Coastal Plain, South Atlantic Coastal Plain, West Gulf Coastal Plain, Upper West Gulf Coastal Plain, and Upper East Gulf Coastal Plain. This criterion has been partially met. Currently, four of the six recovery units have a population that has reached the minimum required size to fulfill this criterion (Sandhills, North Carolina Sandhills East Primary Core; Mid-Atlantic Coastal Plain, Francis Marion Primary Core; South Atlantic Coastal Plain, Fort Stewart Primary Core; and Upper West Gulf Coastal Plain, Sam Houston Primary Core). The Vernon-Fort Polk primary core with 223 active clusters and 185 PBGs (West Gulf Coastal Plain) and Bienville Primary Core with 162 active clusters and 144 PBGs (Upper East Gulf Coastal Plain) have not fulfilled this criterion. Downlisting Criterion 3: There is at least one stable or increasing population containing at least 100 PBGs (110 to 140 active clusters) in each of the four following recovery units: Mid-Atlantic Coastal Plain, Sandhills, South Atlantic Coastal Plain, and East Gulf Coastal Plain. This criterion has been fulfilled by the following populations: Coastal North Carolina Primary Core (235 active clusters, 209 PBGs, Mid-Atlantic Coastal Plain), South Carolina Sandhills Secondary Core (237 active clusters, 211 PBGs, Sandhills), Osceola/Okefenokee Primary Core (212 active clusters, 189 PBGs, South Atlantic Coastal Plain), and Eglin Primary Core (526 active clusters, 462 PBGs, East Gulf Coastal Plain). Downlisting Criterion 4: There is at least one stable or increasing population containing at least 70 PBGs (75 to 100 active clusters) in each of the following[[Page 63489]]four recovery units: Cumberland Ridge and Valley, Ouachita Mountains, Piedmont, and Sandhills. In addition, in the Mid-Atlantic Coastal Plain, the Northeast North Carolina/Southeast Virginia Essential Support Population is stable or increasing and contains at least 70 PBGs (75 to 100 active clusters). This criterion has been partially met by two populations: North Carolina Sandhills West Essential Support (187 active clusters, 166 PBGs, Sandhills) and Oconee/Piedmont Secondary Core (85 active clusters, 76 PBGs, Piedmont). Three of the five populations presently do not meet the required population size: Ouachita Secondary Core (73 active, 69 PBGs, Ouachita Mountains), Northeast North Carolina/Southeast Virginia Essential Support (68 active clusters, 61 PBGs, Mid-Atlantic Coastal Plain), and Talladega/Shoal Creek Essential Support (45 active clusters, 43 PBGs, Cumberland Ridge and Valley). The Ouachita Secondary Core population in the Ouachita Mountains recovery unit, with an estimated 69 PBGs, is on the threshold of achieving the size criterion. Downlisting Criterion 5: There are at least four populations each containing at least 40 PBGs (45 to 60 active clusters) on State and/or Federal ***lands*** in the South/Central Florida Recovery Unit. This criterion has been met by four populations: Big Cypress Essential Support, (88 active clusters, 78 PBGs); Goethe Essential Support (63 active clusters, 52 PBGs); Ocala Essential Support (123 active clusters, 109 PBGs); Withlacoochee Citrus Tract (80 active clusters, 78 PBGs). Downlisting Criterion 6: There are habitat management plans in place in each of the above populations identifying management actions sufficient to increase the populations to recovery levels, with special emphasis on frequent prescribed burning during the growing season. This criterion has been mostly met. These 20 populations occur on properties owned by 6 Federal and 5 State agencies, and 2 nongovernmental entities. Agency management plans meet this criterion for 18 of these 20 populations. The remaining two populations, the Big Cypress Essential Support population and the Northeast North Carolina/Southeast Virginia Essential Support population, do not currently fulfill this management criterion for various reasons. The Big Cypress Essential Support population, on the Big Cypress National Preserve, has exceeded its recovery population size objective, and while the Preserve management plan doesn't mention species-specific management activities, appropriate habitat management is occurring along with a limited application of artificial cavity installation. In addition, because of the current distribution and number of natural cavities and continued excavation of natural cavities on the Preserve by woodpeckers, there may be sufficient old pines for natural cavity excavation to sustain this population even if the Preserve does not manage for artificial cavities in the future. The Northeast North Carolina/Southeast Virginia Essential Support population is spread over five properties with a mixture of management plans and management activities. For example, The Nature Conservancy does not have a management plan for the Piney Grove Preserve in Virginia; however, this population segment is intensively and successfully managed. Red-cockaded woodpeckers on the remaining four properties inhabit ecologically unique conditions that limit the application of the standard management techniques, and a management plan does not exist for one of these properties. In addition, the available management plans for these 20 populations include none to minimal provisions for post-hurricane or post-storm management, although such management generally does occur when needed. Delisting can be achieved with a minimum 29 populations that fulfill required size criteria in, when required, specific recovery units. As with downlisting, a population that fulfills one criterion cannot be applied to meet another criterion. All of these populations must exist with suitable natural cavities and without dependence on continued artificial cavity management. Sufficient management and monitoring plans must be available by respective management agencies to continue to sustain these populations. Finally, the recovery plan indicates that only 11 of the 13 primary core populations must meet the delisting criteria because at any time 2 may be recovering from adverse impacts of hurricanes. Similarly, the requirement for secondary core populations is 9 of 10, and the requirement for essential support populations is 9 of 16 to allow for hurricane impacts. Of the 29 populations required for delisting, only 12 (41.4 percent) currently meet delisting population size requirements. Of the following four recovery criteria with delisting population size requirements, Delisting Criterion 3, concerning populations in the South/Central Florida recovery unit, is the only criterion in which all populations have attained minimum size attributes. All of these 29 populations currently remain dependent on artificial cavities. Delisting Criterion 1: There are 10 populations of red-cockaded woodpeckers that each contain at least 350 PBGs (400 to 500 active clusters), and one population that contains at least 1,000 PBGs (1,100 to 1,400 active clusters), from among 13 designated primary core populations, and each of these 11 populations is not dependent on continuing installation of artificial cavities to remain at or above this population size. This criterion has not been met. Five of the 11 primary core populations in this criterion have met or positively exceeded the minimum population size, but all populations remain dependent on artificial cavities and no population has reached at least 1,000 PBGs: North Carolina Sandhills East Primary Core (520 active clusters, 514 PBGs), Fort Stewart Primary Core (504 active clusters, 480 PBGs), Eglin Primary Core (526 active clusters, 462 PBGs), Francis Marion Primary Core (465 active clusters, 414 PBGs), Fort Benning Primary Core (400 active clusters, 387 PBGs) The Central Florida Primary Core is the closest to achieving the 1,000 PBG goal (858 active clusters, 764 PBGs). In addition, the following populations have not yet met the goal of 350 PBGs: Sam Houston Primary Core (289 active clusters, 257 PBGs), Coastal North Carolina Primary Core (235 active clusters, 209 PBGs), Osceola/Okefenokee Primary Core (212 active clusters, 189 PBGs), Vernon/Fort Polk Primary Core (223 active clusters, 199 PBGs), and Bienville Primary Core (162 active clusters, 144 PBGs) Delisting Criterion 2: There are nine populations of red-cockaded woodpeckers that each contain at least 250 PBGs (275 to 350 active clusters) from among 10 designated secondary core populations, and each of these nine populations is not dependent on continuing installation of artificial cavities to remain at or above this population size. This criterion has not been met. None of the 10 designated secondary core populations harbors 250 PBGs, which range in size from 69 PBGs in the Ouachita Secondary Core to 211 PBGs in the South Carolina Sandhills Secondary Core, and all of these populations remain dependent on artificial cavities. Delisting Criterion 3: There are at least 250 PBGs (275 to 350 active clusters) distributed among designated essential support populations in the South/Central Florida Recovery Unit, and six of these populations (including at least two of the following: Avon Park, Big Cypress, and Ocala) exhibit a minimum population size of 40 PBGs[[Page 63490]]that is independent of continuing artificial cavity installation. This criterion has been partially met. The size of the six populations and total number of PBGs has been fulfilled: Babcock/Webb Essential Support (46 active clusters, 42 PBGs), Big Cypress Essential Support (88 active clusters, 78 PBGs), Goethe Essential Support (63 active clusters, 52 PBGs), Ocala Essential Support (123 active clusters, 109 PBGs), Three Lakes Essential Support (48 active clusters, 45 PBGs), and Withlacoochee Citrus Tract Essential Support (80 active clusters, 78 PBGs). All populations continue to be dependent on artificial cavities. Delisting Criterion 4: There is one stable or increasing population containing at least 100 PBGs (110 to 140 active clusters) in northeastern North Carolina and southeastern Virginia, the Cumberland Ridge and Valley recovery unit (Talladega/Shoal Creek), and the Sandhills recovery unit (North Carolina Sandhills West), and these populations are not dependent on continuing artificial cavity installation to remain at or above this population size. This criterion has been partially met. Of these three populations, the size objective of the North Carolina Sandhills West Essential Support (187 active clusters, 166 PBGs) has been fulfilled, while the Northeast North Carolina/Southeast Virginia Essential Support (73 active clusters, 65 PBGs) and the Talladega/Shoal Creek Essential Support (42 active clusters, 32 PBGs) have not achieved the population size objective. Also, all three populations continue to be dependent on artificial cavities. Delisting Criterion 5: For each of the populations meeting the above size criteria, responsible management agencies shall provide (1) a habitat management plan that is adequate to sustain the population and emphasizes frequent prescribed burning, and (2) a plan for continued population monitoring. This criterion has not been met. Once the populations required for delisting have achieved population size objectives and are not dependent on artificial cavities, this criterion requires adequate future management plans to continue to sustain habitat and populations with active habitat management and monitoring. Such management is essential to ensure populations do not decline and the species falls to an endangered or threatened status. These management and monitoring plans would represent post-delisting commitments by respective management entities for this conservation-reliant species. Various management plans currently exist for these populations, but not as continued commitments upon recovery and delisting of the red-cockaded woodpecker.Summary Since the recovery plan was last revised in 2003, the number of red-cockaded woodpecker active clusters has increased from 5,627 to over 7,800 (USFWS 2020, entire). The population size objectives to meet applicable downlisting criteria have been met for 15 of 20 designated populations. All of these designated populations show stable or increasing long-term population growth rates ([lambda] >= 1). However, not all of the designated recovery populations are demographically a single functional population as intended by the recovery plan. Nine of the 20 designated recovery populations toward fulfilling downlisting population size criteria consist of multiple smaller demographic populations. Based on the largest single demographic population for a designated recovery population, 14 of 20 designated recovery populations have achieved downlisting population size criteria. As to delisting criteria, because the delisting criteria all require all-natural cavities, none of the delisting criteria have been fully met. With continued ***forest*** management to retain and produce sufficient old pines for natural cavity excavation, future populations would no longer be dependent artificial cavities. Regardless, there has been encouraging progress towards meeting the delisting criteria, as 12 of 29 demographically delineated populations corresponding to designated recovery populations currently have achieved population sizes that meet the delisting criteria. While recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents. Revisions to the List, including downlisting or delisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species due to threats to the species. Section 4(b) of the Act requires that the determination be made ``solely on the basis of the best scientific and commercial data available.'' Therefore, while it is valuable to consider the progress a species has made towards meeting downlisting or delisting criteria, the decision to reclassify an endangered species as threatened or to delist a species due to recovery does not rely on the recovery plan. For the red-cockaded woodpecker, although the population objectives from the recovery plan have yet to be reached, the primary recovery task of increasing existing populations on Federal and State ***lands*** has been successful, and the population growth rates indicate sufficient resiliency to stochastic disturbances with effective management. In addition, redundancy of moderate to very high resiliency populations suggests that risks from future catastrophic events to overall viability is low.

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[***COLORADO WILDERNESS ACT OF 2021; Congressional Record Vol. 167, No. 37 (House of Representatives - February 26, 2021)***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6243-MR31-JDG9-Y0X8-00000-00&context=1516831)

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**Body**

Washington: The Library of Congress, The Government of USA has issued the following house proceeding:

The SPEAKER pro tempore. Pursuant to clause 1(c) of rule XIX, further consideration of the bill (H.R 803) to designate certain ***lands*** in the State of Colorado as components of the National Wilderness Preservation System, and for other purposes, will now resume. The Clerk read the title of the bill. The SPEAKER pro tempore. Each further amendment printed in part B of House Report 117-6 not earlier considered as part of amendments en bloc pursuant to section 3 of House Resolution 147, shall be considered only in the order printed in the report, may be offered only by a Member designated in the report, shall be considered as read, shall be debatable for the time specified in the report equally divided and controlled by the proponent and an opponent, may be withdrawn by the proponent at any time before the question is put thereon, shall not be subject to amendment, and shall not be subject to a demand for division of the question. It shall be in order at any time for the chair of the Committee on Natural Resources or his designee to offer amendments en bloc consisting further amendments printed in part B of House Report 117-6, not earlier disposed of. Amendments en bloc shall be considered as read, shall be debatable for 20 minutes equally divided and controlled by the ranking minority member of the Committee on Natural Resources or their respective designees, shall not be subject to amendment, and shall not be subject to a demand for division of the question. Amendments En Bloc No. 1 Offered by Mr. Neguse of Colorado Mr. NEGUSE. Mr. Speaker, Pursuant to House Resolution 147, I offer amendments en bloc. The SPEAKER pro tempore. The Clerk will designate the amendments en bloc. Amendments en bloc No. 1 consisting of amendment Nos. 1, 2, 4, 5, 6, 10, 12, 13, 14, 18, 19, 20, 21, 22, 23, 24, and 28, printed in part B of House Report 117-6, offered by Mr. Neguse of Colorado: Amendment No. 1 Offered by Ms. Barragan of California At the end of the bill, add the following: TITLE IX--OUTDOORS FOR ALL ACT SEC. 901. SHORT TITLE. This title may be cited as the ``Outdoors for All Act''. SEC. 902. DEFINITIONS. In this title: (1) Eligible entity.-- (A) In general.--The term ``eligible entity'' means-- (i) a State; (ii) a political subdivision of a State, including-- (I) a city; and (II) a county; (iii) a special purpose district, including park districts; and (iv) an Indian tribe (as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C 5304)). (B) Political subdivisions and indian tribes.--A political subdivision of a State or an Indian tribe shall be considered an eligible entity only if the political subdivision or Indian tribe represents or otherwise serves a qualifying urban area. (2) Outdoor recreation legacy partnership grant program.-- The term ``Outdoor Recreation Legacy Partnership Grant Program'' means the program established under section 903(a). (3) Qualifying urban area.--The term ``qualifying urban area'' means an area identified by the Census Bureau as an ``urban area'' in the most recent census. (4) Secretary.--The term ``Secretary'' means the Secretary of the Interior. SEC. 903. GRANTS AUTHORIZED. (a) In General.--The Secretary shall establish an outdoor recreation legacy partnership grant program under which the Secretary may award grants to eligible entities for projects-- (1) to acquire ***land*** and water for parks and other outdoor recreation purposes; and (2) to develop new or renovate existing outdoor recreation facilities. [[Page H738]] (b) Matching Requirement.-- (1) In general.--As a condition of receiving a grant under subsection (a), an eligible entity shall provide matching funds in the form of cash or an in-kind contribution in an amount equal to not less than 100 percent of the amounts made available under the grant. (2) Sources.--The matching amounts referred to in paragraph (1) may include amounts made available from State, local, nongovernmental, or private sources. SEC. 904. ELIGIBLE USES. (a) In General.--A grant recipient may use a grant awarded under this title-- (1) to acquire ***land*** or water that provides outdoor recreation opportunities to the public; and (2) to develop or renovate outdoor recreational facilities that provide outdoor recreation opportunities to the public, with priority given to projects that-- (A) create or significantly enhance access to park and recreational opportunities in an urban neighborhood or community; (B) engage and empower underserved communities and youth; (C) provide opportunities for youth employment or job training; (D) establish or expand public-private partnerships, with a focus on leveraging resources; and (E) take advantage of coordination among various levels of government. (b) Limitations on Use.--A grant recipient may not use grant funds for-- (1) grant administration costs; (2) incidental costs related to ***land*** acquisition, including appraisal and titling; (3) operation and maintenance activities; (4) facilities that support semiprofessional or professional athletics; (5) indoor facilities such as recreation centers or facilities that support primarily non-outdoor purposes; or (6) acquisition of ***land*** or interests in ***land*** that restrict access to specific persons. SEC. 905. NATIONAL PARK SERVICE REQUIREMENTS. In carrying out the Outdoor Recreation Legacy Partnership Grant Program, the Secretary shall-- (1) conduct an initial screening and technical review of applications received; and (2) evaluate and score all qualifying applications. SEC. 906. REPORTING. (a) Annual Reports.--Not later than 30 days after the last day of each report period, each State lead agency that receives a grant under this title shall annually submit to the Secretary performance and financial reports that-- (1) summarize project activities conducted during the report period; and (2) provide the status of the project. (b) Final Reports.--Not later than 90 days after the earlier of the date of expiration of a project period or the completion of a project, each State lead agency that receives a grant under this title shall submit to the Secretary a final report containing such information as the Secretary may require. Amendment No. 2 Offered by Mr. Brown of Maryland At the end of the bill, insert the following: TITLE IX--MISCELLANEOUS SEC. 901. PROMOTING HEALTH AND WELLNESS FOR VETERANS AND SERVICEMEMBERS. The Secretary of the Interior and the Secretary of ***Agriculture*** are encouraged to ensure servicemember and veteran access to public ***lands*** designated by this Act for the purposes of outdoor recreation and to participate in outdoor- related volunteer and wellness programs. Amendment No. 4 Offered by Mr. DeFazio of Oregon At the end of the bill, add the following new title: TITLE IX--SOUTHWESTERN OREGON WATERSHED AND SALMON PROTECTION SEC. 901. SHORT TITLE. This title may be cited as the ``Southwestern Oregon Watershed and Salmon Protection Act of 2021''. SEC. 902. WITHDRAWAL OF FEDERAL ***LAND***, CURRY COUNTY AND JOSEPHINE COUNTY, OREGON. (a) Definitions.--In this section: (1) Eligible federal ***land***.--The term ``eligible Federal ***land***'' means-- (A) any federally owned ***land*** or interest in ***land*** depicted on the Maps as within the Hunter Creek and Pistol River Headwaters Withdrawal Proposal or the Rough and Ready and Baldface Creeks Mineral Withdrawal Proposal; or (B) any ***land*** or interest in ***land*** located within such withdrawal proposals that is acquired by the Federal Government after the date of enactment of this Act. (2) Maps.--The term ``Maps'' means-- (A) the Bureau of ***Land*** Management map entitled ``Hunter Creek and Pistol River Headwaters Withdrawal Proposal'' and dated January 12, 2015; and (B) the Bureau of ***Land*** Management map entitled ``Rough and Ready and Baldface Creeks Mineral Withdrawal Proposal'' and dated January 12, 2015. (b) Withdrawal.--Subject to valid existing rights, the eligible Federal ***land*** is withdrawn from all forms of-- (1) entry, appropriation, or disposal under the public ***land*** laws; (2) location, entry, and patent under the mining laws; and (3) operation under the mineral leasing and geothermal leasing laws. (c) Availability of Maps.--Not later than 30 days after the date of enactment of this Act, the Maps shall be made available to the public at each appropriate office of the Bureau of ***Land*** Management. (d) Existing Uses Not Affected.--Except with respect to the withdrawal under subsection (b), nothing in this section restricts recreational uses, hunting, fishing, ***forest*** management activities, or other authorized uses allowed on the date of enactment of this Act on the eligible Federal ***land*** in accordance with applicable law. Amendment No. 5 Offered by Mr. DeSaulnier of California At the end of the bill, add the following new title: TITLE IX--ROSIE THE RIVETER/WORLD WAR II HOME FRONT NATIONAL HISTORICAL PARK ADDITIONS SEC. 901. ROSIE THE RIVETER/WORLD WAR II HOME FRONT NATIONAL HISTORICAL PARK ADDITIONS. (a) Short Title.--This Act may be cited as the ``Rosie the Riveter National Historic Site Expansion Act''. (b) Additions.--The Rosie the Riveter/World War II Home Front National Historical Park Establishment Act of 2000 (16 U.S.C 410ggg et seq.) is amended as follows: (1) In section 2(b), by adding at the end the following: ``Not later than 180 days after areas are added to the park administratively or by Federal law, the Secretary shall update the map to include the added areas.''. (2) By adding at the end of section 2, the following: ``(c) Additional Areas Included.--In addition to areas included under subsection (b), the park shall include the following: ``(1) The Nystrom Elementary School-The Maritime Building, as listed on the National Register of Historic Places. ``(2) Such other areas as the Secretary deems appropriate.''. (3) By amending section 3(e)(2) to read as follows: ``(2) Other property.--Within the boundaries of the park, the Secretary may acquire ***lands***, improvements, waters, or interests therein, by donation, purchase, exchange or transfer. Any ***lands***, or interests therein, owned by the State of California or any political subdivision thereof, may be acquired only by donation. When any tract of ***land*** is only partly within such boundaries, the Secretary may acquire all or any portion of the ***land*** outside of such boundaries in order to minimize the payment of severance costs. ***Land*** so acquired outside of the boundaries may be exchanged by the Secretary for non-Federal ***lands*** within the boundaries.''. Amendment No. 6 Offered by Mr. Garamendi of California At the end of the bill, add the following: TITLE IX--MISCELLANEOUS SEC. 901. SACRAMENTO-SAN JOAQUIN DELTA NATIONAL HERITAGE AREA. Section 6001(a)(4)(A) of the John D. Dingell, Jr. Conservation, Management, and Recreation Act (Public Law 116- 9) is amended by adding at the end the following: ``In addition, the Sacramento-San Joaquin Delta National Heritage Area shall include the area depicted as `Rio Vista/Expansion Area' on the map entitled `Sacramento-San Joaquin Delta National Heritage Area Proposed Boundary Expansion' and dated February 2021.'' Amendment No. 10 Offered by Mr. Keating of Massachusetts At the end of the bill, add the following: TITLE IX--MISCELLANEOUS SEC. 901. CAPE COD NATIONAL SEASHORE ADVISORY COMMISSION. Effective September 26, 2018, section 8(a) of Public Law 87-126 (16 U.S.C 459b-7(a)) is amended in the second sentence by striking ``2018'' and inserting ``2028''. Amendment No. 12 Offered by Mr. Lieu of California At the end of the bill, add the following: TITLE IX--SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA BOUNDARY ADJUSTMENT STUDY ACT SEC. 901. SHORT TITLE. This title may be cited as the ``Santa Monica Mountains National Recreation Area Boundary Adjustment Study Act''. SEC. 902. RESOURCE STUDY OF THE LOS ANGELES COASTAL AREA, CALIFORNIA. (a) Definitions.--In this section: (1) Secretary.--The term ``Secretary'' means the Secretary of the Interior. (2) Study area.--The term ``study area'' means the coastline and adjacent areas to the Santa Monica Bay from Will Rogers State Beach to Torrance Beach, including the areas in and around Ballona Creek and the Baldwin Hills and the San Pedro section of the City of Los Angeles, excluding the Port of Los Angeles north of Crescent Avenue. (b) Special Resource Study.-- (1) Study.--The Secretary shall conduct a special resource study of the study area. (2) Contents.--In conducting the study under paragraph (1), the Secretary shall-- (A) evaluate the national significance of the study area; (B) determine the suitability and feasibility of designating the study area as a unit of the National Park System; (C) consider other alternatives for preservation, protection, and interpretation of the study area by the Federal Government, State or local government entities, or private and nonprofit organizations; [[Page H739]] (D) consult with interested Federal agencies, State or local governmental entities, private and nonprofit organizations, or any other interested individuals; and (E) identify cost estimates for any Federal acquisition, development, interpretation, operation, and maintenance associated with the alternatives. (3) Applicable law.--The study required under paragraph (1) shall be conducted in accordance with section 100507 of title 54, United States Code. (4) Report.--Not later than 3 years after the date on which funds are first made available for the study under paragraph (1), the Secretary shall submit to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report that describes-- (A) the results of the study; and (B) any conclusions and recommendations of the Secretary. Amendment No. 13 Offered by Mr. McEachin of Virginia At the end of the bill, add the following: TITLE IX--GREAT DISMAL SWAMP NATIONAL HERITAGE AREA ACT SEC. 901. SHORT TITLE. This title may be cited as the ``Great Dismal Swamp National Heritage Area Act''. SEC. 902. DEFINITIONS. In this title: (1) Heritage area.--The term ``Heritage Area'' means the Great Dismal Swamp National Heritage Area. (2) Secretary.--The term ``Secretary'' means the Secretary of the Interior. (3) States.--The term ``States'' means the States of Virginia and North Carolina. (4) Study area.--The term ``study area'' means-- (A) the cities of Chesapeake, Norfolk, Portsmouth, and Suffolk in the State of Virginia; (B) Isle of Wight County in the State of Virginia; (C) Camden, Currituck, Gates, and Pasquotank counties in the State of North Carolina; and (D) any other areas in the States that-- (i) have heritage aspects that are similar to the areas described in subparagraphs (A), (B), or (C); and (ii) are adjacent to, or in the vicinity of, those areas. SEC. 903. STUDY. (a) In General.--The Secretary, in consultation with State and local organizations and governmental agencies, Tribal governments, non-profit organizations, and other appropriate entities, shall conduct a study to assess the suitability and feasibility of designating the study area as a National Heritage Area, to be known as the ``Great Dismal Swamp National Heritage Area''. (b) Requirements.--The study shall include analysis, documentation, and determinations on whether the study area-- (1) has an assemblage of natural, historic, and cultural resources that-- (A) represent distinctive aspects of the people and cultures of the United States; (B) are worthy of recognition, conservation, interpretation, and continuing use; and (C) would be best managed-- (i) through partnerships among public and private entities; and (ii) by linking diverse and sometimes noncontiguous resources and active communities; (2) reflects traditions, customs, beliefs, and folklife that are a valuable part of the story of the United States; (3) provides outstanding opportunities-- (A) to conserve natural, historic, cultural, or scenic features; and (B) for recreation and education; (4) contains resources that-- (A) are important to any identified themes of the study area; and (B) retain a degree of integrity capable of supporting interpretation; (5) includes residents, business interests, nonprofit organizations, and State, local, and Tribal governments, and other appropriate entities that-- (A) are involved in the planning of the Heritage Area; (B) have developed a conceptual financial plan that outlines the roles of all participants in the Heritage Area, including the Federal Government; and (C) have demonstrated support for the designation of the Heritage Area; (6) has a potential management entity to work in partnership with the individuals and entities described in paragraph (5) to develop the Heritage Area while encouraging State and local economic activity; and (7) has a conceptual boundary map that is supported by the public. SEC. 904. REPORT. Not later than 3 years after the date on which funds are first made available to carry out this title, the Secretary shall submit to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report that describes-- (1) the findings of the study under section 3; and (2) any conclusions and recommendations of the Secretary. Amendment No. 14 Offered by Mr. McKinley of West Virginia At the end of the bill, add the following new title: TITLE IX--NATIONAL HERITAGE AREA SEC. 901. SHORT TITLE. This title may be cited as the ``National Heritage Area Act of 2021''. SEC. 902. DEFINITIONS. In this title: (1) Feasibility study.--The term ``feasibility study'' means a study conducted by the Secretary, or conducted by one or more other interested parties and reviewed and approved by the Secretary, in accordance with the criteria and processes required by section 905, to determine whether a study area meets the criteria to be designated by Federal statute as a National Heritage Area. (2) Indian tribe.--The term ``Indian Tribe'' means any Indian or Alaska Native tribe, band, nation, pueblo, village, or other community the name of which is included on the list most recently published by the Secretary of the Interior pursuant to section 104 of the Federally Recognized Indian Tribe List Act of 1994 (25 U.S.C 5131). (3) Local coordinating entity.--The term ``local coordinating entity'' means the entity designated by Federal statute to-- (A) carry out, in partnership with other individuals and entities, the management plan for a National Heritage Area; and (B) operate a National Heritage Area, including through the implementation of projects and programs among diverse partners in a National Heritage Area. (4) Management plan.--The term ``management plan'' means the management plan for a National Heritage Area required under this title. (5) National heritage area.--The term ``National Heritage Area'' means-- (A) each National Heritage Area, National Heritage Corridor, Natural Preservation Commission, National Heritage Canalway, National Heritage Route, Heritage Corridor, Cultural Heritage Corridor, Heritage Partnership, and National Heritage Partnership, the Shenandoah Valley Battlefields National Historic District, or other area designated by Federal statute with the explicit purpose of establishing a national heritage area designated by Congress before or on the date of enactment of this Act; and (B) each National Heritage Area designated by Federal statute after the date of enactment of this Act, unless the law designating the area exempts that area from the National Heritage Area System by specific reference to this title. (6) National heritage area system.--The term ``National Heritage Area System'' means the system of National Heritage Areas established by this title. (7) Secretary.--The term ``Secretary'' means the Secretary of the Interior. (8) Study area.--The term ``study area'' means a specific geographic area that is the subject of a feasibility study under section 905. (9) Tribal government.--The term ``Tribal government'' means the governing body of an Indian Tribe. SEC. 903. NATIONAL HERITAGE AREA SYSTEM. (a) In General.--In order to recognize certain areas of the United States that tell nationally significant stories and to conserve, enhance, and interpret the areas' natural, historic, scenic, and cultural resources that together illustrate significant aspects of our country's heritage, there is established a National Heritage Area System through which the Secretary may provide technical and financial assistance to local coordinating entities to support the establishment, development, and continuity of National Heritage Areas. (b) National Heritage Area System.--The National Heritage Area System shall be composed of all National Heritage Areas. (c) Relationship to the National Park System.-- (1) Relationship to national park units.--The Secretary shall encourage participation and assistance by any unit of the National Park System located near or encompassed by any National Heritage Area in local initiatives for that National Heritage Area that conserve and interpret resources consistent with an approved management plan for the National Heritage Area. (2) Applicability of laws.--National Heritage Areas shall not be-- (A) considered to be units of the National Park System; or (B) subject to the authorities applicable to units of the National Park System. SEC. 904. NATIONAL HERITAGE AREA SYSTEM MANAGEMENT. (a) Management Plan.-- (1) In general.--Not later than 3 years after a National Heritage Area is included in the National Heritage Area System outlined by this title, the local coordinating entity of the National Heritage Area shall submit to the Secretary for approval a management plan for the National Heritage Area. (2) Requirements.--The management plan shall-- (A) incorporate an integrated and cooperative approach for the protection, enhancement, and interpretation of the natural, cultural, historic, scenic, and recreational resources of the National Heritage Area; (B) be developed using a comprehensive planning approach that includes-- (i) opportunities for stakeholders, including community members, local and regional governments, Tribal governments, businesses, nonprofit organizations, and other interested parties-- (I) to be involved in the planning process; and (II) to review and comment on draft management plans; and [[Page H740]] (ii) documentation of the planning and public participation processes, including a description of-- (I) the means by which the management plan was prepared; (II) the stakeholders involved in the process; and (III) the timing and method of stakeholder involvement; (C) include-- (i) an inventory of-- (I) the resources located in the National Heritage Area; and (II) any other property in the National Heritage Area that-- (aa) is related to the themes of the National Heritage Area; and (bb) should be preserved, restored, managed, or maintained because of the significance of the property; (ii) comprehensive policies, strategies and recommendations for the conservation, funding, management, and development of the National Heritage Area; (iii) a description of actions that the Federal, Tribal, State, and local governments, private organizations, and individuals have agreed to take to protect the natural, historical, cultural, scenic, and recreational resources of the National Heritage Area; (iv) a program of implementation for the management plan by the local coordinating entity that includes a description of-- (I) actions to facilitate ongoing collaboration among partners to promote plans for resource protection, restoration, and construction; and (II) specific commitments for implementation that have been made by the local coordinating entity or any government, organization, or individual for the first 5 years of operation; (v) the identification of sources of funding for carrying out the management plan; (vi) analysis and recommendations for means by which Federal, Tribal, State, and local programs, including the role of the National Park Service in the National Heritage Area, may best be coordinated to carry out this subsection; and (vii) an interpretive plan for the National Heritage Area; and (D) recommend policies and strategies for resource management that consider and detail the application of appropriate ***land*** and water management techniques, including the development of intergovernmental and interagency cooperative agreements to protect the natural, historical, cultural, educational, scenic, and recreational resources of the National Heritage Area. (3) Exceptions.--The requirements in paragraph (2) shall not apply to management plans in effect on the date of the enactment of this Act. (b) Evaluations.-- (1) In general.--Not later than 1 year before the authorization for Federal funding expires for a National Heritage Area, the Secretary shall-- (A) conduct an evaluation of the accomplishments of that National Heritage Area; and (B) prepare and submit a report detailing the evaluation required by subparagraph (A) to-- (i) the Committee on Natural Resources of the House of Representatives; and (ii) the Committee on Energy and Natural Resources of the Senate. (2) Evaluation components.--An evaluation prepared under paragraph (1) shall-- (A) assess the progress of the local coordinating entity with respect to-- (i) accomplishing the purposes of the authorizing legislation for the National Heritage Area; and (ii) achieving the goals and objectives of the approved management plan for the National Heritage Area; (B) analyze the Federal, Tribal, State, local, and private investments in the National Heritage Area to assess the impact of the investments; and (C) review the management structure, partnership relationships, and funding of the National Heritage Area. (3) Results of evaluation.--Based upon the evaluation under paragraph (1), the Secretary shall prepare a report with recommendations for the National Park Service's continued role, if any, with respect to the National Heritage Area. If the report recommends that Federal funding for the National Heritage Area be-- (A) continued, the report shall include an analysis of-- (i) ways in which Federal funding for the National Heritage Area may be reduced or eliminated over time; (ii) the appropriate time period necessary to achieve the recommended reduction or elimination; and (iii) justification for the continued funding in light of other National Park Service core responsibilities and priorities; or (B) eliminated, the report shall include a description of potential impacts on conservation, interpretation, and sustainability of the National Heritage Area. (4) Updates; additional evaluations.-- (A) Updates.--The Secretary may satisfy the requirement under paragraph (1) for a National Heritage Area by updating an evaluation that was completed for that National Heritage Area not more than 5 years before another evaluation would otherwise be required under paragraph (1). (B) Additional evaluations.--The Secretary may conduct additional evaluations as the Secretary deems appropriate. (c) Coordination.--The head of any Federal agency planning to conduct activities that may have an impact on a designated National Heritage Area is encouraged to consult and coordinate these activities with the Secretary and the local coordinating entity to the maximum extent practicable. SEC. 905. STUDY AREAS. (a) Feasibility Studies.-- (1) In general.--The Secretary may carry out or certify a study to assess the suitability and feasibility of designating a specific geographic area as a National Heritage Area to be included in the National Heritage Area System. (2) Preparation.--The feasibility study shall be carried out-- (A) by the Secretary in consultation with Tribal, State, and local historic preservation officers, State and local historical societies, State and local tourism offices, and other appropriate organizations and governmental agencies; or (B) by interested individuals or entities, if the Secretary certifies that the completed study meets the requirements of paragraph (4). (3) Certification.--Not later than 1 year after receiving a study carried out by interested individuals or entities under paragraph (2)(B) the Secretary shall review and certify whether the study meets the requirements of paragraph (4). (4) Requirements.--A study under paragraph (1) shall include analysis, documentation, and determination on whether the study area-- (A) has an assemblage of natural, historic, and cultural resources that-- (i) represent distinct aspects of the heritage of the United States; (ii) are worthy of recognition, conservation, interpretation, and continuing use; and (iii) would be best managed-- (I) through partnerships among public and private entities; and (II) by linking diverse and sometimes noncontiguous resources; (B) reflects traditions, customs, beliefs, and folklife that are a valuable part of the story of the United States; (C) provides outstanding opportunities-- (i) to conserve natural, historic, cultural, or scenic features; and (ii) for recreation and education; (D) contains resources that-- (i) are important to any identified themes of the study area; and (ii) retain a degree of integrity capable of supporting interpretation; (E) includes Tribal governments, residents, business interests, nonprofit organizations, and State and local governments that-- (i) are involved in the planning of the study area; (ii) have developed a conceptual financial plan that outlines the roles of all participants in the study area, including the Federal Government; and (iii) have demonstrated support for the designation of the study area; (F) has a potential local coordinating entity to work in partnership with the individuals and entities described in paragraph (1) to develop the study area while encouraging State and local economic activity; and (G) has a conceptual boundary map that is supported by the public. (b) Report.-- (1) In general.--For each study carried out under subsection (a), the Secretary shall submit to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report that describes-- (A) the findings of the study described in subsection (a) for that study area; and (B) any conclusions and recommendations of the Secretary. (2) Timing.-- (A) With respect to a study carried out by the Secretary in accordance with paragraph (2)(A)(i), the Secretary shall submit a report under subparagraph (A) not later than 3 years after the date on which funds are first made available to carry out the study. (B) With respect to a study carried out by interested individuals or entities in accordance with paragraph (2)(A)(ii), the Secretary shall submit a report under subparagraph (A) not later than 180 days after the date on which the Secretary certifies under paragraph (2)(B) that the study meets the requirements of paragraph (3). SEC. 906. LOCAL COORDINATING ENTITIES. (a) Duties.--For any year that Federal funds have been made available under this title for a National Heritage Area, the local coordinating entity for that National Heritage Area shall-- (1) submit to the Secretary an annual report that describes the activities, expenses, and income of the local coordinating entity (including grants to any other entities during the year that the report is made); (2) make available to the Secretary for audit all records relating to the expenditure of Federal funds and any matching funds; and (3) require, with respect to all agreements authorizing expenditure of Federal funds by other organizations, that the organizations receiving the funds make available to the Secretary for audit all records concerning the expenditure of the funds. (b) Authorities.--The local coordinating entity may, subject to the prior approval of the Secretary, for the purposes of preparing and implementing the approved management [[Page H741]] plan for the National Heritage Area, use Federal funds made available through this title to-- (1) make grants to Indian Tribes, a State, a local government, nonprofit organizations, and other parties within the National Heritage Area; (2) enter into cooperative agreements with or provide technical assistance to the Indian Tribes, State, a local government, nonprofit organizations, Federal agencies, and other interested parties; (3) hire and compensate staff, which may include individuals with expertise in natural, cultural, and historic resources conservation; economic and community development; and heritage planning; (4) obtain money or services, including those provided under other Federal laws or programs; (5) contract for goods or services; and (6) support activities of partners and any other activities that further the purposes of the National Heritage Area and are consistent with the approved management plan. (c) Prohibitions on the Acquisition of Real Property.--The local coordinating entity may not use Federal funds received under this title to acquire real property or any interest in real property. (d) Heritage Area Commissions.-- (1) Section 804(j) of division B of H.R 5666 (Appendix D) as enacted into law by section 1(a)(4) of Public Law 106-554 (54 U.S.C 320101 note; 114 Stat. 2763, 2763A- 295; 123 Stat. 1294; 128 Stat. 3802) is amended by striking ``shall terminate'' and all that follows through the period and inserting ``shall terminate on September 30, 2034.''. (2) Section 295D(d) of Public Law 109-338 (120 Stat. 1833; 130 Stat. 962) is amended by striking ``shall terminate'' and all that follows through the period and inserting ``shall terminate on September 30, 2034.''. SEC. 907. PROPERTY OWNERS AND REGULATORY PROTECTIONS. Nothing in this title shall be construed to-- (1) abridge the rights of any property owner, whether public or private, including the right to refrain from participating in any plan, project, program, or activity conducted within the National Heritage Area; (2) require any property owner to permit public access (including Federal, Tribal, State, or local government access) to such property or to modify any provisions of Federal, Tribal, State, or local law with regard to public access or use of private ***lands***; (3) alter any duly adopted ***land*** use regulation or any approved ***land*** use plan or any other regulatory authority of any Federal, Tribal, or State, or local government, or to convey any ***land*** use or other regulatory authority to any local coordinating entity; (4) authorize or imply the reservation or appropriation of water or water rights; (5) diminish the authority of the State to manage fish and wildlife including the regulation of fishing and hunting within the National Heritage Area; (6) create any liability, or have any effect on any liability under any other law, of any private property owner with respect to any persons injured on such private property; (7) affect the authority of any Federal official to provide technical or financial assistance under any other law; (8) modify any law or regulation authorizing Federal officials to manage Federal ***land*** under their control or limit the discretion of Federal ***land*** managers to implement approved ***land*** use plans within the boundaries of a National Heritage Area, nor shall this title be construed to modify, alter, or amend any authorized uses of these Federal ***lands***; or (9) enlarge or diminish the treaty rights of any Indian Tribe within the National Heritage Area. SEC. 908. AUTHORIZATION OF APPROPRIATIONS. (a) In General.--Notwithstanding any other provision of law, for each of fiscal years 2022 through 2037, there is authorized to be appropriated not more than $750,000 for each National Heritage Area. (b) Availability.--Amounts made available under subsection (a) shall remain available until expended. (c) Cost-sharing Requirement.-- (1) Federal share.--Notwithstanding any other provision of law, including any law designating a National Heritage Area, the Federal share of the total cost of any activity funded with appropriations authorized by subsection (a) shall not be more than 50 percent. (2) Form of non-federal share.--The non-Federal share of the total cost of any activity funded with appropriations authorized by subsection (a) may be in the form of in-kind contributions of goods or services fairly valued. (3) Exception.--Notwithstanding section 909(b), for each National Heritage Area established before the date of the enactment of this Act without a non-Federal cost share requirement or with a non-Federal cost share requirement of less than 50 percent-- (A) the non-Federal cost share requirement, or lack thereof, shall remain at the previously enacted level for 2 full fiscal years after the date of the enactment of this Act; and (B) after the period referred to in subparagraph (A), the non-Federal cost share requirement shall increase by 10 percent annually until the non-Federal share is consistent with paragraph (1). (d) Authority to Provide Assistance.--Notwithstanding any other provision of law, the Secretary may provide assistance to a National Heritage Area during any fiscal year for which appropriations are authorized under subsection (a). SEC. 909. STATUTORY CLARIFICATION. (a) Authorization Limitations.--Any provision of law enacted before the date of the enactment of this Act that provides for a termination, expiration, or other time limitation on the authorization for a National Heritage Area is hereby superceded and shall have no effect. (b) Funding Limitations.--Any provision of law enacted before the date of the enactment of this Act that provides for a termination, expiration, or other limitation on the time or amount of an authorization of appropriations for a National Heritage Area is hereby superceded and shall have no effect. (c) Evaluations.--Any provision of law enacted before the date of the enactment of this Act that requires the Secretary to conduct an evaluation of or submit a report on the accomplishments of a National Heritage Area is hereby superceded and shall have no effect. (d) Other Authorities.--Any provision of law enacted before the date of the enactment of this Act that provides for the establishment, management, administration, operation, or otherwise affects a National Heritage Area and is not explicitly otherwise provided for in this title shall not be affected by this title. Amendment No. 18 Offered by Mr. O'Halleran of Arizona At the end of the bill, insert the following new title: TITLE IX--CASA GRANDE RUINS NATIONAL MONUMENT BOUNDARY MODIFICATION SEC. 901. SHORT TITLE. This title may be cited as the ``Casa Grande Ruins National Monument Boundary Modification Act of 2021''. SEC. 902. FINDINGS. Congress finds that-- (1) Casa Grande Ruin Reservation was-- (A) set aside on March 2, 1889; (B) proclaimed as the first archaeological preserve in the United States on June 22, 1892; and (C) redesignated as the ``Casa Grande Ruins National Monument'' on August 3, 1918; (2) the Casa Grande Ruins National Monument protects 1 of the finest architectural examples of 14th century Hohokam culture in the Southwest, which was known to early Spanish explorers as the ``Great House''; (3) Casa Grande is only part of the story of an ancient town that may have covered 2 square miles; and (4) recent surveys and research have determined that the area of the Great House and the village surrounding the Great House extends beyond the existing boundary of the Casa Grande Ruins National Monument. SEC. 903. DEFINITIONS. In this title: (1) BIA ***land***.--The term ``BIA ***land***'' means the approximately 7.41 acres of Federal ***land*** administered by the Bureau of Indian Affairs, to be transferred to the administrative jurisdiction of the National Park Service, as generally depicted on the map. (2) BLM ***land***.--The term ``BLM ***land*** Parcel A'' means the approximately 3.8 acres of Federal ***land*** administered by the Bureau of ***Land*** Management, for which administrative jurisdiction is to be transferred to the National Park Service, as generally depicted on the map. (3) BLM ***land*** parcel b.--The term ``BLM ***land*** parcel B'' means the approximately 3.7 acres of Federal ***land*** administered by the Bureau of ***Land*** Management for which administrative jurisdiction is to be transferred to the Bureau of Indian Affairs, as generally depicted on the map. (3) Map.--The term ``map'' means the map entitled ``Casa Grande Ruins National Monument Proposed Boundary Adjustment'', numbered 303-120,734B, and dated June 2020. (5) Monument.--The term ``Monument'' means the Casa Grande Ruins National Monument in the State. (6) NPS ***land***.--The term ``NPS ***land***'' means the approximately 3.5 acres of Federal ***land*** administered by the National Park Service, for which administrative jurisdiction is to be transferred to the Bureau of Indian Affairs, as generally depicted on the map. (7) Secretary.--The term ``Secretary'' means the Secretary of the Interior. (6) State.--The term ``State'' means the State of Arizona. SEC. 904. ACQUISITION AND TRANSFER OF ADMINISTRATIVE JURISDICTION OVER CERTAIN ***LAND***. (a) Acquisition of ***Land***.--The Secretary may acquire by donation, exchange, or purchase with donated or appropriated funds, from willing sellers only, ***lands*** or interests in ***land*** generally depicted on the map as State ***land*** or private ***land***, as generally depicted on the map, to be administered as part of the Monument. (b) Transfer of Administrative Jurisdiction.-- (1) Withdrawal.--The BIA ***land***, BLM ***land*** parcel A and BLM ***land*** parcel B are withdrawn from-- (A) all forms of entry, appropriation, and disposal under the public ***land*** laws; [[Page H742]] (B) location, entry, and patent under the mining laws; and (C) operation of the mineral leasing and geothermal leasing laws and mineral materials laws. (2) Transfer of administrative jurisdiction.-- (A) BLM ***land*** parcel a.--Administrative jurisdiction over the BLM ***land*** parcel A is transferred from the Bureau of ***Land*** Management to the National Park Service. (B) BLM ***land*** parcel b.--Administrative jurisdiction over BLM ***land*** parcel B is transferred from the Bureau of ***Land*** Management to the Bureau of Indian Affairs. (C) BIA ***land***.--Administrative jurisdiction over the BIA ***land*** is transferred from the Bureau of Indian Affairs to the National Park Service. (D) NPS ***land***.--Administrative jurisdiction over the NPS ***land*** is transferred from the National Park Service to the Bureau of Indian Affairs. (c) Administration; Boundary Modification.--Upon the acquisition of ***land*** or an interest in ***land*** pursuant to subsection (a), and with respect to the ***lands*** transferred by subsection (b), the Secretary shall-- (1) administer any acquired ***land*** or interest in ***land***, and ***land*** transferred to the administrative jurisdiction of the National Park Service, as part of the Monument, in accordance with the laws generally applicable to units of the National Park System, including applicable provisions of division A of subtitle I of title 54, United States Code; and (2) modify the boundary of the Monument to reflect the transfers of ***lands***, and any acquired ***lands*** or interests in ***lands***. (d) Availability of Map.--The map shall be on file and available for inspection in the appropriate offices of the National Park Service, U.S Department of the Interior. (e) Compensation.--Except in a case in which ***land*** or an interest in ***land*** is acquired by donation, as consideration for the acquisition of ***land*** or an interest in ***land*** or under subsection (a), the Secretary shall-- (1) pay fair market value for the ***land*** or interest in ***land***; or (2) convey to the State or private landowner, as applicable, Federal ***land*** or an interest in Federal ***land***, of equal value located in the State. SEC. 905. ADMINISTRATION OF STATE TRUST ***LAND***. The Secretary may enter into an agreement with the State to provide for the cooperative management by the Secretary and the State of the approximately 200 acres of State ***land***, as generally depicted on the map. Amendment No. 19 Offered by Mr. O'Halleran of Arizona At the end of the bill, insert the following new title: TITLE IX--SUNSET CRATER VOLCANO NATIONAL MONUMENT BOUNDARY ADJUSTMENT SEC. 901. SHORT TITLE. This title may be cited as the ``Sunset Crater Volcano National Monument Boundary Adjustment Act''. SEC. 902. DEFINITIONS. In this title: (1) Federal ***land***.--The term ``Federal ***land***'' means the approximately 97.71 acres of ***Forest*** Service ***land*** identified as ``Proposed transfer from USDA ***Forest*** Service to National Park Service'' on the Map. (2) Map.--The term ``Map'' means the map entitled ``Sunset Crater Volcano National Monument Draft Proposed Boundary Adjustment'', numbered 039/80,053d, and dated March 2020. (3) Monument.--The term ``Monument'' means the Sunset Crater Volcano National Monument established by Presidential Proclamation 1911 (54 U.S.C 320301 note; 46 Stat. 3023) and redesignated by section 15 of the Smith River National Recreation Area Act (Public Law 101-612; 104 Stat. 3222). (4) Secretary.--The term ``Secretary'' means the Secretary of the Interior, acting through the Director of the National Park Service. SEC. 903. SUNSET CRATER VOLCANO NATIONAL MONUMENT BOUNDARY MODIFICATION. (a) Boundary Modification.--The boundary of the Monument is modified to include the Federal ***land***. (b) Map Availability.--The Map shall be on file and available for inspection in the appropriate offices of the National Park Service. (c) Transfer of Administrative Jurisdiction to National Park Service.--Administrative jurisdiction over the Federal ***land*** is transferred from the ***Forest*** Service to the National Park Service. (d) Administration.--Subject to valid existing rights, the Secretary shall administer the Federal ***land*** added to the Monument under subsection (a)-- (1) as part of the Monument; and (2) in accordance with applicable laws (including regulations). Amendment No. 20 Offered by Mr. Panetta of California At the end of the bill add the following: TITLE IX--MISCELLANEOUS SEC. 901. FIRE, INSECTS, AND DISEASES. Nothing in this Act may be construed to limit the authority of the Secretary of the Interior or the Secretary of ***Agriculture*** under section 4(d)(1) of the Wilderness Act (16 U.S.C 1133(d)(1)), in accordance with existing laws (including regulations). Amendment No. 21 Offered by Ms. Pingree of Maine At the end of the bill, add the following: TITLE IX--YORK RIVER WILD AND SCENIC RIVER SEC. 901. SHORT TITLE. This Act may be cited as ``York River Wild and Scenic River Act''. SEC. 902. WILD AND SCENIC RIVER DESIGNATION. Section 3(a) of the Wild and Scenic Rivers Act (16 U.S.C 1274(a)) is amended by adding at the end the following: ``(\_) York river, maine.--Segments of the main stem and its tributaries in the State of Maine, Bass Cove Creek, Cider Hill Creek, Cutts Ridge Brook, Dolly Gordon Brook, Libby Brook, Rogers Brook, Smelt Brook, totaling approximately 30.8 miles, to be administered by the Secretary of the Interior, as a recreational river: ``(A) The approximately 0.95-mile segment of Bass Cove Creek from the outlet of Boulter Pond in York, Maine, and extending downstream to its confluence with the York River in York, Maine. ``(B) The approximately 3.77-mile segment of Cider Hill Creek from the Middle Pond dam in York, Maine, and extending downstream to its confluence with the York River in York, Maine. ``(C) The approximately 2.15-mile segment of Cutts Ridge Brook from its headwaters in Kittery, Maine, and extending downstream to its confluence with the York River in York, Maine. ``(D) The approximately 3.17-mile segment of Dolly Gordon Brook from its headwaters in York, Maine, and extending downstream to its confluence with the York River in York, Maine. ``(E) The approximately 1.65-mile segment of Libby Brook from its headwaters in Kittery, Maine, and extending downstream to its confluence with Dolly Gordon Brook in York, Maine. ``(F) The approximately 2.43-mile segment of Rogers Brook from its headwaters in Eliot, Maine, and extending downstream to its confluence with the York River in York, Maine. ``(G) The approximately 4.54-mile segment of Smelt Brook from the Bell Marsh Reservoir dam in York, Maine, and extending downstream to its confluence with the York River in York, Maine. ``(H) The approximately 12.14-mile segment of the York River from the outlet of York Pond in Eliot, Maine, and extending downstream to the Route 103 Bridge in York, Maine, including Barrell Mill Pond in York, Maine.''. SEC. 903. MANAGEMENT OF YORK RIVER, MAINE SEGMENTS. (a) Process.-- (1) In general.--The York River, Maine segments shall be managed in accordance with-- (A) the stewardship plan; and (B) such amendments to the stewardship plan as the Secretary determines are consistent with this section and as are approved by the Stewardship Committee. (2) Comprehensive management plan.--The stewardship plan shall be considered to satisfy the requirements for a comprehensive management plan under section 3(d) of the Wild and Scenic Rivers Act (16 U.S.C 1274(d)). (b) Committee.--The Secretary shall coordinate management responsibilities under this title with the Stewardship Committee, as specified in the stewardship plan. (c) Cooperative Agreements.-- (1) In general.--In order to provide for the long-term protection, preservation, and enhancement of the York River, Maine segments, the Secretary may enter into cooperative agreements pursuant to sections 10(e) and 11(b)(1) of the Wild and Scenic Rivers Act (16 U.S.C 1281(e) and 1282(b)(1)) with-- (A) the State of Maine; (B) the municipalities of Eliot, Kittery, South Berwick, and York in Maine; and (C) appropriate local, regional, or State planning, environmental, or recreational organizations. (2) Consistency.--Each cooperative agreement entered into under this subsection shall be consistent with the stewardship plan and may include provisions for financial or other assistance from the United States. (d) ***Land*** Management.-- (1) Zoning ordinances.--For the purpose of the York River, Maine segments, the zoning ordinances adopted by the municipalities named in subsection (c)(1)(B), including provisions for conservation of floodplains, wetlands, and watercourses associated with the York River, Maine segments, shall be deemed to satisfy the standards and requirements of section 6(c) of the Wild and Scenic Rivers Act (16 U.S.C 1277(c)). (2) Acquisition of ***lands***.--The authority of the Secretary to acquire ***land*** for the purposes of the York River, Maine segments shall be-- (A) limited to acquisition by donation or acquisition with the consent of the owner of the ***land***; and (B) subject to the additional criteria set forth in the stewardship plan. (3) No condemnation.--No ***land*** or interest in ***land*** within the watersheds of the York River, Maine segments may be acquired by condemnation. (e) Relation to the National Park System.--Notwithstanding section 10(c) of the Wild and Scenic Rivers Act (16 U.S.C 1281(c)), the York River, Maine segments shall not-- [[Page H743]] (1) be administered as a unit of the National Park System; or (2) be subject to regulations that govern the National Park System. (f) Definitions.--In this section: (1) Secretary.--The term ``Secretary'' means the Secretary of the Interior. (2) Stewardship committee.--The term ``Stewardship Committee'' means the York River Stewardship Committee. (3) Stewardship plan.--The term ``stewardship plan'' means the York River Watershed Stewardship Plan, dated August 2018, developed pursuant to the study described in section 5(b)(21) of the Wild and Scenic Rivers Act (16 U.S.C 1276(b)(21)). (4) York river, maine segments.--The term ``York River, Maine segments'' means the river segments described by the amendment made by section 902. Amendment No. 22 Offered by Ms. Plaskett of Virgin Islands At the end of the bill, add the following: TITLE IX--ST. CROIX NATIONAL HERITAGE AREA SEC. 901. SHORT TITLE. This title may be cited as the ``St. Croix National Heritage Area Act''. SEC. 902. DEFINITIONS. In this title: (1) National heritage area.--The term ``National Heritage Area'' means the St. Croix National Heritage Area established by section 903(a). (2) Local coordinating entity.--The term ``local coordinating entity'' means the local coordinating entity for the National Heritage Area designated by section 903(d). (3) Management plan.--The term ``management plan'' means the management plan for the National Heritage Area required under section 905. (4) Secretary.--The term ``Secretary'' means the Secretary of the Interior. (5) St. croix.--The term ``St. Croix'' means St. Croix, Virgin Islands of the United States. (6) State.--The term ``State'' means the Virgin Islands of the United States. SEC. 903. ST. CROIX NATIONAL HERITAGE AREA. (a) Establishment.--There is established in the State the St. Croix National Heritage Area. (b) Conceptual Boundaries.--The National Heritage Area shall consist of the entire island of St. Croix. (c) Map.--A map of the National Heritage Area shall be-- (1) included in the management plan; and (2) on file and available for public inspection in the appropriate offices of the National Park Service. (d) Local Coordinating Entity.-- (1) In general.--The local coordinating entity for the National Heritage Area shall be the Virgin Islands State Historic Preservation Office. (2) Consultation requirement.--The Virgin Islands State Historic Preservation Office shall consult with a broad cross section of businesses, individuals, agencies, and organizations within the conceptual boundaries of the National Heritage Area described in subsection (b) that were involved in the planning and development of the National Heritage Area before the date of the enactment of this Act. SEC. 904. ADMINISTRATION. (a) Authorities.--For purposes of carrying out the management plan, the Secretary, acting through the local coordinating entity, may use amounts made available under this section to-- (1) make grants to the State or a political subdivision of the State, Indian Tribes, nonprofit organizations, and other persons; (2) enter into cooperative agreements with, or provide technical assistance to, the State or a political subdivision of the State, Indian Tribes, nonprofit organizations, and other interested parties; (3) hire and compensate staff, which shall include individuals with expertise in natural, cultural, and historical resources protection, and heritage programming; (4) obtain money or services from any source including any money or services that are provided under any other Federal law or program; (5) contract for goods or services; and (6) undertake to be a catalyst for any other activity that furthers the National Heritage Area and is consistent with the approved management plan. (b) Duties.--The local coordinating entity shall-- (1) in accordance with section 905, prepare and submit a management plan for the National Heritage Area to the Secretary; (2) assist Federal agencies, the State or a political subdivision of the State, Indian Tribes, regional planning organizations, nonprofit organizations, and other interested parties in carrying out the approved management plan by-- (A) carrying out programs and projects that recognize, protect, and enhance important resource values in the National Heritage Area; (B) establishing and maintaining interpretive exhibits and programs in the National Heritage Area; (C) developing recreational and educational opportunities in the National Heritage Area; (D) increasing public awareness of, and appreciation for, natural, historical, scenic, and cultural resources of the National Heritage Area; (E) protecting and restoring historic sites and buildings in the National Heritage Area that are consistent with National Heritage Area themes; (F) ensuring that clear, consistent, and appropriate signs identifying points of public access, and sites of interest are posted throughout the National Heritage Area; and (G) promoting a wide range of partnerships among governments, organizations, and individuals to further the National Heritage Area; (3) consider the interests of diverse units of government, businesses, organizations, and individuals in the National Heritage Area in the preparation and implementation of the management plan; (4) conduct meetings open to the public at least semiannually regarding the development and implementation of the management plan; (5) for any year that Federal funds have been received under this title-- (A) submit an annual report to the Secretary that describes the activities, expenses, and income of the local coordinating entity (including grants to any other entities during the year that the report is made); (B) make available to the Secretary for audit all records relating to the expenditure of the funds and any matching funds; and (C) require, with respect to all agreements authorizing expenditure of Federal funds by other organizations, that the organizations receiving the funds make available to the Secretary for audit all records concerning the expenditure of the funds; and (6) encourage by appropriate means economic viability that is consistent with the National Heritage Area. (c) Prohibition on the Acquisition of Real Property.--The local coordinating entity shall not use Federal funds made available under this title to acquire real property or any interest in real property. SEC. 905. MANAGEMENT PLAN. (a) In General.--Not later than 3 years after the date of enactment of this Act, the local coordinating entity shall submit to the Secretary for approval a proposed management plan for the National Heritage Area. (b) Requirements.--The management plan shall-- (1) incorporate an integrated and cooperative approach for the protection, enhancement, and interpretation of the natural, cultural, historic, scenic, and recreational resources of the National Heritage Area; (2) take into consideration Federal, State, and Tribal plans and treaty rights; (3) include-- (A) an inventory of-- (i) the resources located in the National Heritage Area; and (ii) any other property in the National Heritage Area that-- (I) is related to the themes of the National Heritage Area; and (II) should be preserved, restored, managed, or maintained because of the significance of the property; (B) comprehensive policies, strategies and recommendations for conservation, funding, management, and development of the National Heritage Area; (C) a description of actions that governments, private organizations, and individuals have agreed to take to protect the natural, historical, cultural, scenic, and recreational resources of the National Heritage Area; (D) a program of implementation for the management plan by the local coordinating entity that includes a description of-- (i) actions to facilitate ongoing collaboration among partners to promote plans for resource protection, restoration, and construction; and (ii) specific commitments for implementation that have been made by the local coordinating entity or any government, organization, or individual for the first 5 years of operation; (E) the identification of sources of funding for carrying out the management plan; (F) analysis and recommendations for means by which Federal, State, and Tribal programs, including the role of the National Park Service in the National Heritage Area, may best be coordinated to carry out this title; and (G) an interpretive plan for the National Heritage Area; and (4) recommend policies and strategies for resource management that consider and detail the application of appropriate ***land*** and water management techniques, including the development of intergovernmental and interagency cooperative agreements to protect the natural, historical, cultural, educational, scenic, and recreational resources of the National Heritage Area. (c) Deadline.--If a proposed management plan is not submitted to the Secretary by the date that is 3 years after the date of enactment of this Act, the local coordinating entity shall be ineligible to receive additional funding under this title until the date that the Secretary receives and approves the management plan. (d) Approval or Disapproval of Management Plan.-- (1) In general.--Not later than 180 days after the date of receipt of the management plan under subsection (a), the Secretary, in consultation with the State, shall approve or disapprove the management plan. (2) Criteria for approval.--In determining whether to approve the management plan, the Secretary shall consider whether-- (A) the local coordinating entity is representative of the diverse interests of the National Heritage Area; [[Page H744]] (B) the local coordinating entity has afforded adequate opportunity, including public hearings, for public and governmental involvement in the preparation of the management plan; and (C) the resource protection and interpretation strategies contained in the management plan, if implemented, would adequately protect the natural, historical, and cultural resources of the National Heritage Area. (3) Action following disapproval.--If the Secretary disapproves the management plan under paragraph (1), the Secretary shall-- (A) advise the local coordinating entity in writing of the reasons for the disapproval; (B) make recommendations for revisions to the management plan; and (C) not later than 180 days after the receipt of any proposed revision of the management plan from the local coordinating entity, approve or disapprove the proposed revision. (4) Amendments.-- (A) In general.--The Secretary shall approve or disapprove each amendment to the management plan that the Secretary determines make a substantial change to the management plan. (B) Use of funds.--The local coordinating entity shall not use Federal funds authorized by this title to carry out any amendments to the management plan until the Secretary has approved the amendments. SEC. 906. RELATIONSHIP TO OTHER FEDERAL AGENCIES. (a) In General.--Nothing in this title affects the authority of a Federal agency to provide technical or financial assistance under any other law. (b) Consultation and Coordination.--The head of any Federal agency planning to conduct activities that may have an impact on the National Heritage Area is encouraged to consult and coordinate the activities with the Secretary and the local coordinating entity to the maximum extent practicable. (c) Other Federal Agencies.--Nothing in this title-- (1) modifies, alters, or amends any law or regulation authorizing a Federal agency to manage Federal ***land*** under the jurisdiction of the Federal agency; (2) limits the discretion of a Federal ***land*** manager to implement an approved ***land*** use plan within the boundaries of the National Heritage Area; or (3) modifies, alters, or amends any authorized use of Federal ***land*** under the jurisdiction of a Federal agency. SEC. 907. PRIVATE PROPERTY AND REGULATORY PROTECTIONS. Nothing in this title-- (1) abridges the rights of any property owner (whether public or private), including the right to refrain from participating in any plan, project, program, or activity conducted within the National Heritage Area; (2) requires any property owner-- (A) to permit public access (including access by Federal or State agencies) to the property of the property owner; or (B) to modify public access or use of property of the property owner under any other Federal or State law; (3) alters any duly adopted ***land*** use regulation, approved ***land*** use plan, or other regulatory authority of any Federal or State agency; (4) conveys any ***land*** use or other regulatory authority to the local coordinating entity; (5) authorizes or implies the reservation or appropriation of water or water rights; (6) enlarges or diminishes the treaty rights of any Indian Tribe within the National Heritage Area; (7) diminishes-- (A) the authority of the State to manage fish and wildlife, including the regulation of fishing and hunting within the National Heritage Area; or (B) the authority of Indian Tribes to regulate members of Indian Tribes with respect to fishing, hunting, and gathering in the exercise of treaty rights; or (8) creates any liability, or affects any liability under any other law, of any private property owner with respect to any person injured on the private property. SEC. 908. EVALUATION AND REPORT. (a) In General.--Not later than 3 years before the date on which authority for Federal funding terminates for the National Heritage Area, the Secretary shall-- (1) conduct an evaluation of the accomplishments of the National Heritage Area; and (2) prepare a report in accordance with subsection (c). (b) Evaluation.--An evaluation conducted under subsection (a)(1) shall-- (1) assess the progress of the local coordinating entity with respect to-- (A) accomplishing the purposes of the authorizing legislation for the National Heritage Area; and (B) achieving the goals and objectives of the approved management plan for the National Heritage Area; (2) analyze the Federal, State, and private investments in the National Heritage Area to determine the impact of the investments; and (3) review the management structure, partnership relationships, and funding of the National Heritage Area for purposes of identifying the critical components for sustainability of the National Heritage Area. (c) Report.--Based on the evaluation conducted under subsection (a)(1), the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Natural Resources of the House of Representatives a report that includes recommendations for the future role of the National Park Service, if any, with respect to the National Heritage Area. SEC. 909. AUTHORIZATION OF APPROPRIATIONS. (a) In General.--There is authorized to be appropriated to carry out this title $10,000,000, of which not more than $1,000,000 may be made available for any fiscal year. (b) Availability.--Amounts made available under subsection (a) shall remain available until expended. (c) Cost-sharing Requirement.-- (1) In general.--The Federal share of the total cost of any activity under this title shall be not more than 50 percent. (2) Form.--The non-Federal contribution of the total cost of any activity under this title may be in the form of in- kind contributions of goods or services fairly valued. SEC. 910. TERMINATION OF AUTHORITY. The authority of the Secretary to provide assistance under this title terminates on the date that is 15 years after the date of enactment of this Act. Amendment No. 23 Offered by Mr. Pocan of Wisconsin After section 227, insert the following: SEC. 228. ICE AGE NATIONAL SCENIC TRAIL. Section 5(a)(10) of the National Trails System Act (16 U.S.C 1244(a)(10)) is amended by striking the third and fourth sentences and inserting ``The trail shall be administered by the Secretary of the Interior as a unit of the National Park System.''. Amendment No. 24 Offered by Ms. Spanberger of Virginia At the end of the bill, add the following new title: TITLE IX--ADDITIONS TO ROUGH MOUNTAIN AND RICH HOLE WILDERNESSES SEC. 901. ADDITIONS TO ROUGH MOUNTAIN AND RICH HOLE WILDERNESSES. (a) Rough Mountain Addition.--Section 1 of Public Law 100- 326 (16 U.S.C 1132 note; 102 Stat. 584; 114 Stat. 2057; 123 Stat. 1002) is amended by adding at the end the following: ``(21) Rough mountain addition.--Certain ***land*** in the George Washington National ***Forest*** comprising approximately 1,000 acres, as generally depicted as the `Rough Mountain Addition' on the map entitled `GEORGE WASHINGTON NATIONAL ***FOREST*** - South half - Alternative I - Selected Alternative Management Prescriptions - ***Land*** and Resources Management Plan Final Environmental Impact Statement' and dated March 4, 2014, which is incorporated in the Rough Mountain Wilderness Area designated by paragraph (1).''. (b) Rich Hole Addition.-- (1) Potential wilderness designation.--In furtherance of the purposes of the Wilderness Act (16 U.S.C 1131 et seq.), certain ***land*** in the George Washington National ***Forest*** comprising approximately 4,600 acres, as generally depicted as the ``Rich Hole Addition'' on the map entitled ``GEORGE WASHINGTON NATIONAL ***FOREST*** - South half - Alternative I - Selected Alternative Management Prescriptions - ***Land*** and Resources Management Plan Final Environmental Impact Statement'' and dated March 4, 2014, is designated as a potential wilderness area for incorporation in the Rich Hole Wilderness Area designated by section 1(2) of Public Law 100- 326 (16 U.S.C 1132 note; 102 Stat. 584; 114 Stat. 2057; 123 Stat. 1002). (2) Wilderness designation.--The potential wilderness area designated by paragraph (1) shall be designated as wilderness and incorporated in the Rich Hole Wilderness Area designated by section 1(2) of Public Law 100-326 (16 U.S.C 1132 note; 102 Stat. 584; 114 Stat. 2057; 123 Stat. 1002) on the earlier of-- (A) the date on which the Secretary publishes in the Federal Register notice that the activities permitted under paragraph (4) have been completed; or (B) the date that is 5 years after the date of enactment of this Act. (3) Management.--Except as provided in paragraph (4), the Secretary shall manage the potential wilderness area designated by paragraph (1) in accordance with the Wilderness Act (16 U.S.C 1131 et seq.). (4) Water quality improvement activities.-- (A) In general.--To enhance natural ecosystems within the potential wilderness area designated by paragraph (1) by implementing certain activities to improve water quality and aquatic passage, as set forth in the ***Forest*** Service document entitled ``Decision Notice for the Lower Cowpasture Restoration and Management Project'' and dated December 2015, the Secretary may use motorized equipment and mechanized transport in the potential wilderness area until the date on which the potential wilderness area is incorporated into the Rich Hole Wilderness Area under paragraph (2). (B) Requirement.--In carrying out subparagraph (A), the Secretary, to the maximum extent practicable, shall use the minimum tool or administrative practice necessary to carry out that subparagraph with the least amount of adverse impact on wilderness character and resources. Amendment No. 28 Offered by Ms. Tlaib of Michigan At the end of the bill, add the following new title: [[Page H745]] TITLE IX--AGENCY REPORT ON DEPARTMENT OF THE INTERIOR SPECIAL RECREATION PERMITS BENEFITS TO ENVIRONMENTAL JUSTICE COMMUNITIES SEC. 901. AGENCY REPORT ON DEPARTMENT OF THE INTERIOR SPECIAL RECREATION PERMITS BENEFITS TO ENVIRONMENTAL JUSTICE COMMUNITIES. (a) In General.--Not later than 3 years following the enactment of this Act, the Secretary shall submit a report to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate on the following: (1) Estimated use of Department of the Interior special recreation permits by recreation service providers serving environmental justice communities. (2) Any national, regional, State, local, or site-specific policies that facilitate public ***lands*** access for recreational service providers serving environmental justice communities. (3) Any case studies that may provide illustrative examples of how Department of the Interior special recreation permits, partnerships, or cooperative agreements are being effectively used by ***land*** managers for the purposes of providing public ***lands*** access to recreation service providers serving environmental justice communities. (4) Identification of any barriers to public ***lands*** access for recreation service providers serving environmental justice communities. (5) Any recommendations for agency policy, or if necessary, action by Congress to encourage and simplify public ***lands*** access for recreational service providers serving environmental justice communities. (b) Voluntary Participation by Special Recreation Providers.--The Secretary-- (1) shall contact all current or prospective special recreation providers to request a voluntary estimation of how many user days are used by individuals from environmental justice communities; (2) shall request from recreational service providers and interested members of the public any other information that supports the reporting requirements in subsection (a); and (3) shall not use participation or information provided as a condition in approving or rejecting a Department of the Interior special recreation permit. (c) Definitions.--In this title: (1) The term ``environmental justice community'' means a community with significant representation of communities of color, low-income communities, or Tribal and indigenous communities, that experiences, or is at risk of experiencing, higher or more adverse human health or environmental effects than other communities. (2) The term ``Secretary'' means the Secretary of the Interior. The SPEAKER pro tempore. Pursuant to House Resolution 147, the gentleman from Colorado (Mr. Neguse) and the gentleman from Arkansas (Mr. Westerman) each will control 10 minutes. The Chair recognizes the gentleman from Colorado. Mr. NEGUSE. Mr. Speaker, I yield myself such time as I may consume. I rise in strong support of en bloc No. 1. These 18 amendments demonstrate the strong and bipartisan support for protecting our wilderness and our public ***lands***. The amendments in this package include bipartisan legislation from Representatives McKinley and Tonko to unify the way National Heritage Areas are established and managed around the country. Other amendments would seek to improve the diversity and representation on our public ***lands***, including the Great Dismal Swamp NHA, by Representative McEachin; ensuring all Americans have access to healthy outdoor recreation, especially in urban and low-income cities, such as the Outdoors for All Act by Representative Barragan; and promote outdoor recreation and wellness among servicemembers and veterans, which is pursued by the Brown amendment. We clarify also our intention regarding wilderness and wildfire with the inclusion of the Panetta amendment, and we even add some small number of wilderness, wild and scenic rivers, and mineral withdrawals with the inclusion of amendments from Representatives Spanberger, Pingree, and DeFazio, respectively. The inclusion of these amendments would not only improve the bill but improve protections for our public ***lands*** and environmental justice communities far beyond the places already covered in Colorado, California, Washington, and Arizona. Simply put, this amendment reinforces that our public ***lands*** are for the benefit and enjoyment of all Americans. I urge support for this en bloc No. 1, and I reserve the balance of my time. Mr. WESTERMAN. Mr. Speaker, I yield myself such time as I may consume. I rise today in opposition to this package of en bloc amendments, which is bad for our environment, kills jobs, locks up more ***lands***, and does nothing to reduce our dependence on hostile foreign nations for critical minerals. One of the amendments in this package is a feasibility study for the Great Dismal Swamp National Heritage Area. Now, the Great Dismal Swamp may technically be located on the Virginia-North Carolina border, but House Democrats attempting to ram through dozens of amendments completely unrelated to the underlying bill, without going through regular order, sure makes it seem like the Great Dismal Swamp is actually located right here in Washington, D.C Much like the underlying bill, many of these amendments have not gone through regular order, are not supported by local stakeholders, and do not have the support of the Members whose districts are directly impacted. One such amendment creates the Ice Age National Scenic Trail as a unit of the National Park Service in Wisconsin. This amendment was offered without the consultation of my colleague on the Natural Resources Committee, Representative Tiffany, and does not have his support. Unlike other trail designation bills that have passed the House by voice vote in previous Congresses, this amendment lacks basic protections to ensure these trails do not have unintended consequences for neighboring communities. Similarly, the Casa Grande Ruins National Monument Boundary Expansion Act ignores the will and voices of local stakeholders. The Arizona State ***Land*** Department expressed concerns to the committee regarding the cooperative agreement language of this amendment and shared that they have encountered numerous problems with these types of agreements in the past. These are exactly the types of concerns that should be vetted through the committee process with testimony from local stakeholders and the affected agencies. I would like to briefly discuss one amendment offered by my friend and colleague, Representative Panetta from California, that would simply reinforce the status quo policy of ***forest*** management in wilderness areas. I have worked with Representative Panetta on ***forest*** management policies in the past, particularly on the wildland-urban interface. I know his heart. I know he has the right intent and wants to do the right thing. But I also know that he is greatly restricted by his own conference on forestry management issues. While I appreciate his intent, over the past 10 years, we have had nearly seven million acres of wilderness and wilderness study areas burn up in catastrophic wildfires. ***Land*** managers and wilderness areas must rely on century-old techniques, like handsaws and shovels when millions of acres of ***forest*** are in desperate need of treatment. Mr. Speaker, 1910 called and it wants its ***forest*** management policy back. Clearly, the status quo isn't working and unfortunately, his amendment won't actually allow for proper ***forest*** management and won't stop this bill from hurting our environment. Michael Jordan once wisely advised: ``If you do the work you get rewarded. There are no shortcuts in life.'' House Democrats are looking to take the shortcut with this amendment package and the underlying bill. Unfortunately, our economy and environment will have to bear the consequences of these misguided policy decisions. I would strongly urge my colleagues to oppose these amendments, and I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I yield 2 minutes to my distinguished colleague from the State of Colorado (Mr. Crow). Mr. CROW. Mr. Speaker, I rise today in support of the Protecting America's Wilderness Act. I would first like to thank my friends and colleagues in the Colorado delegation, Congressman Joe Neguse, Congresswoman Diana DeGette, and Senator Michael Bennet for their leadership on this package. Colorado's identity is closely tied to nature. Colorado is home to four national parks, 42 State parks, and a wide variety of outdoor activities ranging from hiking, to camping, and skiing. Our public ***lands*** are central to the Colorado way of life, and I want to ensure [[Page H746]] that future generations can enjoy these treasures just as my children do now. The conservation package we are considering today will grow the outdoor recreation economy, help create jobs, and protect hundreds of thousands of acres of Colorado ***land*** for future generations. The Colorado Outdoor Recreation and Economy Act will establish the first-ever national historic landscape at Camp Hale. Now, Camp Hale was the training ground of the storied 10th Mountain Division, an elite unit trained in mountain climbing and skiing. They fought valiantly in World War II, and many of them later returned to Colorado, where they helped establish the U.S ski industry. This is particularly important to my family as my wife's grandfather served in the initial 10th Mountain during World War II and was actually wounded in fighting in Italy. As a veteran, and a Coloradan, I believe it is important to honor their service and their legacy, and to preserve this historic landscape so that we can tell the story to future generations. I commend my Colorado colleagues for their work on this effort and their commitment to our public ***lands***, and I urge my colleagues to support this bill. Mr. WESTERMAN. Mr. Speaker, I yield 2 minutes to the gentleman from Wisconsin (Mr. Tiffany). Mr. TIFFANY. Mr. Speaker, I thank the gentleman from Arkansas for yielding me the time. Mr. Speaker, I rise in opposition to the amendment, specifically, a provision in here taking a trail in Wisconsin and turning it into National Park Service unit status. This proposal before us has not been introduced as a standalone bill this Congress and has not been heard by the Natural Resources Committee. We have not discussed the impacts of elevating this trail to National Park Service unit status, and there have been no hearings to afford local officials or adjacent landowners the opportunity to express their views. Too often in this body, we see Members who represent urban constituencies rushing to expand Federal control over rural communities far from their own homes. And too often, these decisions marginalize the voices of people in the affected communities who must live with the consequences: Federal ***land*** management agencies in Washington, D.C , imposing new limitations on access, use, and impacts to private property owners. Mr. Speaker, we have also spent much time in this body discussing the Park Service maintenance backlog, which is significant. We should be mindful of that backlog and the fact that ***land*** managers lack sufficient resources to care for the units already under their supervision. I am also concerned that the passage of measures like this one will further fuel the Federal Government's insatiable appetite to annex yet more private property. And more Federal ***land*** ownership means further erosion of the property tax base, higher local property tax burdens, and strained local budgets. Let me give you this analogy. A homeowner, their roof is falling in. The lot next to them comes up for sale and they say, gosh, I have got to buy that lot, and they don't take care of their own home. That is, in effect, what we are doing with our national parks here in the United States of America. To be clear, I believe that Wisconsin is home to some of this country's most special places, including this scenic and picturesque trail. On this fact, my Wisconsin colleagues and I agree. But I believe this amendment is the wrong approach, Mr. Speaker, and I would encourage a ``no'' vote on the amendment and the bill. Mr. NEGUSE. Mr. Speaker, I yield 1 minute to the distinguished gentleman from Massachusetts (Mr. Keating). Mr. KEATING. Mr. Speaker, I rise in support of my amendment to H.R 803, Protecting America's Wilderness and Public ***Lands*** Act, which will reauthorize the Cape Cod National Seashore Advisory Commission until the year 2028. The park that would eventually become the Cape Cod National Seashore was first conceived as a way to protect one of the last truly unspoiled barrier beaches in New England. From Chatham in the south to Provincetown in the north, the seashore resides within the six towns that form the outer Cape Cod area. And since the creation of the seashore, the fate of that outer cape community has been uniquely intertwined with the success of the national seashore. {time} 0930 Today, more than 4 million visitors from around the world come every year to experience the natural beauty and recreational opportunities that the seashore provides. In this way, the seashore is a crucial, pivotal point to local businesses that depend on the cape's tourism industry for their own livelihoods and those that reside there. Last year, the Great American Outdoors Act was signed into law. Our landmark conservation legislation will bring millions of dollars to rebuild and protect the national seashore in the coming years. The SPEAKER pro tempore. The time of the gentleman has expired. Mr. NEGUSE. Mr. Speaker, I yield an additional 30 seconds to the gentleman from Massachusetts. Mr. KEATING. Mr. Speaker, I thank the gentleman for yielding. Last year, the Great American Outdoors Act was signed into law. Our landmark legislation will bring millions of dollars that will be used to rebuild and protect the national seashore in the coming years. The advisory commission's role is greater than ever. The Cape Cod National Seashore, the vision of then-Senator John F. Kennedy, continues to be a success. Working together, making sure that this model of cooperation between the Federal Government and local governments in this time of necessary cooperation with governmental interaction, is more important than ever as well. Mr. Speaker, I thank the gentleman for yielding, and I thank him for including this in our bill. Mr. WESTERMAN. Mr. Speaker, I yield myself such time as I may consume. Mr. Speaker, I would like to take a moment to focus on wilderness areas. I know it sounds great to have a wilderness area. I have enjoyed spending time myself in wilderness areas, and forestry and wilderness areas are very important to me. Mr. Speaker, I have a degree in forestry, and I have actually been licensed to practice forestry, taken exams to do that. I can tell you, Republicans, Democrats, and independents alike, we all, I think, can appreciate a healthy ***forest*** because we know that it provides clean air, it provides clean water, it provides wildlife habitat, and it also provides great places for us to do recreation. There are certain places where we need wilderness areas, but there are certain places where we do not need wilderness areas. Seven million acres of wilderness area went up in wildfire in the last 10 years. I would love to be able to take my colleagues out to the ***forest***. They say a picture is worth a thousand words, but I can promise you, actually being in the ***forest*** tells a much bigger picture, a much better story. I would love to go to an area that has been properly managed and then go to a wilderness area that hasn't been managed and be able to make the case that although we can pass these bills and create wilderness areas right now that aren't going to affect us, because it takes a long time for a ***forest*** to grow and it takes a long time for a ***forest*** to degrade, but our children and our grandchildren are going to suffer the consequences of us locking these ***lands*** up and making them subject to catastrophic wildfire in the future. Mr. Speaker, I understand the sentimental value, the emotional value, in wanting to make more wilderness areas. But I wish we would have a long-term look and think about the impact that this is going to have on the future. I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I yield myself such time as I may consume. Mr. Speaker, I want to take a moment to say that I have great respect for my colleague, the ranking member, and I know that he is well intentioned with respect to addressing wildfire issues. I would note, for my colleague, that we just recently created a Bipartisan Wildfire Caucus with Representative Curtis to address some of the issues that he describes. But, look, with respect to the bill that is before the House today, there is [[Page H747]] simply no question. This bill does not create any further risks from wildfire, far from it. As I said yesterday, the law as it stands today, section 4(d) provides for the flexibility, ultimately, for measures to be taken as may be necessary for the control of insects, disease, and fire, subject to such conditions as the Secretary of the Interior may deem desirable. So, there is flexibility within existing law to address any potential issues that might arise. For that reason, I would hope that my colleague's concerns would be alleviated and that he would support this bill. Mr. Speaker, I yield 1 minute to the distinguished gentlewoman from California (Ms. Brownley). Ms. BROWNLEY. Mr. Speaker, I rise in support of H.R 803, the Protecting America's Wilderness and Public ***Lands*** Act. This bill incorporates two important pieces of legislation that will preserve the natural beauty of public ***lands*** and improve access to recreational opportunities in my congressional district in Ventura County and California. The first is the Central Coast Heritage Protection Act, which I joined Congressman Salud Carbajal in introducing. The Central Coast Heritage Protection Act will protect more than 25,000 acres in the Los Padres National ***Forest*** and the Carrizo Plain National Monument by designating these ***lands*** as wilderness. It also designates the Condor Trail within Los Padres as a National Recreational Trail. This is a beautiful trail that is 400 miles long. You can hike from Ventura County to Santa Barbara County surrounded by great and unique beauty. The second piece of legislation is the Rim of the Valley Corridor Preservation Act, which would add more than 191,000 acres to the Santa Monica Mountains National Recreational Area. If you ever want to hike to a beautiful 180-degree view of the Pacific Ocean, this is your place. Much of the ***land*** is in Ventura County, and I am grateful for Congressman Adam Schiff's efforts to advance this bill through the years. Overall, H.R 803 is an important downpayment on a commitment that many of us made to help conserve 30 percent of U.S ***lands*** by 2030. The SPEAKER pro tempore. The time of the gentlewoman from California has expired. Mr. NEGUSE. Mr. Speaker, I yield an additional 30 seconds to the gentlewoman from California (Ms. Brownley). Ms. BROWNLEY. Mr. Speaker, in Ventura County, my constituents and I are so fortunate to be surrounded by beautiful public spaces. The public ***lands*** provisions in this bill will strengthen our region's commitment to sound environmental stewardship and preserve an important part of our natural heritage for future generations to enjoy. I know we all agree on the importance of being good stewards of our country's natural ***lands***. For these reasons, I urge my colleagues to vote ``yes'' on H.R 803. Mr. WESTERMAN. Mr. Speaker, may I inquire how much time is remaining on each side. The SPEAKER pro tempore. The gentleman from Arkansas has 2\1/2\ minutes remaining. The gentleman from Colorado has 3 minutes remaining. Mr. WESTERMAN. Mr. Speaker, I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I yield 1 minute to the gentlewoman from Virginia (Ms. Spanberger). Ms. SPANBERGER. Mr. Speaker, I rise in support of my amendment to H.R 803. During the COVID-19 pandemic, we have seen the renewed importance of having safe and accessible public ***lands*** for our families and communities. As a proud Virginian, I know that Virginia's public ***lands*** not only provide opportunities for recreation and reflection but they are key to our tourism industry and our overall economy. My amendment would strengthen protections for two beautiful areas of the George Washington National ***Forest***, the Rough Mountain and Rich Hole wilderness areas, following recommendations from the U.S ***Forest*** Service in 2014. These areas offer outstanding scenic views, rare and endangered plants, age-old hardwood ***forests***, and a dense population of black bears. This legislation, the Virginia Wilderness Additions Act, would allow these irreplaceable areas to remain open to recreation while also protecting their wildlife, natural resources, and trails for generations to come. I would like to thank Senators Kaine and Warner for their leadership on this issue in the Senate, as well as Representatives Luria and McEachin for working with me on this important amendment. Mr. WESTERMAN. Mr. Speaker, I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I yield 2 minutes to the distinguished gentlewoman from Michigan (Ms. Tlaib), the newest member of our Natural Resources Committee. Ms. TLAIB. Mr. Speaker, I would like to begin by thanking Chairman Grijalva, Congresswoman DeGette, and the committee staff for working with me on this amendment and for the continued leadership on this bill. The amendment incorporates environmental justice communities like mine into this space. It would require a report on permits by providers serving environmental justice communities. This measure, first introduced last Congress by the soon-to-be first Native American Cabinet Secretary and the Secretary of the Interior, Congresswoman Haaland, is an important step in identifying and ***removing*** barriers to access our public ***lands***. Communities of color, low-income communities, indigenous communities, and those most impacted by pollution and climate change often have the least access to our national parks and Federal ***lands***. My 13th District Strong is an environmental justice community, an area that the State calls the epicenter of the asthma burden due to corporate polluters. Folks in my district deserve the same opportunity to enjoy clean air and public ***lands*** as anyone else so they don't grow up like me, thinking that sulfur dioxide and rotten eggs was just how the air smelled. Mr. Speaker, I urge my colleagues to please support this amendment. Mr. WESTERMAN. Mr. Speaker, I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, how much time do I have remaining, if I might inquire? The SPEAKER pro tempore. The gentleman has 30 seconds remaining. Mr. NEGUSE. Mr. Speaker, I will just simply say that these amendments are common sense. They have been vetted by the various stakeholders and constituents in the communities that support the respective amendments that have been proposed as part of this package, and my hope is that my colleagues could support them. Several of them are bipartisan, as we have mentioned, and they go to the heart of this bill, which is ultimately protecting the most scenic places in our country. Mr. Speaker, I yield back the balance of my time. Mr. WESTERMAN. Mr. Speaker, I yield myself the balance of my time. Mr. Speaker, I appreciate my colleague from Colorado's love for the outdoors. I appreciate his passion to do what is right. He mentioned the provisions in the Wilderness Act to address insects, disease, and wildfire. Mr. Speaker, that is a Band-Aid. That is what you do after the fact. What we are proposing is proactive ***forest*** management so that you don't have the insects, the disease, and the wildfires. An ounce of prevention is definitely worth a pound of cure. I would challenge my colleagues to enjoy those scenes and those vistas. I encourage them to take pictures so they can show their children and grandchildren what they looked like before they locked them away in a wilderness area. Mr. Speaker, this random assortment of amendments does nothing but make a bad bill three times worse. The only difference is that instead of having a package of eight bills that haven't been through regular order that will harm our environment and that will kill jobs in rural communities, we now have a package of 23 bills that haven't been through regular order, will harm the environment, and will kill jobs in rural communities. No amendment in this package reduces our dependence on hostile foreign nations or critical minerals, improves our supply chains, or bolsters American energy security. No amendment in this package changes how we currently treat ***forest*** and wilderness areas with century-old technology like handsaws and shovels. No amendment in this [[Page H748]] package creates new jobs or bolsters our economic growth. What does this package do? It just adds more wilderness, more wild and scenic river designations, and more provisions that haven't gone through regular order and do not have the support of Members of Congress directly impacted by those amendments. Needless to say, this isn't how we should be managing our resources, and it isn't how we should be legislating in Congress. Mr. Speaker, I strongly urge my colleagues to oppose this package of en bloc amendments, and I yield back the balance of my time. Mr. COURTNEY. Mr. Speaker, I rise in support of the amendment from Mr. Tonko and Mr. McKinley to reauthorize and standardize the management of the National Heritage Areas, and salute them for their commitment across multiple sessions of Congress to institute critical, lasting protections for our nation's National Heritage Areas. This amendment would address the haphazard and confusing patchwork of authorizations for National Heritage Areas across the country, with two right here in my neck of the woods, by instituting a universal timeline to ensure these natural treasures are not subject to arbitrary lapses in authorization. These heritage areas create jobs, establish destinations that people want to visit and vacation to, and are a smart investment in both the economy and the natural environment. Support from the federal government is what provides these areas with the foundation needed to preserve and protect these natural spaces, but the work just starts there--from that federal support, these National Heritage Areas leverage countless dollars and volunteer hours to promote the environment and identity of their surrounding regions. Two of those treasures are especially close to my heart and would be reauthorized for 15 years under this amendment--the Last Green Valley National Heritage Corridor and the Upper Housatonic Valley National Heritage Area. Both areas are incredible assets to eastern Connecticut and the Northeast with the Last Green Valley encompassing 35 towns stretching from eastern Connecticut to Massachusetts. First designated as a National Heritage Corridor by Congress in 1994, the area spans 1,100 miles in Connecticut alone, remains 77 percent ***forest*** and farm, and is the last stretch of dark night sky in the sprawl between Boston and Washington, D.C My colleagues from Connecticut and Massachusetts know that investments in our open spaces provide an enormous value for taxpayers, and I salute our neighbor and friend for his amendment which would ensure that these wonders are protected for future generations to enjoy. Mr. GARAMENDI. Mr. Speaker, my amendment (Garamendi No. 6) to the ``Protecting America's Wilderness and Public ***Lands*** Act'' (H.R 803) would adjust the Congressionally designated boundary of the Sacramento- San Joaquin Delta National Heritage Area to include approximately 62 acres of adjacent publicly owned ***land*** in unincorporated Solano County. I thank Rules Chairman McGovern (D-MA) for making my noncontroversial amendment in order and Natural Resources Chairman Grijalva (D-AZ) for including it in the en bloc #1 amendments today, offered by Congressman Neguse (D-CO). My amendment is identical to H.R 1230, which I introduced on February 23, 2021, at the request of the City of Rio Vista. It would include the decommissioned United States Army Reserve Center (Rio Vista), U.S Coast Guard Station Rio Vista, Beach Drive Wastewater Treatment Plant (City of Rio Vista), and Sandy Beach County Park (Solano County) in the National Heritage Area. Two of these parcels--the decommissioned United States Army Reserve Center and Beach Drive Wastewater Treatment Plant--are owned by the City of Rio Vista but technically outside the city limits. As such, it appears these parcels were omitted inadvertently when the National Park Service prepared the legislative map for the then-proposed Delta National Heritage Area in 2010. Including these parcels within the National Heritage Area's boundary supports the City of Rio Vista's proposed redevelopment of the decommissioned United States Army Reserve Center, now owned by the City. In March 2019, Congress enacted into law (Public Law 116-9) my legislation with U.S Senator Dianne Feinstein (D-CA) designating the Sacramento-San Joaquin Delta as California's first national heritage area. The Delta is a crown jewel of our state and an iconic working landscape, which my family has been fortunate to call home for over 40 years. It is the most productive watershed in the western United States and among the most ecologically important in the Western Hemisphere. Together, we must safeguard the Delta and the historic communities that make it such a special place, including Rio Vista. Expanding the Delta National Heritage Area will ensure that the proposed redevelopment of the decommissioned Rio Vista Army base and similar projects on the adjacent publicly owned ***land*** are eligible to apply for the $10 million in federal grant funding available until 2034. I urge all Members to support my amendment and the underlying bill, which I will work to enact into law before California's Delta Protection Commission completes the management plan for the National Heritage Area. {time} 0945 The SPEAKER pro tempore. Pursuant to House Resolution 147, the previous question is ordered on the amendments en bloc offered by the gentleman from Colorado (Mr. Neguse). The question is on the amendments en bloc. The question was taken; and the Speaker pro tempore announced that the ayes appeared to have it. Mr. WESTERMAN. Mr. Speaker, on that I demand the yeas and nays. The SPEAKER pro tempore. Pursuant to section 3(s) of House Resolution8, the yeas and nays are ordered. Pursuant to clause 8 of rule XX, further proceedings on this question are postponed. Amendment No. 3 Offered by Mr. Curtis The SPEAKER pro tempore. It is now in order to consider amendment No. 3 printed in part B of House Report 117-6. Mr. CURTIS. Mr. Speaker, I have an amendment at the desk. The SPEAKER pro tempore. The Clerk will designate the amendment. The text of the amendment is as follows: At the end of the bill, add the following new title: TITLE IX--RENEWABLE ENERGY INPUTS ACCESS STUDY SEC. 901. STUDY. The Secretary of the Interior, in consultation with the Secretary of Energy and Secretary of Commerce, shall conduct a study to determine whether the acreage to be withdrawn under this Act contains geothermal resources, or minerals needed for battery storage, renewable energy technology, and electric vehicles. The SPEAKER pro tempore. Pursuant to House Resolution 147, the gentleman from Utah (Mr. Curtis) and a Member opposed each will control 5 minutes. The Chair recognizes the gentleman from Utah. Mr. CURTIS. Mr. Speaker, I yield myself such time as I may consume. Mr. Speaker, I rise today in support of my amendment to require a study of any ***land*** impacted by the legislation to determine if these areas contain geothermal resources or minerals needed for battery storage, renewable energy technology, or electric vehicles. We agree that we want to reduce human ***emissions*** that are polluting our ecosystem. Renewable energy will play a role long into the future, and we must ensure we have the resources needed to make solar panels, wind turbines, and batteries here in America. President Biden agrees. Just yesterday he issued an executive order to ensure the United States has access to domestic critical minerals. President Biden's fact sheet on the executive order says: ``While the U.S is a net exporter of electric vehicles, we are not a leader in the supply chain associated with electric battery production. The U.S could better leverage our sizable lithium reserves and manufacturing know-how to expand domestic battery production.'' To state the obvious, if we are accidentally locking up lithium with this bill while President Biden says we should do the opposite, this is something Congress should know. This amendment does not prevent any part of the ***lands*** package from being implemented, as currently drafted. I am a strong supporter of the local-driven public ***lands*** legislation, which is why I ensured my amendment would not impact any of the bills on the ground level. There is parts of this package I actually support. Mr. Huffman's bill included in the public ***lands*** bill was supported by me last year. This amendment is not a criticism of this ***lands*** package. It is about listening to science and combating climate change. More information is always better, more science is better. That is all this amendment does, give us more science-backed information as Congress faces the issues of producing renewable energy in the future. [[Page H749]] Mr. Speaker, I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I claim the time in opposition to the amendment. The SPEAKER pro tempore. The gentleman from Colorado is recognized for 5 minutes. Mr. NEGUSE. Mr. Speaker, I yield myself such time as I may consume. Mr. Speaker, I want to say, first, I appreciate the gentleman's remarks on this amendment. My friend from Utah, I know from our work together last Congress and this Congress and from our bipartisan work on the Congressional Wildfire Caucus that the gentleman is sincere in his intent that he, too, wants to help address the climate crisis and the threat that it poses to our communities, and I thank him for that. However, to that end, I would encourage the gentleman and his colleagues to continue to work with us across the aisle on opportunities to create clean, green, well-paying jobs for all Americans. Ultimately, I will be opposing the gentleman's amendment because I don't believe it is in the best interest of this particular legislation. As we have heard over the course of the debate this morning and yesterday, of course, on the bill, the various areas that are protected in this bill were included at the request of local communities who want to see these ***lands*** protected for future generations. One example, perhaps the most salient in my view, is the Thompson Divide region in my bill, the CORE Act, which has faced years of pressure to develop certain mineral interests that local stakeholders, including the ranching community, oppose. The largest individual withdrawal area in this bill actually surrounds the Grand Canyon, a region with few identified critical mineral resources, but one that I believe we can all agree is of enormous importance to the American public. That importance, that value of the Grand Canyon, as well as every area included in this bill, is ultimately why we are here today. It is why my colleagues have gone through years of painstaking work developing a consensus with those local communities to identify those ***lands*** of such exceptional value that they believe and the communities believe should be protected for future generations. The bottom line is this: We believe that some places should be set aside permanently from extraction because some landscapes, like the Grand Canyon, are simply too special to be mined, drilled, or excavated. Mr. Speaker, with that, I respectfully oppose the gentleman's amendment, and I reserve the balance of my time. Mr. CURTIS. Mr. Speaker, to my friend from Colorado, I welcome his invitation to work together on many of these issues. I point out that we are simply asking for a study so that we know what is there. We are not stopping anything. We are simply asking for a study. Mr. Speaker, I yield such time as he may consume to the gentleman from Arkansas (Mr. Westerman). Mr. WESTERMAN. Mr. Speaker, I thank the gentleman from Utah for his tireless work on doing what is right for the environment. I use that word ``environment,'' and not the word ``climate,'' because I want people to understand that those two things are different. Climate is very narrowly focused. Climate is an issue that has made carbon, a necessary element, arch enemy number one. Republicans are about a cleaner, safer, and healthier environment. We are concerned not just about carbon in the atmosphere, but we are concerned about ***forest*** health, about air quality, about water quality, about wildlife habitat, about having great places for recreation. Mr. Speaker, nobody wants to mine inside the Grand Canyon. Nobody is mining inside the Grand Canyon. Nobody ever will mine inside the Grand Canyon. We have already got the Grand Canyon National Park that establishes those boundaries, and these mineral withdrawals are far outside of the actual Grand Canyon. Mr. Speaker, we want a clean environment. We want a healthy environment. We are all for cleaner technology, but that cleaner technology takes certain things. It takes minerals and elements. It takes research and development. It takes using all of the energy sources that we have. Why can't we talk about creating more next-generation nuclear power? It has zero carbon. If your concern is about climate, your concern is about carbon. And nuclear energy doesn't emit carbon. Why not put hydroelectric plants on existing dams? We don't have to build new dams. We can add 12,000 megawatts of clean, carbon-free hydropower on existing dams. We can use the natural resources that we have and develop cleaner ways to use them. As we develop more electrical components and devices that, again, run on carbon-free energy, unless that energy is produced from carbon sources, but we have to have a stable and reliable supply of energy, and we can't have that without developing these resources. I appreciate the gentleman's concern about not locking up these resources and doing a study to make sure that when we lock them up, we are not locking away our future, we are not taking away the ability for this country to produce our own energy supply, that we are not further relying on a foreign supply chain that is controlled by Communist parties. Mr. Speaker, we are blessed with a resource-rich country, but we are right now at the mercy of foreign suppliers, especially China, to meet our mineral needs. Resources like lithium, cobalt, gallium, and dozens more will be needed in the billions of pounds to meet the projected growth in electric vehicles and other renewable technologies. Even commodities like copper, which have historically been produced in surplus, are now falling short of demand. Mr. Speaker, I encourage supporting the gentleman's amendment. Mr. CURTIS. Mr. Speaker, I am prepared to close, and I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I wonder if my colleague might engage in just a brief colloquy so I understand the scope of the amendment. What is the most common way to assess geothermal or other mineral resources? I yield to the gentleman from Utah. Mr. CURTIS. Mr. Speaker, I thank my colleague. I suspect you have an answer ready to tell me, and I would love to hear that. Mr. NEGUSE. The gentleman is correct, I do have an answer. The most common way is to drill. That is the most common way to assess geothermal and mineral resources. With much respect to the gentleman, because, again, I know his intent is sincere, but this amendment is not simply a study amendment. This study amendment, ultimately, if it were to succeed, would have the Interior Department drilling countless wells throughout these wilderness areas to ultimately ascertain the information that the distinguished gentleman seeks, and I just don't think that is a prudent way forward. I would say to the distinguished ranking member, with respect to the areas around the Grand Canyon, that the southwest United States, as I know some of my colleagues are certainly familiar, is littered with remnants of abandoned uranium mines and mill sites that poison the water and the air to this day, and those mines have hit Tribal nations the hardest. So you can understand why the distinguished chairman of our committee, Chairman Grijalva, would feel so compelled by local communities in the State that he represents to move forward with the Grand Canyon protections that are a part of this important wilderness package. Mr. Speaker, while I very much respect my colleague and look forward to working with him on future proposals, we respectfully oppose this amendment and would ask for a ``no'' vote. Mr. Speaker, I yield back the balance of my time. Mr. CURTIS. Mr. Speaker, I yield back the balance of my time. The SPEAKER pro tempore. Pursuant to House Resolution 147, the previous question is ordered on the amendment offered by the gentleman from Utah (Mr. Curtis). The question is on the amendment. The question was taken; and the Speaker pro tempore announced that the noes appear to have it. Mr. CURTIS. Mr. Speaker, on that I demand the yeas and nays. The [[Page H750]] SPEAKER pro tempore. Pursuant to section 3(s) of House Resolution 8, the yeas and nays are ordered. Pursuant to clause 8 of rule XX, further proceedings on this question are postponed. Amendments En Bloc No. 2 Offered by Mr. Neguse Mr. NEGUSE. Mr. Speaker, pursuant to House Resolution 147, I rise to offer amendments en bloc. The SPEAKER pro tempore. The Clerk will designate the amendments en bloc. Amendments en bloc No. 2, consisting of amendment Nos. 7, 8, 9, 11, 15, 16, 17, 25, 26, 27, and 29, printed in part B of House Report 117-6, offered by Mr. Neguse of Colorado: Amendment No. 7 Offered by Mr. Gosar of Arizona At the end of title VIII, add the following: SEC. 803. EXEMPTION. The withdrawal under section 802 shall not apply to any Federal ***land*** depicted on the Map as ``Federal Mineral Estate to be Withdrawn'' located in the 4th Congressional District of Arizona, as configured on the date of enactment of this Act. Amendment No. 8 Offered by Mr. Gosar of Arizona At the end of title VIII, add the following: SEC. 803. SUPPORTING SCIENCE-BASED ***LAND*** MANAGEMENT. The withdrawal under section 802 shall not go into effect until the Secretary of the Interior completes a mineral survey of the area proposed for withdrawal, including uranium, rare earth elements, geothermal and oil and gas resources, and determines that there are no mineral resources, geothermal resources, or critical minerals present other than uranium. Amendment No. 9 Offered by Ms. Herrell of New Mexico Strike subsection (i) of section 103. Strike section 233. Strike subsection (c) of section 302. Strike section 404. Strike section 407. Strike section 713. Amendment No. 11 Offered by Mr. Lamborn of Colorado Page 330, after line 6, insert the following: TITLE IX--SAVINGS CLAUSE SEC. 901. UTILITY FACILITIES AND RIGHTS OF WAY. Nothing in this Act shall-- (1) affect the use, operation, maintenance, repair, construction, destruction, reconfiguration, expansion, inspection, renewal, reconstruction, alteration, addition, relocation, improvement, ***removal***, or replacement of a utility facility or appurtenant right of-way within or adjacent to any wilderness areas or potential wilderness areas designated in this Act; (2) affect access to a utility facility or right-of way within or adjacent to a wilderness area or potential wilderness area designated in this Act; or (3) preclude the establishment of a new utility facility or right-of-way (including instream sites, routes, and areas) within a wilderness area or potential wilderness area designated in this Act if such a facility or right-of-way is necessary for public health and safety, electricity supply, or other utility services. Amendment No. 15 Offered by Mr. Moore of Utah Page 330, after line 6, add the following: TITLE IX--RECOGNIZING THE IMPORTANCE OF LOCAL INPUT SEC. 901. COUNTY APPROVAL. No wilderness or potential wilderness designation under this Act shall be effective in any county where the county has not formally approved such designation. Amendment No. 16 Offered by Mr. Newhouse of Washington At the end of the bill, add the following: TITLE IX--PROTECTIONS SEC. 901. RENEWABLE ENERGY JOBS. This Act shall not take effect until the Secretary of the Interior certifies that no renewable energy jobs have been lost as a result of this Act. Amendment No. 17 Offered by Mr. Newhouse of Washington At the end of the bill, add the following: TITLE IX--PROTECTIONS SEC. 901. RENEWABLE HYDROPOWER DEVELOPMENT. Nothing in this Act shall prohibit development of new renewable hydroelectric energy and associated transmission lines and rights-of-way in the wild and scenic designations, wilderness designations, or wilderness study area designations under this Act. Amendment No. 25 Offered by Mr. Stauber of Minnesota Page 330, after line 6, add the following: TITLE IX--RECOGNIZING THE IMPORTANCE OF LOCAL INPUT SEC. 901. COUNTY APPROVAL. No mineral withdrawal under this Act shall be effective in any county where the county has not formally approved such withdrawal. Amendment No. 26 Offered by Mr. Stauber of Minnesota Page 30, after line 2, insert the following: SEC. 107. APPLICATION. Notwithstanding any other provision of this Act, this Act shall not apply to any ***lands*** or waters in the Third or Fifth Congressional Districts of Colorado as in existence on the date of enactment of this Act. Page 329, after line 4, insert the following: Subtitle E--Local Input SEC. 761. APPLICATION. Notwithstanding any other provision of this Act, this Act shall not apply to any ***lands*** or waters in the Third or Fifth Congressional Districts of Colorado as in existence on the date of enactment of this Act. Page 330, after line 6, insert the following: SEC. 803. APPLICATION. Notwithstanding any other provision of this Act, this Act shall not apply to any ***lands***, waters, or minerals in the Fourth Congressional Districts of Arizona as in existence on the date of enactment of this Act. Amendment No. 27 Offered by Mr. Stauber of Minnesota Page 30, after line 2, insert the following: SEC. 107. APPLICATION. Notwithstanding any other provision of this Act, this Act shall not apply to any ***lands*** or waters in the Third Congressional District of Colorado as in existence on the date of enactment of this Act. Page 329, after line 4, insert the following: Subtitle E--Local Input SEC. 761. APPLICATION. Notwithstanding any other provision of this Act, this Act shall not apply to any ***lands*** or waters in the Third Congressional District of Colorado as in existence on the date of enactment of this Act. Amendment No. 29 Offered by Mr. Westerman of Arkansas Page 330, after line 6, add the following: TITLE IX--PRESERVING WILDERNESS CHARACTER AND WILD AND SCENIC RIVER CHARACTER SEC. 901. PRESERVING WILDERNESS AND WILD AND SCENIC RIVER CHARACTER. (a) Wilderness.--The Secretary of ***Agriculture*** or the Secretary of the Interior, as appropriate, may exempt from any wilderness or potential wilderness designated under this Act any area determined by that Secretary not to meet the definition of wilderness under the Wilderness Act (16 U.S.C 1131 et seq.). (b) Wild and Scenic Rivers.--The Secretary of ***Agriculture*** or the Secretary of the Interior, as appropriate, may exempt from any wild and scenic river designated under this Act any area determined by that Secretary not to meet the qualifications for a wild, scenic or recreational river under the Wild and Scenic Rivers Act (16 U.S.C 1271 et seq.). The SPEAKER pro tempore. Pursuant to House Resolution 147, the gentleman from Colorado (Mr. Neguse) and the gentleman from Arkansas (Mr. Westerman) each will control 10 minutes. The Chair recognizes the gentleman from Colorado. Mr. NEGUSE. Mr. Speaker, I reserve the balance of my time. Mr. WESTERMAN. Mr. Speaker, I yield myself such time as I may consume. Mr. Speaker, I rise today in support of the en bloc amendments that would offer important improvements to the underlying bill. Unfortunately, this en bloc is only a fraction of the amendments Republicans would have offered if Democrats had held a markup on the bill in the Natural Resources Committee. It is egregious that House Democrats rejected every single Republican recreation and wildfire amendment offered at the Rules Committee. House Democrats also denied Representative Boebert of Colorado the chance to offer a single amendment to this legislation, despite the fact that one-third of all wilderness designations contained in the entire bill are in her district, and she has never had the chance to even debate it, as a new Member of Congress. One amendment that I offered is included in this package, and it would rectify the fact that Democrats have arbitrarily included tens of thousands of acres of wilderness designations that have not been recommended for wilderness or do not meet the basic definition of wilderness in the Wilderness Act. If my Democratic colleagues feel so confident that every single acre in this bill is actually worthy of a wilderness designation, they should have no problem supporting my simple amendment to reaffirm proper wilderness characteristics. Also included in these amendments is a proposal from one of our freshmen members of the Natural Resources Committee, Representative Moore from Utah. It will protect the rights of counties to have a say in local ***land*** use by requiring county approval of wilderness designations. [[Page H751]] Representative Stauber also offered a version of this amendment for mineral withdrawals and several amendments that would exclude congressional districts represented by Members of Congress who were not consulted on this legislation and strongly oppose it. This should not be a difficult hurdle to overcome. In fact, it should be a desirable outcome for the sponsor of these bills. Forcing ***land*** management decisions upon local communities without their support is a bad idea. {time} 1000 Another one of our freshman committee members, Representative Herrell of New Mexico, offered an amendment to ***remove*** all potential wilderness designations in the bill. This bill designates an amount of area equivalent to the size of President Biden's home State of Delaware, and it includes only one wilderness study area release. We shouldn't be adding potential wilderness to this bill without releasing an equivalent amount of wilderness study area first. Finally, this package of amendments would improve our American energy security by ensuring continued development of critical energy infrastructure, promoting the responsible utilization of domestic critical minerals, facilitating rights-of-way for utilities, and protecting jobs in the energy sector. In contrast, the underlying bill is just an extension of the Biden ban and will hurt rural jobs and our national security. Mr. Speaker, I wish that Democrats afforded us more than 10 minutes to consider these amendments that would actually improve our environment and economy through conservation and multiple use. Mr. Speaker, I would urge all of my colleagues to strongly support this en bloc of amendments, and I reserve the balance of my time. Mr. NEGUSE. Mr. Speaker, I rise in strong opposition to en bloc No. 2. The amendments in this bloc run the gauntlet of ideological opposition to wilderness, public ***lands*** protections, and our efforts that respond to the climate crisis. The amendments are not a good-faith effort to attempt to improve the bill or work with the Democratic sponsors of the committee. They simply seek to outright reverse or fundamentally weaken the various designations proposed in this bill. In many cases, if these amendments were adopted and signed into law, the result would leave these areas with fewer protections than they currently have under the status quo. Now, I heard a lot of wide-ranging arguments against this bill from the distinguished ranking member, but let me just begin by responding to two points specifically: First, with respect to this notion of having local community support, I would simply say--and I welcome my colleague to come visit my district in the State of Colorado. I represent a district that is the size of New Jersey--far bigger than Delaware--10 counties, stretches all the way to the Wyoming border, Grand County, half of Eagle County, Summit County. I look forward to taking the ranking member to my district in Colorado and showing him these incredible places that we seek to protect, because I believe if he has a chance to visit them, I may be able to convince him of the same. I also just say, secondly, with respect to the process complaints, as I said yesterday, every title of this bill was heard, was marked up, passed out of committee, and passed this Chamber, on this floor in the 116th Congress--not once, twice. So I understand the gentleman's desire to have more amendments. I think it is a bit odd to be arguing that he is unable to amend the bill when he is literally debating the amendments that he is offering as they exist today, that we are proceeding to debate in this fashion. In any event, I will simply say that these amendments, as I said earlier, are not a good-faith attempt to improve this bill, and for that reason we would oppose them. Mr. Speaker, I reserve the balance of my time. Mr. WESTERMAN. Mr. Speaker, I would love to visit the gentleman's district, take some photos so that we could show future generations what it looked like before it was locked away in wilderness, and maybe be able to talk about some of those ***forest*** management activities and how it could help improve the area. Mr. Speaker, I yield 1 minute to the gentleman from Minnesota (Mr. Stauber). Mr. STAUBER. Mr. Speaker, I rise today in support of the amendments contained in this en bloc package, which includes three of my own and two I offer on behalf of my good friend and colleague, Mr. Gosar. The amendments I offer restore control to locals who not only recreate in the areas impacted by the underlying bill, but live and earn their livelihoods there, too. This is about northern Arizona and western Colorado. This is about uranium formations in Representative Gosar's district, and oil and gas in Representatives Lamborn's and Boebert's districts. This is about local governance and listening to those who live and work in the area, not just those who make it a short weekend retreat. The amendments I offer today move control of ***land*** back to those who govern best. These amendments exempt the bill from taking effect in Arizona's Fourth, Colorado's Third, and Colorado's Fifth Congressional Districts, and require county input. Those who represent these districts were not meaningfully consulted on these bills. Mr. Speaker, I include in the Record a letter from the Mohave County Board of Supervisors in support of Representative Gosar's amendment No. 7. These are the folks who know best for their families, their neighbors, and their ***land***. Mohave County Board of Supervisors, Kingman, AZ, February 24, 2021. Hon. Paul Gosar, Washington, DC. Congressman Gosar: The Mohave County Board of Supervisors is writing to offer our support for your amendment to H.R 803--Colorado Wilderness Act of 2021. As you know, the passage of this legislation will have a grave effect on Mohave County, Arizona, and our neighboring counties in Utah. Uranium mining in the past has been the forefront of our economic growth in Mohave County and if allowed to continue will bring in nearly $29 billion to our local economy over a 42 year period. The passage of H.R 803 would make permanent a 2012 moratorium on uranium mining in our area. The language of your amendment would help alleviate the permanent economic loss we would sustain under the passage of H.R 803. We strongly support the passing of this amendment as presented in the Rules Committee and the House of Representatives. Without this amendment, the financial stability of our economy in Mohave County would drastically suffer. In 2012, the Secretary of the Interior imposed a 20 year ban on over 1 million acres of ***land*** in the Arizona Strip Area for the purpose of Uranium mining. This ban included both public ***lands*** and National ***Forest*** System ***lands***. This ban took away much needed growth and jobs from our area. Secretary Salazar at the time issued this withdrawal without complying with the law requiring coordination with local governments. The Federal ***Land*** Policy Management Act, 43 USC Section 1711 requires that the Secretary and his designees ``coordinate'' with local government as to development and implementation of any plan or management action. Coordination is defined in the Act as requiring prior notice of proposed plans and actions to the local government officials (``prior'' meaning prior to public announcements, and early enough to provide ``meaningful'' participation by the local officials in the ``development'' of the plan or action.). The congressional mandate or coordination also requires the Secretary to use all practicable means to reach consistency between the federal plan/management action and local policy, plan or law. All of which Secretary Salazar did not do. Making this ban permanent based on misinformation will have lasting effects on Mohave County. We respect and take a responsibility for protecting the Grand Canyon, but saying that the Grand Canyon will suffer because of mining is inaccurate. Secretary Salazar's reasoning behind the withdrawal was out of concern that it could damage the region's drinking water and the park's water quality. Bureau of ***Land*** Management officials contradicted those claims by explaining that their Arizona Strip field office had no evidence of contamination of water, and had no evidence of problems with the safe operation of the uranium mines in operation on the ***lands***. Uranium mining is important and useful for many reasons. The ***lands*** in the ``Strip'' contain the nation's high grade uranium deposits and enough uranium to provide power generation for the state of California for over 20 years. Uranium is useful in many ways. It is used by our military for national security and defense. Uranium metal is very dense and heavy. When it is depleted (DU), uranium is used by the military as shielding to protect Army tanks, and also in parts of [[Page H752]] bullets and missiles. The military also uses enriched uranium to power nuclear propelled Navy ships and submarines, and in nuclear weapons. A permanent withdrawal of uranium mining from the ``Strip'' harms the American people by ***removing*** between 326-375 million lbs (the equivalent electricity generating capacity for the entire state of California's 40 million people for 22.4 years) of uranium. From a national security standpoint, domestic utilities now import 90% of the uranium used to operate America's 104 nuclear reactors. Thirty years ago, these reactors used U.S mined uranium for 100% of electricity production. The nation cannot be pro-nuclear and anti-nuclear fuel. In sum, these deposits represent the last available use of our public ***lands*** for economic growth in our region. The opponents of uranium mining have chosen to ignore the fact that mining with environmentally sound reclamation was conducted from the early 1980s until the price of uranium collapsed in 1993. No mining at all occurred from 1993 until 2010, and the Denison mine which is now operating, is following and often exceeding all environmental and safety laws. Arizona needs to go back to the roots that led to Arizona being developed, and that is mining. The strict federal and state environmental laws already on the books will protect the public from environmental damage to the Grand Canyon watershed. The mining of uranium however does not affect ground water nor destroy the natural resources of the ***land***. It does not require open pit mining. Upon completion of mining one Breccia Pipe (4 years) the ***land*** is placed back into its native state. We want to thank you for putting forward this amendment. Nuclear energy can be the future of clean energy. We have the resources in this Country to ensure that happens and we have the technology and means to ensure mining that energy is both environmentally safe and protects our natural resources. We stand in support of the amendment. Sincerely, Buster Johnson, Chairman, Mohave County Board of Supervisors. Mr. STAUBER. Mr. Speaker, I urge a ``yes'' vote on this en bloc, and a ``no'' on the underlying bill. Mr. NEGUSE. Mr. Speaker, I yield 2 minutes to the distinguished gentleman from Arizona (Mr. Stanton). Mr. STANTON. Mr. Speaker, I thank the gentleman and I also thank the chairman of the Committee on Natural Resources and my fellow Arizonan, dean of our delegation, Congressman Raul Grijalva, for their leadership. Mr. Speaker, when people think of Arizona, they think of our Grand Canyon--perfectly chiseled over millions of years by the Colorado River. Its beauty and scale are humbling. But to us, it represents so much more than a natural wonder. The Grand Canyon National Park welcomes 6 million visitors a year. It is the cornerstone of our State's tourism industry, directly supporting almost 10,000 jobs. Though it is special to all, it is sacred to the indigenous communities who call it home and who know better than anyone how critical it is to protect. It is simple: This is no place for uranium mining. We can't risk the health of the communities that rely on this ***land*** and water or the delicate ecosystems it contains. We cannot improve upon this wonder, and we should not play a part in its destruction. Mr. Speaker, I support protecting the Grand Canyon, and I am proud of the vote we will take later today to safeguard it for future generations. Mr. WESTERMAN. Mr. Speaker, I yield 1 minute to the gentlewoman from New Mexico (Ms. Herrell). Ms. HERRELL. Mr. Speaker, I rise in support of my amendments that would strike all potential wilderness designations from this bill. A wilderness designation is one of the most restrictive designations that the Federal Government can put on a piece of ***land***. They put limits on ***forest*** management activities, access for emergency and military personnel, and limit access for the general public. As we have seen across the West, areas designated as potential wilderness or wilderness study areas sit in limbo for decades. Criteria for what constitutes a wilderness area is very clear and straightforward. Keeping ***lands*** under potential wilderness or wilderness study area designations for extended periods of time is unnecessary and greatly handicaps rural communities in the West. Mr. Speaker, let me emphasize: Many of the counties affected by these potential wilderness designations are already living in ***lands*** with over 80 percent publicly managed ***lands***. Many of my Eastern colleagues may not appreciate what that means for local governments in the affected counties when I say a county is over 80 percent public ***land***. Public ***lands*** are not taxable, meaning that the local tax base for counties that have high amounts of Federal ***lands*** is extremely small, therefore, their multiple use on these ***lands*** prevented by this legislation is crucial for economic success. Mr. NEGUSE. Mr. Speaker, I would just note for the record with reference to ``Eastern colleagues,'' I represent the State of Colorado, my colleague, Representative DeGette, represents the State of Colorado, the vast majority of the sponsors of this bill represents Western States. My district is not all that far from the gentlewoman's district in New Mexico. Mr. Speaker, I yield 1 minute to the distinguished gentlewoman from Colorado (Ms. DeGette), the dean of our delegation. Ms. DeGETTE. Mr. Speaker, I just couldn't let this go. Insinuating that the sponsors of this legislation, on all the titles of this legislation have not been to these areas and that these designations do not have local support is simply untrue. Two-thirds of the individuals in the affected areas in title 1 of my part of the bill, which have been mostly managed as wilderness study areas for 40 years, support wilderness. Scores of local public officials, scores of local mayors, city councils, and, yes, county commissioners have supported this over the years. I personally have been to almost every area in the legislation. I have met with scores of businesses, local elected officials, and citizens, and I challenge anybody to go look at these very special areas and tell me that they should not be preserved for future generations. The same goes for every single title of this legislation. It has been vetted, it has been revetted, and it has been revetted again, and it has strong reasons for designation as public ***lands***, and it has strong local support. Mr. WESTERMAN. Mr. Speaker, I yield 1 minute to the gentleman from Utah (Mr. Moore). Mr. MOORE of Utah. Mr. Speaker, I thank the gentleman for yielding. Mr. Speaker, I am proud to rise in support of these amendments. Utah ranks second in the country for percentage of ***land*** owned by the Federal Government, so we understand the challenges and opportunities that come with ***land*** designations. Mr. Speaker, with Utah's interests in mind, I introduced a commonsense amendment that would require local ***land*** officials to approve wilderness designations, empowering the local communities to work with the Federal Government on major ***land*** decisions, and the previous comments actually emphasize the importance of that. And I appreciate that, and I respect that, the local input that the gentlewoman was mentioning. Our system works best when there is close collaboration between all levels in government. Our State and local governments see firsthand obstacles to successfully managing their resources, and they are experts in their communities' unique needs and concerns. As policymakers, we have a responsibility to bring local officials to the table so that we can make the most informed ***land*** decisions possible. Wilderness areas can be beautiful, but these designations bring many challenges. Our Federal ***lands*** will be best managed when we include our constituents' perspectives. Unfortunately, this process has denied my Republican colleagues and me the ability to do just that. Mr. Speaker, I urge my colleagues to vote for these very sensible and reasonable amendments. Mr. NEGUSE. Mr. Speaker, I would just say to my colleague: One, I want to welcome him to the United States Congress, and I thank him for his thoughtful recitation with respect to the amendment he offered. But I just want to assure him, for example, with respect to the CORE Act, my provision of this bill, it has the support of every county in which a part of the bill is designated. That is to say, in the areas where there are protections being made in the bill, the counties in those areas support this bill. And that is why this bill has attracted such bipartisan support back home in [[Page H753]] Colorado and why it has passed the House twice. Mr. Speaker, I reserve the balance of my time. Mr. WESTERMAN. Mr. Speaker, may I inquire how much time both sides have remaining. The SPEAKER pro tempore. The gentleman from Arkansas has 3\3/4\ minutes remaining. The gentleman from Colorado has 4\1/2\ minutes remaining. Mr. WESTERMAN. Mr. Speaker, I yield 2 minutes to the gentlewoman from Colorado (Mrs. Boebert), who, again, represents one-third of the area proposed in this wilderness area, to tell the House about how the people there really feel. Mrs. BOEBERT. Mr. Speaker, I thank the gentleman from Arkansas for yielding. I thank Mr. Stauber for working with me on several amendments that protect Colorado's Third Congressional District. All 11 of my amendments to give voice to the people in my district were denied. Mr. Speaker, this bill ***targets*** my district and would lock up more than 550,000 acres of it with new wilderness designations. The Mesa County Commissioners, Montezuma County Commissioners, Dolores County Commissioners, the Archuleta County Commissioners, White River and Douglas Creek Conservation Districts, the Colorado Farm Bureau, and numerous other constituencies in Colorado strongly oppose this bill because of the damage they know that it will cause and activities it will prevent. Mr. Speaker, I include in the Record several of those letters of opposition. Colorado Snowmobile Association, COHVCO, Trails Preservation Alliance, February 23, 2021. Re 2021 Omnibus Wilderness & Amendments. Congresswoman Lauren Boebert, Att: Jeff Smalls & Ashley Higgins, Washington DC. Dear Jeff and Ashley: Please accept this correspondence as the comments of the above referenced Organizations vigorously opposing the CORE Wilderness Proposal (HR 803) and the Colorado Wilderness Act (HR577) hereinafter referred to as ``the Proposal''. After a detailed review of the Proposal, the Organizations have concluded that every area expanded or created in the Proposal would result in significant lost recreational opportunities for the overwhelming portion of visitors to the Proposal area, both currently and in the future. While there are significant lost opportunities, there is also no additional protections for multiple use routes that might remain outside the Wilderness areas and no new areas are designated or released for multiple use recreational opportunities. The Organizations have spent many years trying to hammer out something that works for everyone around these proposals, and have simply been stonewalled at every turn by the sponsors of this legislation in both Houses of Congress. This is despite the fact our groups were thanked by outgoing Senator Mark Udall for our collaboration and efforts around the development of the Hermosa Creek Watershed Management legislation signed into law on December 19, 2014 as Section 3062 in the Carl Levin and Howard P. ``Buck'' McKeon National Defense Authorization Act for Fiscal Year 2015 (PL 113-291). This legislation released a WSA and specifically protected motorized usage in the area moving forward, designated a large special management area where multiple uses were protected and designated Wilderness in areas where that management was appropriate. We had hoped this collaboration was a roadmap for resolving many of the ongoing challenges we encounter around Wilderness designation and releases. Unfortunately, we were incorrect as exemplified by the efforts around HR 577 and HR 803 as phone calls are not returned, meetings are continued and ideological trench warfare has returned around these Proposals. It is worth noting, the Colorado Wilderness Act would heavily impact many recently developed trail networks that have enjoyed strong bi-partisan and community support or historical trail networks that serve a wide range of interests. Examples of these types of losses would include: 1. Bangs Canyon area, which developed an extensive multiple use trail network after a complete NEPA review and analysis and almost a million dollars in direct funding from users for the project. The Bangs Canyon SMA area is now to be designated as Wilderness. 2. Delores Canyon--this area has a large network of trails serving a wide range of interests that has existed for an extended period of time without controversy. While the list above is far from exhaustive, these are examples of impacts we are seeing all too frequently. a. Our position on Specific Amendments Please note that while we do not specifically address every Amendment, several of these are unrelated to recreational usages and outside our expertise to discuss in a meaningful manner. While we are not opposed to any of the Amendments on the list, we are not taking a position. 1. Rep. Boebert 30x30 Program Nullification Amendment #18: Vigorously support. This Executive Order is a direct conflict with multiple mandates that have managed public ***lands*** successfully for decades. Not only does this EO conflict with these mandates, the application of these concepts to private property rights and interests is even more troubling. 2. Rep. Boebert--BLM headquarters--Amendment #16: Vigorously support. Moving BLM national headquarters closer to ***lands*** owned and managed by BLM has greatly increased the responsiveness of the BLM to a wide range of issues. This amendment has garnered strong bipartisan support. 3. Rep. Boebert Native Americans, Other Minorities and Women Jobs Protection Act-- Amendment #60: No position. 4. Rep. Boebert CO, AZ, CA, WA Wilderness Study Act Amendment #56: Vigorously support. The lingering designations around the Wilderness process create significant management challenges moving forward in areas that have never been suitable for designation as Wilderness. The loss of historical recreational opportunities due to the lingering designation of the West Needles WSA was a major issue driving the Hermosa Creek legislation. \_\_\_\_ Board of County Commissioners, Archuleta County, Colorado, Pagosa Springs, CO, February 24, 2021. To Whom It May Concern: The Archuleta County Board of County Commissioners is opposed to H.R 803, the ``Protecting America's Wilderness and Public ***Lands*** Act''. This bill would lock-up nearly 1.5 million acres with new wilderness designations. We agree with Congressman Doug Lamborn's statements that the American people deserve to access our nation's public ***lands***--not to be locked out of them and that a wilderness designation does not guarantee the protection of these ***lands***. We support Congresswoman Lauren Boebert's amendments to the bill and ask that the House allow local governments to make the right decisions for their communities, especially when it comes to managing our beautiful outdoors. Please feel free to contact us if you want to discuss this matter further. Thank you for your consideration. Sincerely yours, Alvin Schaaf, Chairman, Board of County Commissioners. \_\_\_\_ Grand Junction Area Chamber of Commerce, February 24, 2021. Congresswoman Lauren Boebert, Washington, DC. Dear Congresswoman Boebert: On behalf of the 900 small businesses employing 37,000 people that the Grand Junction Area Chamber of Commerce represents, I am writing to encourage you to oppose H.R 803, a bill that would lock up public ***lands*** in Mesa County and negatively impact our local economy. Our community's economy is still reliant in part on the business activity generated by our legacy industries of ***agriculture*** and energy. This bill if passed will negatively impact our already fragile economy and jeopardize our economic recovery. These are ***lands*** that are literally in our backyard in Mesa County yet Congresswoman DeGette continues to ignore us, does not meet with us, and does not even consider the consequences of her bill on the hardworking families of our areas. In addition to opposing H.R 803 our organization supports the various amendments you are proposing be added to the bill that include keeping the BLM Headquarters in Grand Junction, Colorado, requiring that affected counties must approve the Wilderness Designation and protects grazing and water rights. We appreciate your efforts to help retain jobs and the diversity of our local economy by opposing H.R 803 and offering amendments to help preserve the livelihood of our families and our way of life. Sincerely, Diane Schwenke, President/CEO. \_\_\_\_ San Juan Trail Riders, Durango, CO, Congresswoman Lauren Boebert, Attn: Jeff Smalls & Ashley Higgins, Washington, DC. Re 2021 Omnibus Wilderness & Amendments. Dear Jeff and Ashley: Please accept this correspondence as support of comments submitted by Trails Preservation Alliance (``TPA''), Colorado Off Highway Vehicle Coalition (``COHVCO''), and Colorado Snowmobile Association (``CSA'') in their vigorously opposing the CORE Wilderness Proposal (H.R 803) and the Colorado Wilderness Act (H.R 577). San Juan Trail Riders (``SJTR'') is a single-track motorized trail user group that has a membership of nearly 400 members within the Four Corners Area, California and Texas. These members provide significant positive economic impacts to a broad range of businesses and communities in cities and towns throughout the region. The organization has for over 30 years provided significant support to agencies like the BLM and USFS for recreational single-track motorized trail construction, maintenance and repair. Additionally, this agency is responsible for helping to [[Page H754]] establish special grant applications from existing state OHV Funds. SJTR has headquarters in Durango, CO. Submitted by, Deric Hook, Board Member, San Juan Trail Riders. \_\_\_\_ Mesa County, Board of Commissioners, Grand Junction, CO, February 25, 2021. Re Colorado Wilderness Act of 2021, H.R 803. Hon. Diana DeGette, House of Representatives, Washington, DC. Dear Representative DeGette: As the Board of County Commissioners (``Board'') for Mesa County, Colorado, we are again writing in strong opposition to the Colorado Wilderness Act of 2021, H.R 803 (``the Act''). Mesa County's opposition to additional Wilderness designation within Mesa County is clearly documented in ``A Resolution of the Board Of County Commissioners of Mesa County, Colorado Opposing the Colorado Wilderness Act of 2015 (H.R 3336) and Calling on Congress to Release All Wilderness Study Areas in Colorado'' (attached) passed and adopted on September 21, 2015, and the letter of opposition to the Colorado Wilderness Act of 2019, dated June 24, 2019 (attached). Wilderness designations are the most restrictive ***land*** management tool available and are in direct conflict with the multiple use mandate of our federally managed ***lands***. As federally managed ***lands***, these areas are subject to customized protections through various designations identified in area resource management plans, including prohibition of grazing, seasonal travel limitations and closures, and oil and gas lease stipulations. Mesa County supports less restrictive federal designations that involve appropriate, special management protections determined through responsible ***land*** use planning that allow stakeholders to work together to identify and address issues with local solutions for each unique area, rather than a broad-brush approach that ends multiple use of these ***lands*** in perpetuity. The Colorado Wilderness Act of 2021 egregiously fails to take into account several important considerations concerning necessary access, such as: 1. Three of the five proposed Wilderness areas in Mesa County have experienced wildfires over the past two decades. Lack of access for wildfire mitigation, proper extinguishment, and post-fire restoration increases the probability and severity of devastating wildfires. Lack of access also compounds the potential for life-safety emergencies as responding personnel will be obstructed when answering time-sensitive calls. 2. Based on the mapping provided by the Colorado Oil and Gas Commission, the proposed Little Book Cliffs Wilderness polygon includes the Laramie Energy, LLC Winter Flats well and the Maralex Resources, Inc. USA-610S98W well. These wells will need ongoing maintenance and monitoring. Should access be denied for these wells and the leases within the proposed Wilderness areas, the lessee should be fairly compensated. 3. The Bureau of ***Land*** Management (BLM), as the agency responsible for the health and well being of the wild horses of the Little Book Cliffs Wild Horse Area and their habitat, must access to this area to ``sustain a healthy viable wild horse population while maintaining a thriving natural ecological balance of resources and uses.'' The BLM utilizes vehicles, and at times helicopters, for set-up and take down of traps and transportation of gathered horses, and to perform fertility control measures. Loss of access for these events could lead to serious consequences for the wild horses, area habitat, and surrounding property owners. 4. More than 850 acres of Gunnison Sage-Grouse Habitat are included in the proposed South Bangs Canyon Proposed Wilderness area and The Palisade Proposed Wilderness area which could limit management activities, lek counting, and habitat restoration activities by the US Fish and Wildlife Service. 5. Non-motorized trail based recreation is critical for our region's quality of life and economy. The potential for exclusion of mechanized travel, e.g bicycles, from thousands of acres of public ***lands*** in western Colorado is not supported by the Board. Of particular concern is the North and South Bangs Canyon Proposed Wilderness areas. Given the proximity to and importance of the Tabeguache Trail, the region is of interest to local trail groups for future trail based recreation growth. 6. The Act eliminates ``development for any new irrigation and pumping facility, reservoir, water conservation work, aqueduct, canal, ditch, pipeline, well, hydropower project, transmission, other ancillary facility or other water, diversion, storage, or carriage structure'' in the Wilderness designation. As Colorado's water resources require more astute management, eliminating the option to create and expand necessary water storage and delivery systems and the ability to improve critical drainages and watersheds indefinitely is imprudent. In addition to ending critical access and multiple use of public ***lands***, the Board believes Wilderness designations also: 1. unfairly discriminates against those that are unable to walk or ride horseback, including those with disabilities and the elderly; 2. creates additional hardships on adjacent property owners, lessees, and other nonrecreation users who face restricted travel; and, 3. abolishes future productive uses of all resources within the designated area, including those that enrich residents and visitors' lives, in perpetuity. Mesa County is comprised of more than 72% public ***lands***. Our economy and way of life are deeply reliant on these ***lands***, and ensuring the proper management of them is of the highest concern for all who live here. To suggest that anyone in Mesa County would wish these ***lands*** destroyed is false and offensive. However, with more than 100,000 acres of designated Wilderness and more than 80,000 acres held in perpetual Wilderness Study Area limbo, residents of Mesa County do not want to see more of their public ***lands*** made inaccessible. Further, with the possible passage of the Colorado Outdoor Recreation and Economy Act (``CORE Act''), Colorado will see varying levels of conservation in counties that desire such protections. We invite you to visit Mesa County and speak with those directly affected by the proposed legislation. Our door is always open, and we welcome the opportunity to discuss further this critical matter that can drastically change our residents' lives. Sincerely, Janet Rowland, Chair, Board of County Commissioners. Cody Davis, Commissioner. Scott McInnis, Commissioner. \_\_\_\_ February 25, 2021. The Honorable, House of Representatives, Washington, DC. Dear Representative: On behalf of the nearly six million Farm Bureau member families across the United States, we write in strong opposition to H.R 803, the Protecting America's Wilderness and Public ***Lands*** Act. Collectively this package of bills impacts ***lands*** in California, Colorado, Arizona and Washington by creating nearly 1.5 million acres of new wilderness, the most restrictive federal ***land*** use classification. Additionally, it would designate 1,200 miles of wild and scenic rivers and create 110,000 acres of National Monument expansion. Further, many of the wilderness and wild and scenic river designations contained in this bill are not suitable for these restrictive designations. To declare areas that do not possess these characteristics undermines the integrity of the Wilderness Act and the Wild and Scenic Rivers Act as well as the ***lands*** that possess those features. Farmers and ranchers rely on federal ***forests*** and rangelands for economic and recreational opportunities. Livestock grazing on federal ***lands*** forms an integral part of ranching operations across the United States, especially in the West. But farmers also use national ***forests*** and rangelands throughout the United States in a variety of other ways. Federal ***lands*** throughout the country are important components of our nation's watersheds that provide water to a large number of Americans. Active ***land*** management practices such as timber production and livestock grazing are critical to protect against wildland fires which devastate range resources, damage watersheds, threaten wildlife and put rural communities at great risk. American farmers and ranchers have a genuine interest in healthy and productive federal ***forest*** and rangelands. At the same time, we have a genuine interest in seeing ***lands*** managed in an environmentally sound manner. Farmers and ranchers understand and appreciate that active management of our federal ***lands*** is critical to the long-term viability of the ecosystem, the resource, and the communities they support. Designations included in H.R 803 threaten multiple use areas by prohibiting the employment of motorized tools and mechanized vehicles in watershed management, trail maintenance, soil treatment, noxious weed control, waste management and fire protection. Our nation's federal ***forests*** are facing serious threats from fires, insects and disease due to a lack of active ***forest*** management. The poor health of our federal ***forests*** also threatens wildlife populations and neighboring non- federal ***lands***, as well as the vitality of rural, ***forested*** communities across the country. A vibrant livestock and ***forest*** products industry helps diversify rural economies in ways that compliment ranching and ***agricultural*** operations. Wilderness and National Monument designations eliminate federal ***land*** management agencies ability to effectively protect against the threat of catastrophic wildland fire. Farmers, landowners, and grazing permitees should be fully involved as affected partners in any process to execute federal ***land*** use designations which restrict public use and access. Federal ***land*** use designations that lack local stakeholder input from ***agricultural*** and resource management professionals often generates significant controversy and economic hardship at the local level. The detrimental effects of a federal ***land*** use designation frequently causes residents, elected state and county officials, and local stakeholders significant reductions in economic activity and the loss of jobs in rural communities. Past designations have also affected water rights, public ***lands*** grazing and access to State and private ***lands***. Farm Bureau supports the multiple-use concept of federal ***lands***, recognizing that definable ***land*** areas have dominant- use capability, which should be recognized with the [[Page H755]] concept of multiple uses without the total exclusion of other uses. The Protecting America's Wilderness and Public ***Lands*** Act stands in clear violation of AFBF policy. Additionally, the California, Colorado, Arizona and Washington Farm Bureau's oppose passage of this legislation. Farm Bureau urges you to oppose passage of H.R 803, the Protecting America's Wilderness and Public ***Lands*** Act. Sincerely, American Farm Bureau Federation, Arizona Farm Bureau, California Farm Bureau, Colorado Farm Bureau, Washington Farm Bureau. Mrs. BOEBERT. Mr. Speaker, Democrats have ignored our local communities and their needs with this ***land*** grab. In their letter of opposition, Mesa County points out three of the five wilderness areas in Mesa County in this bill that have had large fires in recent years, and that wilderness designations harm active management and wildfire activities. I hope that when Members visit my district on horseback, they are telling people that this ***land*** will soon burn, because if we do not actively manage our ***forest***, Mother Nature will continue to manage it for us. Mr. Speaker, the amendments that are offered today would protect energy production, local grazing rights, water rights, access to our public ***lands***, and allow wildfire mitigation. Perhaps, and most importantly, these amendments give the people of my district a voice, ensuring local officials have a seat at the table when ***land*** use is changed in their respective counties. {time} 1015 The victory in my election showed the will of the people in Colorado's Third District. They want to keep their ***land*** open for public use. Mr. Speaker, I thank the Member for his thoughtful amendments, and I strongly encourage support on these amendments today. Mr. NEGUSE. Mr. Speaker, I yield myself such time as I may consume. Mr. Speaker, I want to note one thing for the record because there is a reference from my colleague to amendments that she proceeded to make on this bill. There has been a lot of talk about local control and the support of communities back home. We received communications from various town commissioners regarding the amendments that my colleague proposed, and I will just give you a couple of examples of their responses. To simply classify this as a ***land*** grab is deeply disrespectful to those who have worked long and hard to gather the facts, negotiate, and compromise. The issues are too important to let parties divide us. That was a county commissioner from San Miguel. A commissioner from Routt County: The amendments were issued in a way that ignores our system of local control. They reject the liberty and freedom of local jurisdictions to express what is right and just within those jurisdictions. The communities impacted by the provisions in this bill support the protections that we are seeking to enact into law. That is why we are here. So with respect, I would again say we oppose the amendments that have been submitted in en bloc No. 2. Mr. Speaker, I yield 1\1/2\ minutes to the distinguished gentleman from California (Mr. Thompson). Mr. THOMPSON of California. Mr. Speaker, I rise in strong support of the first en bloc amendment, which stipulates that nothing in this act shall limit the ability of the Secretary of the Interior or the Secretary of ***Agriculture*** to manage ***forest*** fires, insects, and diseases in designated wilderness areas under the Wilderness Act. ***Land*** conservation is an investment in our future, but it is equally important that we continue to manage our wilderness areas responsibly. Over the past several years, my district and others across our great country have been hit hard by historically damaging wildfires. To protect countless communities, the Federal Government must ensure wilderness areas are adequately managed to minimize the impacts of wildfires. I want to thank Chairman Grijalva and Representatives Panetta and Lofgren for being champions of public ***lands*** and responsible ***land*** management. Mr. Speaker, I am proud to join them on this amendment, and I strongly urge an ``aye'' vote on the first en bloc amendment. Mr. WESTERMAN. Mr. Speaker, I include in the Record this letter from the Grand Junction Area Chamber of Commerce. It says that this bill, if passed, will negatively impact our already fragile economy and jeopardize our economic recovery. Grand Junction Area, Chamber of Commerce, February 24, 2021. Congresswoman Lauren Boebert, Washington, DC. Dear Congresswoman Boebert: On behalf of the 900 small businesses employing 37,000 people that the Grand Junction Area Chamber of Commerce represents, I am writing to encourage you to oppose H.R 803, a bill that would lock up public ***lands*** in Mesa County and negatively impact our local economy. Our community's economy is still reliant in part on the business activity generated by our legacy industries of ***agriculture*** and energy. This bill if passed will negatively impact our already fragile economy and jeopardize our economic recovery. These are ***lands*** that are literally in our backyard in Mesa County yet Congresswoman DeGette continues to ignore us, does not meet with us, and does not even consider the consequences of her bill on the hardworking families of our areas. In addition to opposing H.R 803 our organization supports the various amendments you are proposing be added to the bill that include keeping the BLM Headquarters in Grand Junction Colorado, requiring that affected counties must approve the Wilderness Designation and protects grazing and water rights. We appreciate your efforts to help retain jobs and the diversity of our local economy by opposing H.R 803 and offering amendments to help preserve the livelihood of our families and our water life. Sincerely, Diane Schwenke, President/CEO. Mr. WESTERMAN. Mr. Speaker, I yield myself the balance of my time. Mr. Speaker, I urge all of my colleagues that if you want to improve our environment, if you are worried about job losses in your district, if you think we should secure our supply chains and improve American energy independence, if you think our ***forests*** need to be properly managed to avoid catastrophic wildfires, and if you enjoy recreating in our public ***lands***, you should vote for this amendment package. The underlying bill is a feel-good bill that hurts our economy and environment. We won't have to suffer the consequences of that. It will be our children and our grandchildren who have to live with the fact that we don't have ***forests*** because we burned them all down and we don't have jobs because we outsourced our domestic mining industry to Russia and China. It shouldn't be a surprise to anybody that the Democrats didn't want to put a package this disastrous for our economy and environment through regular order. They may be able to limit our ability to debate this package, but there is no hiding the truth: This legislation is a ***land*** grab that devastates the very communities and ***lands*** it claims to support and protect. Mr. Speaker, I urge my colleagues to support the en bloc amendments and oppose the underlying bill. I yield back the balance of my time. Mr. NEGUSE. Mr. Speaker, I yield myself the balance of my time. Mr. Speaker, again, I have great respect for my colleague, the ranking member, but what he purports this bill will do is just simply not the case. I would think that trying to prevent uranium mining in the Grand Canyon would not be controversial. I would hope that my colleagues could come to a consensus on that. As lawmakers, we all know that strong policy requires compromise. It requires years of input and vigorous debate. I am happy to participate in this debate, and I appreciate the gentleman's participation. When we think of some of the most iconic, protected places in the United States--Yellowstone, Yosemite, the Grand Canyon--it is difficult to imagine a time when they were not protected, but even those most treasured places in America underwent criticism from Members of Congress. The arguments, actually, that we heard today are nearly identical to those that we were hearing on the floor 100 years ago. In 1882, Benjamin Harrison, who was then a Senator from Indiana, introduced a bill to designate ***land*** lying on the Colorado River in the territory of Arizona as a public park. The bill was forwarded to Interior Secretary Henry Teller, who was a Coloradan, and he opposed conservation of the site. He told [[Page H756]] the Senate that the bill was unnecessary and that the area ``does not require the creation of a public park to preserve it.'' Congress was unwilling to proceed in the face of opposition from the executive branch due to the interests of mining, westward territorial mining, and ***land*** use. Harrison pushed on. He reintroduced the bill in 1883, again in 1886. And in 1903, the great conservationist Teddy Roosevelt visited the area he had advocated to protect. He declared that it is ``beyond comparison, beyond description,'' and ``unparalleled.'' ``Let this great wonder of nature remain as it is now. Do nothing to mar its grandeur. . . . You cannot improve upon it. But what you can do is keep it for your children, your children's children, and all who come after you.'' On February 26--on this very day--in 1919, President Wilson signed into law the Grand Canyon National Park Act, 101 years ago today. Mr. Speaker, let's make that choice again. We passed this bill with bipartisan support. I ask my colleagues to do it again, and I yield back the balance of my time. Mr. GOSAR. Mr. Speaker, my amendment would require us to know what we are doing before we take the overwhelming radical step of withdrawing more than a million acres of federal ***lands*** from mineral development. It may come as a shock but even today we know little about the geologic mineral makeup of our ***lands***. Minerals that were very important in the past like gold and silver are not always the key to our future technologies. Today, we are finding a whole new suite of minerals that are critically important to our future, while rare earths and lithium are the stars, important minerals like cobalt, manganese and copper are quickly becoming equally both important and challenging to find and produce. However, this bill in front of us has no recognition of the importance of the breadth of minerals that may be included in the areas covered by this legislation. Which is why my amendment is so important today. This amendment will require the Secretary of the Interior to conduct a full mineral resource survey of the withdrawal areas prior to enacting this withdrawal. This is important because of the national security impacts of this proposed withdrawal that seeks to permanently ban oil, natural gas, geothermal, uranium and other critical minerals and rare earths on over a million acres of ***land*** in Arizona, I will continue to make the case that the importance of the uranium alone is key for keeping these ***lands*** open, however I believe that without this amendment this bill will have a negative impact on our national security as it aims to permanently prohibit mining of rare earths and critical minerals on a massive, massive swath of ***land***. Earlier I mentioned the importance of lithium and there is no question that lithium is critically important to our technology and energy future. However, we don't often know where all the lithium resources are in the United States. For example, in September of last year, the USGS funded an earth MRI program in Arizona to study the lithium resources of the Big Sandy Valley in Arizona. I include in the Record the press release from USGS. This study will help us to define and understand the lithium resources in this region. Yet it is important for us to reflect on the fact that we didn't know about these resources until recently, had we closed off this area, like this bill proposes to do to more than one million acres of Arizona, we may have never known. Yet because we have the ability to examine this area, which is not subject to a withdrawal, we are going to study and hopefully find rich resources we can produce to secure our nation's future. Before I close Mr. Speaker, let me stress, the underlying bill represents one of the largest legislative ***land*** grabs ever considered by Congress. This effort to permanently lock away the highest grade and largest deposit of uranium in the country will further increase our reliance on foreign adversaries like Russia, China, Kazakhstan and Uzbekistan. Instead of rushing headlong into the endeavor of permanently making this million acre area off limits, we should know what the true impacts of this legislation will be on the long-term national security of our country. This amendment would not kill this legislation, instead it would ensure that the proposed withdrawal can only go ahead once we clearly access the region, clearly understand the picture of what we are withdrawing and what other resources may be impacted by this action. I say to my colleagues, lets slow down this process so we know what we are doing, what we are impacting and the real impacts of making such a large and bountiful parcel of ***land*** off limits could have on our mineral security. I urge my colleagues to vote for this amendment. Earth MRI Funds Critical Minerals Projects in Arizona [Sept. 28, 2020] A total of $133,016 will fund new research and preserve important data across the Grand Canyon State Flagstaff, Ariz.--The U.S Geological Survey and the Association of American State Geologists are pleased to announce $133,016 in funding for critical minerals projects in Arizona. These funds are for the fiscal year 2020 under the USGS Mineral Resources Program's Earth Mapping Resources Initiative, or Earth MRI. The funds include grants to the Arizona Geological Survey for geologic mapping and geochemical analyses for an area of the Big Sandy Valley with a focus on lithium and to preserve and publicly available information on critical mineral resources. ``These new projects in Arizona represent the next step in our ambitious effort to improve our knowledge of the geologic framework in the United States and to identify areas that may have the potential to contain undiscovered critical mineral resources,'' said Jim Reilly, director of the USGS. ``The identification and prioritization of prospective areas were done through our strong partnership with the state geological surveys in a series of workshops in Fall 2019.'' ``This program will revitalize and update the science and geologic research and data compilation that is needed in many states for the United States to identify new geologic associations,'' said John Yellich, director of the Michigan Geological Survey and president of AASG. ``The Earth MRI effort is an outgrowth of the strong partnership between the AASG members and the USGS,'' said Warren Day, Earth MRI lead scientist for the USGS. ``The USGS is grateful for the scientific input and support from the state geological surveys, resulting in a robust body of information useful for many applications beyond mineral resources.'' The geologic mapping efforts, which are managed through the National Cooperative Geologic Mapping Program, will refine our scientific understanding of the geologic framework of areas of interest. In addition to helping identify mineral potential, these maps also support decisions about use of ***land***, water, energy and minerals and help to mitigate the impact of geologic hazards on communities. In 2017, President Trump issued Executive Order 13817, a Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals. This executive order called on agencies across the federal government to develop a strategy to reduce the nation's susceptibility to critical mineral supply disruptions. In May of 2018, DOI released a list of 35 minerals deemed critical to the U.S economy and security, based on a methodology by the USGS. This list forms the foundation of the full federal strategy. Mr. GOSAR. Mr. Speaker, my amendment is very simple, it only asks Congress to do one thing, respect the will of the local people in the management of our ***lands***. This amendment would ***remove*** from the bill the ***lands*** included in my Congressional district from the massive mineral withdrawal included in the bill. My local constituents and counties support this amendment and I encourage my colleagues to respect our wishes. Under general leave, I include in the Record a letter from Mohave County opposing this legislation. Mohave County Arizona, which is the primary area which this amendment would help protect, is currently facing nearly 10 percent unemployment and has a per capita income of less than thirty-five thousand dollars a year. These economic conditions should be proof enough that we need to be promoting economic development in these regions, not simply closing off an important path to economic security for the people of Mohave County. My colleagues on the other side of the aisle will argue that these ***lands*** belong to all the American people, which is true, but we must respect the local concerns. When I highlight that offshore oil drilling in California would reduce our dependence on foreign oil, stop us from subsidizing Russia and Saudi Arabia, my colleagues from California scream out ``respect our wishes, we don't want drilling''. So I call on them here today, join me in supporting my constituents who are crying out for the chance, just the chance to keep the potential of high paying jobs open and support this amendment. It may come as a shock but even today we know little about the geologic mineral makeup of our ***lands***. Minerals that were very important in the past like gold and silver are not always the key to our future technologies. Today, we are finding a whole new suite of minerals that are critically important to our future, while rare earths and lithium are the stars, important minerals like cobalt, manganese and copper are quickly becoming equally both important and challenging to find and produce. This area in Mohave County has tremendous potential and keeping that potential open and available to the people of the county is critical to ensuring a rich economic future. [[Page H757]] This amendment only ***removes*** the area within my district, it will allow other members to do with their regions as they will. This amendment would not kill this legislation, instead it would ensure that the people I represent in Arizona have their wishes respected and the ***land*** managed in a manner consistent with the will of the local communities. I urge my colleagues to vote for this amendment. Mohave County Board of Supervisors, February 24, 2021. Hon. Paul Gosar, U.S Congress, Washington, DC. Congressman Gosar: The Mohave County Board of Supervisors is writing to offer our support for your amendment to H.R 803--Colorado Wilderness Act of 2021. As you know, the passage of this legislation will have a grave effect on Mohave County, Arizona, and our neighboring counties in Utah. Uranium mining in the past has been the forefront of our economic growth in Mohave County and if allowed to continue will bring in nearly $29 billion to our local economy over a 42 year period. The passage of H.R 803 would make permanent a July 2012 moratorium on uranium mining in our area. The language of your amendment would help alleviate the permanent economic loss we would sustain under the passage of H.R 803. We strongly support the passing of this amendment as presented in the Rules Committee and the House or Representatives. Without this amendment, the financial stability of our economy in Mohave County would drastically suffer. In 2012, the Secretary of the Interior imposed a 20 year ban on over 1 million acres of ***land*** in the Arizona Strip Area for the purpose of Uranium mining. This ban included both public ***lands*** and National ***Forest*** System ***lands***. This ban took away much needed growth and jobs from our area. Secretary Salazar at the time issued this withdrawal without complying with the law requiring coordination with local governments. The Federal ***Land*** Policy Management Act, USC Section 171 requires that the Secretary and his designees ``coordinate'' with local government as to development and implementation of any plan or management action. Coordination is defined in the Act as requiring prior notice of proposed plans and actions to the local government officials (``prior'' meaning prior to public announcements, and early enough to provide ``meaningful'' participation by the local officials in the ``development'' of the plan or action.). The congressional mandate of coordination also requires the Secretary to use all practicable means to reach consistency between the federal plan/management action and local policy, plan or law. All of which Secretary Salazar did not do. Making this ban permanent based on misinformation will have lasting effects on Mohave County. We respect and take a responsibility for protecting the Grand Canyon, but saying that the Grand Canyon will suffer because of mining is inaccurate. Secretary Salazar's reasoning behind the withdrawal was out of concern that it could damage the region's drinking water and the park's water quality. Bureau of ***Land*** Management officials contradicted those claims by explaining that their Arizona Strip field office had no evidence of contamination of water, and had no evidence of problems with the safe operation of the uranium mines in operation on the ***lands***. Uranium mining is important and useful for many reasons. The ***lands*** in the ``Strip'' contain the nation's high grade uranium deposits and enough uranium to provide power generation for the state of California for over 20 years. Uranium is useful in many ways. It is used by our military for national security and defense. Uranium metal is very dense and heavy. When it is depleted (DU), uranium is used by the military as shielding to protect Army tanks, and also in parts of bullets and missiles. The military also uses enriched uranium to power nuclear propelled Navy ships and submarines, and in nuclear weapons. A permanent withdrawal of uranium mining from the ``Strip'' harms the American people by ***removing*** between 326-375 million lbs (the equivalent electricity generating capacity for the entire state of California's 40 million people for 22.4 years) of uranium. From a national security standpoint, domestic utilities now import 90 percent of the uranium used to operate America's 104 nuclear reactors. Thirty years ago, these reactors used U.S mined uranium for 100 percent of electricity production, The nation cannot be pro-nuclear and anti-nuclear fuel. In sum, these deposits represent the last available use of our public ***lands*** for economic growth in our region. The opponents of uranium mining have chosen to ignore the fact that mining with environmentally sound reclamation was conducted from the early 1980s until the price of uranium collapsed in 1993. No mining at all occurred from 1993 until 2010, and the Denison mine which is now operating, is following and often exceeding all environmental and safety laws. Arizona needs to go back to the roots that led to Arizona being developed, and that is mining. The strict federal and state environmental laws already on the books will protect the public from environmental damage to the Grand Canyon watershed. The mining of uranium however does not affect ground water nor destroy the natural resources of the ***land***. It does not require open pit mining. Upon completion of mining one Breccia Pipe (4 years) the ***land*** is placed back into its native state. We want to thank you for putting forward this amendment. Nuclear energy can be the future of clean energy. We have the resources in this Country to ensure that happens and we have the technology and means to ensure mining that energy is both environmentally safe and protects our natural resources. We stand in support of the amendment. Sincerely, Buster Johnson, Chairman, Mohave County Board of Supervisors. The SPEAKER pro tempore. Pursuant to House Resolution 147, the previous question is ordered on the amendments en bloc offered by the gentleman from Colorado (Mr. Neguse). The question is on the amendments en bloc. The question was taken; and the Speaker pro tempore announced that the noes appeared to have it. Mr. WESTERMAN. Mr. Speaker, on that I demand the yeas and nays. The SPEAKER pro tempore. Pursuant to section 3(s) of House Resolution8, the yeas and nays are ordered. Pursuant to clause 8 of rule XX, further proceedings on this question are postponed. Pursuant to clause 1(c) of rule XIX, further consideration of H.R 803 is postponed.

**Load-Date:** March 2, 2021

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[***Anders Povlsen on his radical mission to ‘rewild’ Scotland***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61BR-RP61-JBNF-W1V7-00000-00&context=1516831)

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**Highlight:** Last year the UK’s largest private landowner lost three children in the Sri Lankan terror attacks. In a rare interview the reclusive Danish entrepreneur talks to Dan McDougall about finding new purpose

**Body**

The track is narrow and serpentine, cutting a low channel through the great glen at Feshie as the rain turns to sleet and the ethereal Highland light is lost. Up ahead, ancient junipers, oaks and pines, stripped bare to the waist, stand sentinel over the pass.

A Range Rover suddenly flashes in my rear-view mirror. At the wheel in a cashmere beanie is Britain’s largest private landowner, Anders Povlsen, a reclusive billionaire who owns more of the UK than the Queen and the Church of Scotland combined.

As well as the 43,000-acre Glenfeshie estate, a pristine wilderness in the Cairngorms, Povlsen owns 12 other Scottish estates. In total this Danish entrepreneur has acquired about 230,000 acres of Britain worth more than £120 million, and has grand visions for a 200-year “rewilding” plan — to allow native woodland and species to regenerate and flourish across northern Scotland. Povlsen’s rewilding is the most ambitious privately funded environmental endeavour in the conflict-ridden history of the Highlands.

To achieve his goal Povlsen has bought adjoining estates and has begun the process of ***removing*** sheep, which overgraze and previous Highland lairds allowed to proliferate to promote a landscape suitable for gun sports. He is also planting trees — restoring ancient Caledonian ***forest*** tracts. At Killiehuntly near Inverness his young Scottish team have planted 1.5 million native trees in less than two years; over all his properties his staff have planted more than four million.

The truth is that rewilding is an often maligned and misunderstood philosophy. Popularly it is often seen as a movement that seeks the return of carnivores such as wolves or lynx — Natural England, for example, is currently considering the feasibility of reintroducing lynx. But for Povlsen rewilding aims to return far more modest animal species by undoing centuries of overgrazing and regenerating native woodlands and wetlands. It’s notable that across Povlsen’s ***lands*** there have been increased sightings of red squirrels, pine martens and golden eagles, as well as reforesting.

His plans have drawn praise from environmentalists — and criticism from ***land*** reform campaigners concerned about foreign ownership in the Highlands.

“I generally think, over generations, we have lost the baseline,” Povlsen says as we sit in the main lodge at Glenfeshie, a Ralph Lauren-imagined hallucination of stags’ heads and Victorian-era crampons that he inherited from the estate’s previous owner. “This [the Highlands] is not a natural environment any more — when you’re out there and there’s only heather, heather, heather. In some places you will not be able to see a single tree for miles. Then we dig into the peat and you will find it used to be a ***forest***, and not only that, we can change it back to its splendour and natural state.”

Povlsen recently made headlines when his team sought a judicial review of plans for a space-rocket launch site in the Highlands, fearing it will damage protected areas. The Highlands and Islands Enterprise agency, on the other hand, says the project would create jobs.

Yet to most people Povlsen is something of a ghost. He rarely speaks to the media, not even to tell them when they are wrong — which, in his opinion, they often are. In April Povlsen, who calls an estate near Aarhus in Denmark his home, was named in

The Sunday Times

Rich List as

[*Scotland’s richest man*](https://www.thetimes.co.uk/article/anders-povlsen-takes-scottish-league-of-super-rich-to-new-heights-r33cfcrfn)

, with a fortune of £4.73 billion — a title he says he finds unnecessary as a resident tax-paying Dane. This interview is the first Povlsen has given to a mainstream international publication for years.

It comes as he is fighting tooth and nail through the most significant professional challenge of his life: his multibillion-pound fashion company, Bestseller, along with the entire fashion industry, has been dramatically affected by Covid-19. However, its impact on Povlsen pales into insignificance beside the appalling events that altered the course of his life last year.

In April 2019 he travelled to Sri Lanka with his wife,

[*Anne*](https://www.thetimes.co.uk/article/anders-povlsen-takes-scottish-league-of-super-rich-to-new-heights-r33cfcrfn)

, and their four children, partly on holiday, partly to visit potential conservation projects. A last-minute decision before their departure caused the family to spend a final night in Colombo before heading to the airport. As a consequence they were caught in a terrorist attack as a series of explosions ripped through the city.

One bomb detonated at 9am on Easter Sunday at the Shangri-La hotel, where the Povlsen family were having breakfast. It took the lives of three of his four children: Alfred, 5, Agnes, 12, and Alma, 15. Only Astrid, his youngest daughter, survived.

On Povlsen’s left wrist is a row of three scarlet Buddhist threads, one for each of the children he lost that fateful morning. In the wake of the bombings, which killed an estimated 269 people including about 50 other children, Povlsen, his family and friends all adopted the three symbolic threads, which they continue to wear.

Although stricken with unimaginable sorrow, Povlsen has proven to be stoic, ploughing much of his heart and soul into conservation. When he speaks about his projects in Scotland I am surprised by the passion in his voice. “This ***land*** moves me — it motivates me. Here in Scotland it feels like we are at the vanguard of something.”

Nevertheless, Povlsen admits he needs to work harder to explain his aims in the Highlands. “I am not going to pretend it was easy when I first started here in Scotland. But today the locals here are less suspicious of our motivation. They know we are trying to deliver something to protect the ***land***.”

He adds: “Wildland, which manages our estates, is a business registered in Scotland. I am being taxed in the UK and Denmark for our Scottish estates. There will always be doubters, of course, but the truth is we are here for the long run and the right reasons.”

Povlsen acknowledges that with more ownership comes deeper accountability. “We could probably have communicated our intentions here in Scotland better. If I was candid, we didn’t plan to buy this much ***land***. It has grown organically and now we find ourselves here with titles like the UK’s largest private landowners.

“The trouble with the attention this attracts is that people assume there is an angle in play. That I am buying all this ***land*** for reasons that are not entirely altruistic. Perhaps there is something inherent in human nature, when people see a project or a vision like this, to doubt it, to mistrust the scale.”

Scale is clearly an issue. In 2017 it was estimated that more than half of the private ***land*** in Scotland was owned by fewer than 500 people — and the new wave of owners is universally foreign. The billionaire ruler of Dubai, Sheikh Mohammed bin Rashid al-Maktoum, owns 63,000 acres of the Highlands. The list also includes the Swedish philanthropist and publisher Sigrid Rausing, who owns Coignafearn, a 40,000-acre estate in the Monadhliath Mountains.

Scotland arguably has more terms for rain than any other country on Earth, and with good reason. Most commonly there is lashing (rain that bounces off the ground), murr (a fine drizzle), scrow (a nasty squally shower) and uar (a persistent heavy fall of rain). There is also plenty of rainfall in the Jutland peninsula of Denmark, where Povlsen grew up and raised his children, sending them to a local state school. Part of me understands why Povlsen feels at home here in the Cairngorms. There is something about rain and how it shapes communities and people. In the Highlands it bonds villages together in tight-knit groups. The harsh weather also forges resilience.

From the outset of our talk Povlsen makes it clear that the death of his three children in Sri Lanka is an issue he wishes to avoid. Yet it is clear he is also seeking catharsis. One treasured memory of his children is a family effort to collect litter on a remote Indian Ocean beach in the south of Sri Lanka. His children, he recalls quietly, were the best litter collectors he had ever seen.

When he returned to Europe with their bodies, Denmark mourned for one of its most successful sons. The funeral, at Aarhus Cathedral, was attended by Denmark’s prime minister and Crown Prince Frederik and Crown Princess Mary, with their own four children. After several minutes’ silence outside the church, Astrid, Povlsen’s only surviving child, cut a string of balloons for her siblings that rose into the blue sky.

In the Cairngorms and at Povlsen’s other ***land*** holdings, local people, including entire classes of schoolchildren, wrote letters of condolence to the family — prompting them to take out full-page adverts in local newspapers extending their gratitude. The owner of the small B&B I stayed at the night before driving up to the estate said simply: “We felt for them. They were so young. Everything was in front of them.”

I tell Povlsen that I covered Sri Lanka’s civil war as a foreign correspondent, and how I stared down at the white-clothed bodies of rows of dead schoolchildren after a militia bomb attack in the north of the island. Unexpectedly he begins to talk about his loss and his new baby daughters — then changes tack, turning to the humility of the Sri Lankan people.

His wife, Anne, gave birth to twin girls earlier this year. They are rays of light in a family history darkened by more than one trauma. In 1998 the family were ***targeted*** by an extortionist who threatened violence if he didn’t receive a ransom. And in 2003 a close family friend was kidnapped in India by a gang that mistook him for one of the Povlsens; luckily he survived.

Povlsen is regularly described as a billionaire who inherited his father’s fortune, but he bristles at this half-truth. His parents opened their first store in 1975 in the small Danish town of Ringkobing and expanded it — but their son wasn’t handed an empire or offered an easy way into the family business. He holds a bachelor’s degree from the Berlin School of Economics and Law and a doctorate in business and ecommerce from Anglia Ruskin University in Cambridge. He wrote his dissertation on an Amazon-style model for online shopping — before Amazon, in its current form, existed. Today his fortune stems mainly from Bestseller, the fashion business he inherited from his parents and developed from the age of 28, selling clothes under 11 brand names, including Jack & Jones, Only and Vero Moda, across thousands of individual stores. Bestseller is one of the most successful western fashion chains in China.

That financial strength has allowed him to pursue conservation well beyond Scotland and his native Denmark. He has projects in the Leaota region of Romania and is examining new frontiers in the Volcanoes National Park, which straddles Rwanda, Uganda and the Democratic Republic of Congo. It was, in fact, to Rwanda where Povlsen partially retreated with his wife and daughter after the bombings in Sri Lanka. I ask about his wife’s role in his Scottish projects. “Well, Anne’s very aware. She shares the sense that we urgently need to do more around sustainability — how nature needs a helping hand.”

This raises an awkward issue: there is an apparent contradiction between his business interests and his conservation efforts. The fashion industry produces 10 per cent of all carbon ***emissions*** and is the second-largest consumer of the world’s water. How does Povlsen square being part of an unsustainable industry while running a global conservation programme?

“It’s a fair question,” he says. “But I can’t have conservation ambition without the business to fund it. I don’t think you have the luxury of being able to wake up one morning and sell up everything — to leave the business behind. This is more acute now that we have lost ground with Covid-19. In many ways I think we will reset the company for good. I think we will finally find ways of working that are a little bit smarter, a little bit more efficient, faster, more sustainable. Covid is resetting how we work and think. Will it mean that we operate in a cleaner and better way? We all hope so.”

He suggests that the way big businesses are taxed may become related to their environmental impact. “In the future you should have to prove you are carbon neutral, that you’re not subtracting from the natural world. And we run a fashion business, so it’s challenging, right? There has to be a way forward, a new way of measuring a company’s tax in relation to the natural world. I want to be part of that.”

While Povlsen’s environmental aims may satisfy some critics, ***land*** has long been a thorny issue in Scotland. The Clearances — the mass depopulation of the Highlands and Islands in the 18th and 19th centuries, when landlords enclosed fields and sought higher rents and thousands of people emigrated in the hope of a better life — still resonate here. The Clearances are wrapped in a swirl of historical fact and romantic fiction, particularly at those moments when the Scottish parliament struggles with ***land*** reform, or billionaires turn up to buy ***land*** the size of a home county.

***Land*** is such a contentious issue that some communities are taking direct action. This month the 2,300 villagers of Langholm, a few miles north of the English border, announced they had made a bid to buy one of the UK’s most famous grouse moors, owned by the hereditary landowner the Duke of Buccleuch. If it goes ahead the £3.8 million community buyout will convert the 5,000-acre Langholm Moor into a model for climate-friendly, sustainable ecological restoration. Povlsen himself is no opponent of such endeavours and claims that any community involvement in ***land*** is positive, but the scale of his own ***land*** purchases dwarfs that of the Langholm villagers.

As well as Glenfeshie, Povlsen owns the Strathmore estate at Altnaharra, the 24,000-acre Ben Loyal and the 23,000-acre Ben Hope estate near Tongue. His acquisition of the Killiehuntly farm for £2 million means he owns the ***land*** where the artist Sir Edwin Landseer painted

The Monarch of the Glen

. In 2014 Povlsen snapped up the £15 million Aldourie Castle estate by Loch Ness, and has also bought the 20,000-acre Gaick estate from Xavier-Louis Vuitton, fifth-generation head of the French designer-goods family.

In a recent report for the government the Scottish ***Land*** Commission found that the heavy concentration of ***land*** ownership in a small number of hands, including private owners, charities and government agencies, constitutes a monopoly. It has recommended new legal powers to subject ***land*** sales to public interest tests and to investigate abuses of power, as well as requirements for landowners to publish management plans.

Povlsen’s company Wildland, which ploughs profits from tourism back into conservation, insists that its agenda remains firmly in the public interest and that his ***land*** contains public throughways and trails. Povlsen goes further, arguing that breaking up his estates would undo his interlinked rewilding masterplan.

One of the most vocal critics of foreign ***land*** ownership in the Highlands has been the Scots academic and ***land*** reformer Dr Jim Hunter, who admits to being conflicted by Povlsen’s endeavours. “I have visited Glenfeshie and was stunned at what Anders Povlsen has achieved there in terms of his rewilding work,” Hunter says. “They have transformed the ***forests*** and we certainly can’t accuse him of being a typical absentee landlord. Then again, the truth is that rewilding also isn’t the answer for the Highlands.”

In Hunter’s view, people are needed more than trees. “To ensure wealth generation and economic growth, we also need repeopling,” he says. “It’s possible these things can go hand in hand, but that will take a different approach. Many of these Highland glens used to be productive ecosystems that were also rich with people. Historical ***land*** clearances and intensive ***agriculture*** changed a lot of that. Povlsen is trying to improve tourism on his ***land***, but how many jobs that will bring in is hard to judge.”

In response Povlsen appears hopeful that the perception of ownership will change through action. “We want to rewild

and

repeople,” he says. “We think the two can work in tandem. We hope that tourism and conservation can help repeople remote areas, but I worry that the vision of the past in the Highlands is misplaced. Yes, in some of the glens there might have been many families, but they had an impoverished life. The future of many places in the Highlands needs to be reimagined, and we hope conservation will be part of this.”

When he talks about climate change and Greta Thunberg, Povlsen seems genuinely torn between the value of action and activism. At times the Dane finds himself grimacing at the Swedish teenager’s methods. It clearly concerns him that being forthright and divisive might not be the best way to convert climate sceptics or win hearts and minds.

“We see a movement across the world. With Greta, at times it might need to be done in … how can I say? … a more constructive and less confrontational way. I understand why sometimes she’s raising her voice. But at other times you need to be solution-orientated, and that’s what we’re trying to do.”

As he talks of protecting the landscape and building a legacy for the future, I hear the profound influence of Povlsen’s children in his mission. “Things suddenly seem to be happening quite fast and that’s the challenge for all our natural habitats: how to adapt to a change that is coming so quickly. My children understand this.”

Sometimes he speaks as if the three children he lost are still alive. “They were always looking at the environment,” he says. “They cared. They did.”.

**Load-Date:** November 21, 2020

**End of Document**



[***What the parties are saying on the big issues facing Scotland; Still undecided on how to cast your two votes? Compare and contrast the manifesto pledges on the key aspects in our at-a-glance guide by Kenny Farquharson***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62KH-MJG1-JCBW-N22C-00000-00&context=1516831)

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**Body**

economy taxes welfare education health justice

Alba New power for Scottish National Investment Bank to raise capital for Covid recovery. Create sovereign wealth fund from renewable energy. Massive re-skilling programme to produce skills of tomorrow. More co-ops, more industrial democracy.

Introduce ***land*** tax, with exemptions for farming. New wellhead production tax on offshore oil industry.

Annual payment of £500 to every low-income household. Double education maintenance allowance. Revamp fuel and food poverty measures. Set up a Scottish pensions commission.

Support for pupils to catch up on work lost to Covid. Bonfire of paperwork for teachers. Free school breakfasts and lunches for all, with Scottish ingredients. Review curriculum. Prioritise IT literacy. Review teachers' pay. NHS catch-up programme. Mental health recovery plan. Link health and anti-poverty strategies. National Care Service free at point of need and publicly [*www.owned.No*](http://www.owned.No) mention.

All For Unity

Small business recovery unit to aid post-Covid growth. Harmonise regulations across UK. Stronger Scottish presence in UK trade missions. Scrap Scottish National Investment Bank. Support freeports.

Higher income tax in Scotland is "impediment" to attracting employees. Independent commission on optimal tax rates. Tax breaks domiciled arts and culture [*www.industries.No*](http://www.industries.No) mention.

Restore literacy and numeracy to the heart of teaching. Close attainment gap. Tutoring and mentoring to allow pupils to catch up.

Emergency funding for post- Covid NHS recovery. More medical students from Scotland. More investment in mental health provision and drug treatment.

Repeal the hate crime bill. Reform role of lord advocate. Limit verdicts to "proven" and "not proven". Judge-led inquiry into Alex Salmond trial. Local chief constables for local areas.

constitution housing environment infrastructure rural affairs transgender other

Immediate negotiations with Westminster on independence. Fight any Westminster refusal in the courts. Use "the mobilisation of the Scottish people through popular and peaceful demonstration and direct action". Commission to work on independence blueprint.

Set up a Scottish National Housing Company to build as many new homes as possible to highest environmental standards. Use housing industry supply chain to support Scottish companies.

Take a public share in all licensed renewables projects. Aim to at least double renewables capacity in ten years. Ensure next generation of wind farms embraces public and community ownership, with turbines made in Scotland.

Create a road map to electrify the transport system. Examine feasibility of a global container transhipment hub. Fund to transition taxi fleets to green power.

Better ***land*** use including reforesting and rewilding. Protect food producers from regulatory race to the bottom. Support for rural housing.

"Alba is calling for a citizens' assembly to be established with urgency to develop binding proposals on reform of the Gender Recognition Act."

Protect the right to single-sex sports to ensure fairness and safety at all levels of competition. Create a citizens' chamber to advise [*www.Holyrood.No*](http://www.Holyrood.No) to a second referendum. New tests: proreferendum parties need majority of electorate to trigger new vote; Scots elsewhere in UK able to vote; question is leave/remain, not yes/no; independence requires majority of electorate, not majority of votes.

More low-cost starter homes. Encourage New Zealand-style retirement villages. Repurpose high streets for housing. End homelessness by turning empty shops into hostels.

Move to zero-carbon economy without making same mistakes as de-industrialisation. Pause ***forestation*** and protect heather moorland. Careful rewilding to encourage biodiversity.

Support for road link between Scotland and Northern Ireland. Rethink cycle lanes in urban areas. Review of disused rail lines. Cancel nonessential spending such as road signs in Gaelic.

Maintain subsidies for "lessfavoured areas". Cut red tape.

End the practice of putting the saltire on food labels. Fair deal for farmers in face of corporate [*www.capitalism.No*](http://www.capitalism.No) mention.

Rename the Scottish government the Scottish executive. Rename the Bank of England the Bank of Britain. Scrap Scottish banknotes.

Conservatives Scotland First approach to procurement. Skills grant of £500 for all. Streamline Covid support for businesses. Moratorium on red tape. Rates relief of at least 25 per cent. Unlimited apprentices. Universal fibre broadband. Support freeports. Seek to ensure no one in Scotland pays more income tax than elsewhere in UK, but retain Scottish starter rate.

Top-up benefit for military veterans.

Extend carers' allowance six months beyond bereavement. Raise child payment to £20 a week. Recruit 3,000 more teachers. Dedicated Stem teacher in every primary. Every S4 pupil able to take at least seven subjects. New independent schools inspector. £1 billion to close attainment gap. Free breakfasts and lunches in primary and special schools. National tutoring programme. Spend an extra £2 billion on NHS. Protect local services with a presumption against centralisation. Revolution in community mental health services. Comprehensive review of drug treatment. More money for dementia research.

Repeal Hate Crime Bill. Make policing more local. Double maximum sentence for assaulting emergency workers. Bring back short prison sentences. End automatic early release. Whole life custody for worst offenders. Introduce a victim's [*www.law.No*](http://www.law.No) to a second vote on independence and repeal Referendum Act. Mackay's Law to recall MSPs. Revoke prisoners' right to vote.

Commission to reform parliamentary accountability. Halve the size of the Scottish cabinet.

Deliver 60,000 affordable homes, two thirds as social housing. Invest £50 million in rural housing fund. Restore funding for Help To Buy.

Incentivise a wind turbine decommissioning centre. Feasibility study into hydrogen network. Spend 10 per cent of transport budget on active travel. Spend £2.5 billion on energy efficiency in homes and businesses. Cleaner seas fund of £25 million. Covid memorial gardens.

Complete national electric car charging infrastructure by 2025. Reopen rail lines. National public transport smartcard. Spend £200 million repairing potholes.

New ***agricultural*** funding scheme to ensure stability and certainty. Support measures to allow food and drink sector to double turnover by 2030.

"We will tackle prejudice and discrimination in all forms to ensure no one is held back from succeeding due to their race, sexuality, gender, religion or disability."

Support UK bid for 2030 World Cup and push for final to be held in Scotland. Half-price entry to heritage sites for the rest of 2021. Arts Bill to secure the future of Scottish culture.

Greens Create more than 100,000 jobs with £7.5 billion green recovery. Worker representation mandatory on boards of companies with turnover of £5 million. Local community access to national investment bank.

Support transition to four-day week. Wealth tax on all assets over £1 [*www.million.No*](http://www.million.No) income tax rises during Covid recovery, but more progressive system afterwards. Windfall tax on pandemic profit. Scrap council tax and move to system based on actual property value.

Double child payment to £20. Increase Best Start and school clothing grants by £100. Index-link devolved benefits. Scrap the benefit cap and fully mitigate its effects. Pilot universal basic income and, in the meantime, Scottish minimum income.

Raise school starting age to seven. Teach the future by telling children about climate change. Teach the past by educating children about empire and slavery. Free school meals all year round for all pupils. Recruit 5,500 more teachers. Reduce class sizes to 20.

Allocate 10 per cent of frontline health spend to mental health by 2026. Introduce the right to an assisted death. Support safe consumption for drug users. ***Remove*** two-doctor rule for abortions.

More local scrutiny of local policing. Abolish the "not proven" verdict. Legal aid for domestic abuse victims in civil cases. Decriminalise sex work. Create a victims' commissioner.

An independence referendum during next parliamentary session. Commit to EU membership following independence. Seek associate membership of Nordic Council. Make local government more local.

Build 84,000 homes for social rent by 2032. Ban winter evictions. Give tenants rights to keep pets and decorate. Introduce rent controls. New social housing options for older people.

Phase out North Sea oil and gas. Source at least 70 per cent of onshore wind equipment domestically. More cash for tidal energy. Oppose carbon capture, bioenergy and hydrogen produced from fossil fuels. Ban on new fossil fuel boilers from 2025.

Invest £3.2 billion in public transport, including free ferry travel for children and young people. Progress on first phase of Rail for All, a 20-year, £22 billion transformation in rail travel. Support for cycling, walking to make up 20 per cent of transport budget.

Create more than 6,000 jobs through £895 million plan to restore natural environment. 11,000 new homes in rural areas by 2026.

"Deliver long overdue reforms to the Gender Recognition Act, including statutory selfdeclaration, recognising non-binary identities and all genders."

20mph speed limit in builtup areas. A lynx reintroduction trial for rewilding the countryside.

Labour

Every adult to get £75 prepaid card to spend locally. Subsidies for staycations. Guaranteed job for six months for everyone who needs one. Skills retraining benefit of £500. Work experience guarantee. Create 5,000 new apprenticeships. Double number of co-ops.

Labour would "seek to avoid" income tax rises but if necessary only for those earning more than £100,000. Abolish council tax and replace with fairer alternative based on property values and ability to pay. Examine tourist tax and levies on Airbnb. Alcohol sales levy.

Use full powers of Holyrood to scrap two-child benefits cap and rape clause. Maintain uplift in universal credit. Increase child payment to £20 a week by end of 2022, with £5 supplement for disability. Water rebate of £100 for every household.

Personal comeback plan for every pupil. Personal tutoring for all. Introduce a right to resit exams. Prioritise vaccination for teachers. Digital device for every pupil. Extra 1,000 additional support teachers.

Cancer treatment back on track. Mental health worker for every GP practice. Baby clubs. Fair pay for NHS staff. National Care Service. Drug death action plan.

At least 500 extra police. Scrap the not proven verdict. Introduce specialist sexual offences courts and domestic abuse courts. Split the role of the lord advocate. More powers for Holyrood including borrowing and employment rights. Constitutional commission on structural reform of the UK. New powers for councils. Fair Rents Bill. Tax and regulate Airbnb rentals. Support building of 200,000 zero-carbon social homes over ten years. Give councils power to acquire ***land*** for social housing.

Upgrade all homes to energy efficiency rating C or higher by 2030. Double the rate of housing renovation. Grants and loans up to £18,000 for green upgrades. Create a Scottish Conservation Corps of 10,000 people. Just Transition Commission to ensure fairness.

Bus services back in public ownership. Earmark 10 per cent of transport budget for active travel. Free bus travel for under-25s. End private finance for public infrastructure.

Invest in rural public transport. Better flood management. Strengthen the Scottish ***Agricultural*** Wages Board. Maintain support for farmers and crofters until 2024. New crofting and ***land*** reform legislation.

"We will reform the Gender Recognition Act to demedicalise the process and allow for the recognition of people who identify as neither men nor women."

Grant for over-75s to pay TV licence fee. Create a New Scots Strategy for refugees.

Liberal Democrats

Job guarantee for 16-24-year-olds. New £5,000 bond to change careers. Create 2,000 paid graduate internships. Support a "Made in Scotland" kitemark. Support for community [*www.co-ops.No*](http://www.co-ops.No) "substantial" change to income tax rates and bands. Scrap council tax and move to ***land*** value system.

Double child payment to £20. Develop universal basic income. Guarantee of respite for unpaid carers.

Play-based education until age of seven. Every qualified teacher guaranteed a job. Minimum teaching starting salary of £30,000. Reform SQA and Education Scotland. National standards and fair pay for social care staff. Treatment not prosecution for drug abusers. More mental health specialists for community centres, hospitals, workplaces and schools.

More investment in rehabilitation of offenders. More support for victims of crime. More local accountability for policing. Reform of fatal accident inquiry system. Mental health professionals to work alongside police.

Work towards a federal UK. A new contempt of parliament rule, so minority governments can't ignore Holyrood. Support a power to recall MSPs. Power of general competence for councils.

Build 60,000 affordable homes. Help To Renovate loans to bring dilapidated properties back onto the market. Support findings of Scottish ***Land*** Commission on use of derelict ***land***.

Move a million homes to zero-***emission*** heating by 2030. Invest in low-carbon heat networks. Just transition from fossil fuel economy. Double cash to combat fuel poverty. New national parks and woodlands.

Reopen railway lines. Integrate all forms of public transport. Local control of bus services. Accelerate journey times on key rail connections. Rural broadband champions for left-behind communities.

Examine moving civil service jobs to rural areas.

More money for community ownership. Support growth of rural housing stock. More powers for Scottish ***Land*** Commission. New incentives for sustainable ***agriculture***. "Allow trans people to change the legal gender on their birth certificate with a simple process based on self-determination."

Protect performance, rehearsal and exhibition spaces in the arts. Invest in more Gaelic medium education. Support for former football and rugby players with dementia.

SNP

Invest additional £500 million in new jobs and reskilling. Invest £1 billion in Scottish National Investment Bank. Explore feasibility of four-day week. Tourism recovery fund of £25 million. Maintain ban on fracking. Accelerate R&D investment by £100 million.

Aim to freeze income tax rates and increase thresholds by maximum of inflation. Maintain current rates and bands for residential LBTT.

Fund local government to freeze council tax for 2021/22. Consult on reforming council tax.

Double child payment to £20 per child by end of parliament. £50 million to tackle child poverty. £50 million to end homelessness and rough sleeping.

Every child to get laptop or tablet, with free internet. Free breakfasts and lunches for all primary pupils, all year round. Additional 3,500 teachers and assistants.

Abolish dental charges. Establish a National Care Service. Pay rise of 4 per cent average for NHS staff. Increase NHS spending by 20 per cent and implement recovery plan. Abolish nonresidential social care charges. Increase mental health service spending by 25 per cent.

Review of prosecution system to deliver fairer, faster and more effective justice. Increase support for victims of domestic violence by £100 million. Introduce a police complaints bill. Appoint independent victims commissioner.

Consult on role of law officers.

Independence referendum once Covid-19 crisis has passed, with timing, question and franchise decided by Holyrood. Citizens' assemblies on "core complex issues", including one for under- 16s. Incorporate UN treaties into Scots law.

Deliver 100,000 affordable homes by 2032 backed by £3.5 billion investment over course of next parliament, supporting 14,000 jobs a year. Allow councils to cap unreasonably high rents in localised areas.

Free bikes for children who can't afford them. ***Remove*** most fossil fuel buses by 2023. Greener, more affordable railway. Decarbonise heating of 1 million homes by 2030. Make progress on reducing carbon ***emissions*** by 75 per cent by 2030.

Invest £33 billion over five years. Set up National Infrastructure Company. Bring ScotRail into public ownership. Free bus travel for under-22s. Fibre broadband to more Scottish islands.

Transform support for farming so that half of funding comes with "green strings". New ***land*** reform bill with pre-emption for community buyouts. Double the Scottish ***land*** fund. Increase woodland ***target*** by 50 per cent.

"We remain committed to making necessary changes to the Gender Recognition Act at the earliest opportunity."

Bonds of up to £50,000 for families to stay on or move to depopulated islands.

"Percentage for the Arts" in new public building programmes.

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[***Federal Register: Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule for Sickle Darter Pages 71859 - 71873 [FR DOC #2020-24471]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:618R-3571-JDG9-Y00X-00000-00&context=1516831)

Impact News Service

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**Body**

Washington: United States Tax Court has issued the following order:DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R4-ES-2020-0094; FF09E21000 FXES11110900000 212]RIN 1018-BE89Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule for Sickle DarterAGENCY: Fish and Wildlife Service, Interior.ACTION: Proposed rule.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the sickle darter (Percina williamsi), a fish species from the upper Tennessee River drainage in North Carolina, Tennessee, and Virginia, as a threatened species under the Endangered Species Act of 1973, as amended (Act). After a review of the best available scientific and commercial information, we find that listing the species is warranted. Accordingly, we propose to list the sickle darter as a threatened species with a rule issued under section 4(d) of the Act (``4(d) rule''). If we finalize this rule as proposed, it would add this species to the List of Endangered and Threatened Wildlife and extend the Act's protections to the species.DATES: We will accept comments received or postmarked on or before January 11, 2021. Comments submitted electronically using the Federal eRulemaking Portal (see ADDRESSES, below) must be received by 11:59 p.m Eastern Time on the closing date. We must receive requests for a public hearing, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by December 28, 2020.ADDRESSES: You may submit comments by one of the following methods: (1) Electronically: Go to the Federal eRulemaking Portal: [*http://www.regulations.gov*](http://www.regulations.gov). In the Search box, enter FWS-R4-ES-2020-0094, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the[[Page 71860]]Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on ``Comment Now!'' (2) By hard copy: Submit by U.S mail to: Public Comments Processing, Attn: FWS-R4-ES-2020-0094, U.S Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041-3803. We request that you send comments only by the methods described above. We will post all comments on [*http://www.regulations.gov*](http://www.regulations.gov). This generally means that we will post any personal information you provide us (see Information Requested, below, for more information).FOR FURTHER INFORMATION CONTACT: Lee Andrews, Field Supervisor, U.S Fish and Wildlife Service, Kentucky Ecological Services Field Office, 330 West Broadway, Suite 265, Frankfort, KY 40601; telephone 502-695-0468. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.SUPPLEMENTARY INFORMATION:Executive Summary Why we need to publish a rule. Under the Act, if we determine that a species may be an endangered or threatened species throughout all or a significant portion of its range, we are required to promptly publish a proposal in the Federal Register and make a determination on our proposal within 1 year. To the maximum extent prudent and determinable, we must designate critical habitat for any species that we determine to be an endangered or threatened species under the Act. Listing a species as an endangered or threatened species and designation of critical habitat can only be completed by issuing a rule. What this document does. This rule proposes the listing of the sickle darter as a threatened species with a rule under section 4(d) of the Act. This rule summarizes our analysis regarding the status of and threats to the sickle darter. The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that threats to the sickle darter include habitat degradation or loss stemming from hydrologic alteration by impoundments, including dams and other barriers; resource extraction, including mining and timber operations; and diminished water quality from point and non-point source chemical contamination and siltation (Factor A). These threats contribute to the negative effects associated with the species' reduced range and potential effects of climate change (Factor E). Peer review. In accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of five appropriate specialists regarding the species status assessment report. We received responses from four specialists, which informed this proposed rule. The purpose of peer review is to ensure that our listing determinations and 4(d) rules are based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise in the biology, habitat, and threats to the species. Because we will consider all comments and information we receive during the comment period, our final determination may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the species is endangered instead of threatened, or we may conclude that the species does not warrant listing as either an endangered species or a threatened species. We invite comments on any of these possibilities, as well.Information Requested We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule. We particularly seek comments concerning: (1) The species' biology, range, and population trends, including: (a) Biological or ecological requirements of the species, including habitat requirements for feeding, breeding, and sheltering; (b) Genetics and taxonomy; (c) Historical and current range, including distribution patterns; (d) Historical and current population levels, and current and projected trends; and (e) Past and ongoing conservation measures for the species, its habitat, or both. (2) Factors that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors. (3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats. (4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species. (5) Information on regulations that are necessary and advisable to provide for the conservation of the sickle darter and that the Service can consider in developing a 4(d) rule for the species. In particular, we seek information concerning: (a) The extent to which we should include any of the prohibitions in section 9 of the Act (16 U.S.C 1531 et seq.) in the 4(d) rule or whether any other forms of take should be excepted from the prohibitions in the 4(d) rule; (b) Whether we should add a specific provision to except from prohibition incidental take resulting from silviculture practices and ***forest*** management activities that implement highest-standard best management practices and comply with ***forest*** practice guidelines related to water quality standards; and (c) Whether there are additional provisions the Service may wish to consider for the 4(d) rule that are necessary and advisable for the conservation of the sickle darter. Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include. Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made ``solely on the basis of the best scientific and commercial data available.'' You may submit your comments and materials concerning this proposed rule[[Page 71861]]by one of the methods listed in ADDRESSES. We request that you send comments only by the methods described in ADDRESSES. If you submit information via [*http://www.regulations.gov*](http://www.regulations.gov), your entire submission--including any personal identifying information--will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on [*http://www.regulations.gov*](http://www.regulations.gov). Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on [*http://www.regulations.gov.Public*](http://www.regulations.gov.Public) Hearing Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. We must receive requests for a public hearing, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the Federal Register and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the Federal Register. The use of these virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).Previous Federal Actions On April 20, 2010, we received a petition from the Center for Biological Diversity (CBD), Alabama Rivers Alliance, Clinch Coalition, Dogwood Alliance, Gulf Restoration Network, Tennessee ***Forests*** Council, and West Virginia Highlands Conservancy (referred to below as the CBD petition) to list 404 aquatic, riparian, and wetland species, including the sickle darter, as endangered or threatened species under the Act. In response to the petition, we published a partial 90-day finding on September 27, 2011 (76 FR 59836), in which we announced our finding that the petition contained substantial information indicating that listing may be warranted for numerous species, including the sickle darter. On February 18, 2015, the CBD filed a complaint alleging the Service failed to complete a 12-month finding for the sickle darter in accordance with statutory deadlines. On September 9, 2015, the Service and the CBD filed a stipulated settlement in the District of Columbia, agreeing that the Service will submit to the Federal Register a 12-month finding for the sickle darter no later than September 30, 2020 (Center for Biological Diversity v. Jewell, case 1:15-CV-00229-EGS (D.D.C )). This document constitutes our concurrent 12-month warranted petition finding and proposed listing rule.Supporting Documents An SSA team prepared an SSA report for the sickle darter. The SSA team was composed of Service biologists, in consultation with other species experts from the Tennessee Valley Authority; State agencies in North Carolina, Tennessee, and Virginia; university researchers; and private fish conservation organizations. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. As discussed above under Peer review, we solicited appropriate peer review for the SSA report. The Service sent the SSA report to five independent peer reviewers and received four responses. In addition, we sent the draft SSA report for review to Federal partners, State partners, and scientists with expertise in aquatic ecology and fish biology, taxonomy, and conservation.I. Proposed Listing DeterminationBackground The sickle darter is a small fish native to the upper Tennessee River drainage in North Carolina, Tennessee, and Virginia. The species currently has a disjunct distribution, with populations in the Emory River, Little River, Sequatchie River, and Emory River systems in Tennessee, and the upper Clinch River, North Fork Holston River, and Middle Fork Holston River systems in Virginia. Populations within the French Broad River system in North Carolina and Tennessee, and the South Fork Holston River, Powell River, and Watauga River systems in Tennessee are extirpated. A thorough review of the taxonomy, life history, and ecology of the sickle darter is presented in the SSA report (version 1.0; Service 2020a, pp. 9-13). The sickle darter has a long, slender body reaching up to 120 millimeters (mm) (4.7 inches (in)) in length and an elongated, pointed snout. The body color is brown to olive above and white to pale yellow below with a thin black stripe along the top of the body. Spawning occurs in late winter (February-March), and the species has a maximum lifespan of 3 to 4 years. Sickle darters typically occupy flowing pools over rocky, sandy, or silty substrates in clear creeks or small rivers. Occupied streams tend to have good water quality, with low turbidity and negligible siltation (Etnier and Starnes 1993, p. 576; Alford 2019, p. 9). In these habitats, the species is most often associated with clean sand-detritus or gravel-cobble-boulder substrates, stands of American water willow (Justicia americana), or woody debris piles at water depths ranging from 0.4-1.0 meter (m) (1.3-3.3 feet (ft)) (Etnier and Starnes 1993, p. 576; Page and Near 2007, p. 609; Alford 2019, p. 8). Streams supporting sickle darters range from 9-33 m (29-108 ft) wide and streamside tree canopy cover in these streams ranges from open to nearly closed (Alford 2019, p. 8). The species spends most of its time in the water column, often hovering a few inches above the stream or river bottom (Etnier and Starnes 1993, p. 576). In winter, sickle darters have been observed in deep pools (depths of up to 3 m (10 ft)) or in slow-flowing, shallow pools in close proximity to cover (Etnier and Starnes 1993, p. 576; Service 2020b, p. 1). The species migrates from the deepest areas of pools to shallow, gravel shoals (riffles) in late winter or early spring (February-March) to spawn (Etnier and Starnes 1993, p. 576). Spawning begins when stream water temperatures reach 10 to 16 Celsius ([deg]C) (50 to 60 Fahrenheit ([deg]F)) (Petty et al. 2017, p. 3). Sexual maturity of males occurs at the end of the first year of life, while sexual maturity of females occurs at the end of their second year of life (Page 1978, p. 663; Petty et al. 2017, p. 3). Females produce up to 355 eggs per clutch, which hatch in 21 days at an average stream temperature of 10 [deg]C (50 [deg]F) (Etnier and Starnes 1993, p. 576). The incubation period is likely shorter (about 2 weeks) when stream temperatures are higher (Service 2020b, p. 1). The larvae move up and down in the water column and presumably feed on zooplankton and other small macroinvertebrates after depleting yolk sac nutrients (Etnier and Starnes 1993, p. 576; Petty et al. 2017, p. 3). After about 30 days, the larvae move to the stream bottom (Petty et al. 2017, p. 3) where they mature. Except for their late winter movements from pools to riffles for spawning, no information is available on the movement behavior of the sickle darter. However, studies of two closely related species in the genus[[Page 71862]]Percina (longhead darter and frecklebelly darter) indicate that the sickle darter likely exhibits seasonal upstream and downstream movements (Eisenhour et al. 2011, p. 15; Eisenhour and Washburn 2016, pp. 19-24). Sickle darters feed primarily on larval mayflies and midges; minor prey items include riffle beetles, caddisflies, dragonflies, and several other groups of aquatic macroinvertebrates (Page and Near 2007, pp. 609-610; Alford 2019, p. 10). Crayfishes have been reported as a common food item for the closely related longhead darter (Page 1978, p. 663), but have not been observed in the sickle darter's diet (Alford 2019, p. 10).Regulatory and Analytical FrameworkRegulatory Framework Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an ``endangered species'' or a ``threatened species.'' The Act defines an ``endangered species'' as a species that is in danger of extinction throughout all or a significant portion of its range, and a ``threatened species'' as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an ``endangered species'' or a ``threatened species'' because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We use the term ``threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ``threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ``threat'' may encompass--either together or separately--the source of the action or condition or the action or condition itself. However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ``endangered species'' or a ``threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats--in light of those actions and conditions that will ameliorate the threats--on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ``endangered species'' or a ``threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future. The Act does not define the term ``foreseeable future,'' which appears in the statutory definition of ``threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term ``foreseeable future'' extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ``Reliable'' does not mean ``certain''; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions. It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.Analytical Framework The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be proposed for listing as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS-R4-ES-2020-0094 on [*http://www.regulations.gov*](http://www.regulations.gov). To assess sickle darter viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the species' ability to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the species' ability to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the species' ability to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability. The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all stages, we used the best available information to characterize viability as[[Page 71863]]the ability of a species to sustain populations in the wild over time.Summary of Biological Status and Threats In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability. For sickle darter populations to be resilient, the needs of individuals (slow-flowing pools, substrate, food availability, water quality, and aquatic vegetation or large woody debris) must be met at a larger scale. Stream reaches with suitable habitat must be large enough to support an appropriate number of individuals to avoid negative effects associated with small population size, such as inbreeding depression and the Allee effect (whereby low population density reduces the probability of encountering mates for spawning). Connectivity of stream reaches allows for immigration and emigration between populations and increases the likelihood of recolonization should a population be lost. At the species level, the sickle darter needs a sufficient number and distribution of healthy populations to withstand environmental stochasticity (resiliency) and catastrophes (redundancy) and adapt to biological and physical changes in its environment (representation). To evaluate the current and future viability of the sickle darter, we assessed a range of conditions to allow us to consider the species' resiliency, representation, and redundancy. We delineated analytical units (populations) using the tributary systems the sickle darter historically occupied. Each population represents demographically linked interbreeding individuals; however, these populations are currently separated by long distances or isolated by impoundments. We identified 10 historical populations across the range of the sickle darter: Emory River, Clinch River, Powell River, Little River, French Broad River, North Fork Holston River, Middle Fork Holston River, South Fork Holston River, Watauga River, and Sequatchie River. To assess resiliency, we evaluated six components that broadly relate to the species' physical environment or its population demography. Each population's physical environment was assessed by averaging three components determined to have the most influence on the species: Physical habitat quality, connectivity, and water quality. The three components describing population demography were reproduction, occurrence extent (total length of occupied streams compared to historical range), and occupied stream length. Parameters for each component's condition category were established by evaluating the range of existing data and separating those data into categories based on our understanding of the species' demographics and habitat. Using the demographic and habitat parameters, we then categorized the overall condition of each population. We weighted each of the six components equally and determined the average score to describe each population's current condition (see Table 1, below). Due to a limited amount of species-specific genetic information for the sickle darter, we based our evaluation of the species' representation on the extent and variability of environmental diversity (habitat diversity) across the species' geographical range. Additionally, we assessed sickle darter redundancy (ability of species to withstand catastrophic events) by evaluating the number and distribution of resilient populations throughout the species' range. Highly resilient populations, coupled with a relatively broad distribution, have a positive relationship to species-level redundancy. Table 1--Component Conditions Used To Assess Resiliency for Sickle Darter Populations---------------------------------------------------------------------------------------------------------------- Condition Component ------------------------------------------------------------------------------- High Moderate Low 0----------------------------------------------------------------------------------------------------------------Physical Habitat................ Slow-flowing pools Slow-flowing pools Slow-flowing pools Habitat abundant (ample present but not scarce (few pools unsuitable. cover in pools); abundant (some with cover); silt silt deposition pools with deposition low; no extensive cover); silt extensive; or significant deposition habitat severely habitat moderate; habitat altered and alteration such alteration at recognized as as recent moderate level impacting the channelization or such that species; < 25% of riparian channelization or habitats suitable clearing; > 75% other habitat for the species. of available disturbance more habitat suitable widespread; 25- for the species. 75% of available habitat suitable for the species.Connectivity.................... High immigration Moderate Low immigration No connectivity potential between immigration potential between (populations populations (no potential between populations isolated; no dams or other populations (populations immigration barriers (populations separated by >= 2 potential due to separating separated by 1 low-head dams or the presence of populations). low-head dam, and other barriers). large other partial reservoirs). barriers, such as narrow culverts, may be present).Water Quality................... Minimal or no Water quality Water quality Water quality known water issues recognized issues prevalent unsuitable. quality issues that may impact within system, (i.e , no 303(d) species (i.e , likely impacting streams\* some 303(d) populations impacting the streams\*, unpaved (i.e , numerous species, area roads more 303(d) streams\*). sparsely common, moderate populated, few levels of roads). developed ***land*** use).Reproduction.................... Clear evidence of Clear evidence of No direct evidence Extirpated. reproduction, reproduction, of reproduction with multiple age juveniles (only adults classes present. present, but present). multiple age classes not detected.Occurrence Extent............... <10% decline from 10-50% decline >50% decline from Extirpated. historical range. from historical historical range. range.Occupied Stream Length >=22.5 km (>= 14 11.3-22.5 km (7-14 <11.3 km (< 7 mi). Extirpated. (Continuity). mi). mi).----------------------------------------------------------------------------------------------------------------\* A 303(d) stream is a stream listed under section 303(d) of the Clean Water Act of 1972 (33 U.S.C 1251 et seq.) as a water body impaired by pollutants.Current Condition of Sickle Darter Currently, the sickle darter is known from six tributary systems in the upper Tennessee River drainage: Emory River, Little River, Clinch River, North Fork Holston River, Middle Fork Holston River, and Sequatchie River. Historical populations in the Powell River, French Broad River, South Fork Holston River,[[Page 71864]]and Watauga River systems are extirpated, including the species' only population within the Blue Ridge ecoregion. Impoundments and water pollution in the upper Tennessee River drainage were major factors in the decline of the sickle darter and several other fishes during the early to mid-20th century (Etnier and Starnes 1993, pp. 15, 576). Current factors affecting the condition of sickle darter populations include habitat and water quality degradation, low connectivity, and small population size (e.g , Clinch River). The Emory River and Little River populations exhibit moderate resiliency, as evidenced by the species' persistence within these systems for over 45 years, recent and repeated evidence of reproduction and recruitment, a relatively long occupied reach in each system (more than 22.5 kilometers (km) (14 miles (mi))), and the physical habitat condition and water quality in both systems. The remaining four populations exhibit low resiliency. They are represented by fewer documented occurrences, no evidence of recruitment, shorter occupied reaches, and occur in areas with limited habitat and water quality. The species' adaptive potential (representation) is low because of its reduced range (and presumably associated reduction in genetic diversity), and the loss of connectivity caused by dam construction. The sickle darter occupies only two of three historical ecoregions (Ridge and Valley and Southwestern Appalachians), likely reducing its ability to adapt to changing environmental conditions over time. We assessed the number and distribution of resilient populations across the sickle darter's range as a measure of its redundancy. Construction of dams across the upper Tennessee River drainage has eliminated connectivity between extant populations. However, within the currently occupied streams, large barriers are absent, although some small barriers that hamper movement are present (e.g , defunct low-head mill dams, low-water bridges, narrow or partially blocked culverts). As such, there is connectivity within each occupied stream and opportunity for movement of individuals, decreasing the effect of localized stochastic events. Overall, the sickle darter exhibits a low degree of redundancy based on the number of resilient populations and the amount of isolation observed across the species' range, increasing the species' vulnerability to catastrophic events.Risk Factors for Sickle Darter Habitat loss and degradation (Factor A) resulting from impoundments, siltation, and water quality degradation, pose the largest risk to the current and future viability of the sickle darter and are the primary contributors to the species' reduced range, population fragmentation, and population loss. Climate change (Factor E) is a potential stressor that may impact the sickle darter in the future. We find the species does not face significant threats from overutilization (Factor B), disease or predation (Factor C), or invasive species (Factor E). A brief summary of relevant stressors is presented below; for a full description, refer to chapter 3 of the SSA report (Service 2020a, entire).Siltation Siltation is characterized by excess sediments suspended or deposited in a stream. Excessive levels of sediment accumulate and cover the stream bottom, filling the interstitial spaces with finer substrates and homogenizing and decreasing the available habitat for fishes. In severe cases, sediment can bury large substrate particles such as cobble and boulders. Siltation can affect fishes through abrasion of gill tissues, suffocation of eggs or larvae, reductions in disease tolerance, degradation of spawning habitats, modification of migration patterns, and reductions in food availability (Berkman and Rabeni 1987, pp. 285-294; Waters 1995, pp. 5-7; Wood and Armitage 1997, pp. 211-212; Meyer and Sutherland 2005, pp. 2-3). The sickle darter is considered to be intolerant of siltation (Etnier and Starnes 1993, p. 576). Pool habitat, which is the area in streams most often occupied by sickle darters, is affected by sediment deposition earlier and more readily than habitats with faster moving water (Eisenhour et al. 2009, p. 11). However, the sickle darter is occasionally observed in areas with at least low to moderate levels of siltation on some substrates, as in the Emory River (Service 2020b, p. 3). Siltation continues to be one of the primary stressors of streams in the upper Tennessee River drainage (TDEC 2010, pp. 43-45; TDEC 2014, pp. 48-50; TDEC 2017, pp. 51-128; VDEQ 2018, pp. 89-91). Sediments can originate from a variety of sources, but State agencies continue to cite ***land*** use practices associated with ***agriculture***, ***land*** development, and resource extraction (e.g , coal mining) as primary sediment sources within the current and historical range of the sickle darter (TDEC 2010, pp. 56-65; TDEC 2014, pp. 62-69; VDEQ 2018 (Appendix 5), pp. 2313-2531). Unrestricted livestock access occurs on many streams in the range of the sickle darter and has the potential to cause siltation and other habitat disturbance (Fraley and Ahlstedt 2000, pp. 193-194). Grazing may reduce water infiltration rates and increase stormwater runoff; trampling and vegetation ***removal*** increases the probability of erosion and siltation (Brim Box and Mossa 1999, p. 103). Other sources of siltation in the species' range include croplands, stream channelization, and ***removal*** of riparian (streamside) vegetation, which have the potential to contribute large sediment loads during storm events, thereby causing increased siltation and potentially introducing ***agricultural*** pollutants such as herbicides and pesticides carried on or with sediment particles that wash into streams. Surface coal mining, oil and gas drilling, and logging may also contribute to siltation of stream habitats in the upper Tennessee River drainage, especially the upper Clinch and Powell River systems (TDEC 2017, pp. 94-97; Zipper et al. 2016, pp. 609-610; VDEQ 2018, pp. 2313-2531). ***Land*** clearing, road construction, and excavation associated with these ***land*** use practices produce new road networks and large areas of bare soil that can contribute large amounts of sediment if best management practices (BMPs) are not used. Siltation from surface coal mining activities, such as the placement of valley fills, ***forest*** clearing, and road construction, has affected the sickle darter's historical range in the mainstem Clinch and Powell Rivers. Over the last decade, forestry BMP implementation rates, to control erosion, runoff, and siltation, have increased within the upper Tennessee River drainage (Clatterbuck et al. 2017, pp. 8-12; VDOF 2014, pp. 1-5); however, siltation continues to impact aquatic habitats in those areas where BMP use is lacking.Water Quality Degradation (Pollution) Information is lacking on the sickle darter's tolerance to specific pollutants, but overall the species is likely to have low tolerance experienced by other species in its genus. A review of species tolerances to pollution classified five species in the sickle darter genus Percina as intolerant, moderately intolerant, or having intermediate tolerance (Grabarkiewicz and Davis 2008, p. 64). None of these five species were classified as moderately tolerant or tolerant of pollution. A variety of pollutants that may impact the sickle darter continue to degrade stream water quality within the upper Tennessee River drainage (Locke et al. 2006, pp.[[Page 71865]]197, 202-203; TDEC 2010, pp. 42-48; TDEC 2014, pp. 47-53; Zipper et al. 2016, p. 604; TDEC 2017, pp. 51-106; VDEQ 2018 (Appendix 5), pp. 2313-2531). Major pollutants within the upper Tennessee River drainage include pathogens, domestic sewage, animal waste, nutrients, metals, and toxic organic compounds. Pathogens (fecal indicator bacteria) are a leading cause of stream pollution across the sickle darter's range (Hampson et al. 2000, p. 7; TDEC 2014a, pp. 47-53, TDEC 2017, pp. 51-106; VDEQ 2018 (Appendix 5), pp. 2313-2531). The effect of high bacterial levels on the sickle darter is unknown, but high bacterial concentrations are one indicator of degraded stream conditions, including low dissolved oxygen that negatively affects fish or that may indicate the presence of other pollutants of concern that could harm the species. In the upper Tennessee River drainage, livestock waste is the primary source of bacterial contamination in rural areas, while deteriorating and leaky sewage systems, faulty sewage treatment plants, urban runoff, and combined sewer overflow (CSO) systems are the primary sources of bacterial contamination in urban streams (Hampson et al. 2000, p. 7). Elevated nutrient concentrations of phosphorus, nitrite/nitrate, and ammonia are another leading cause of stream pollution in the upper Tennessee River drainage (Hampson et al. 2000, p. 8; Price et al. 2011, pp. III-1, IV-1; TDEC 2014, p. 50; TDEC 2017, pp. 51-106; VDEQ 2018, pp. 89-91). Primary sources include wastewater treatment facilities, urban and industrial stormwater systems, and ***agricultural*** runoff (i.e , livestock waste and synthetic fertilizers) (Hampson et al. 2000, p. 9; TDEC 2014, p. 50). Other stream pollutants in the upper Tennessee River drainage include organic compounds (e.g , polychlorinated biphenyls (PCBs), dioxins), metals (e.g , mercury, iron, manganese), and pesticides (Hampson et al. 2000, pp. 14-19; Soucek et al. 2000, entire; Soucek et al. 2003, entire; Locke et al. 2006, pp. 200-203; Price et al. 2011, p. VI-1; TDEC 2014, pp. 51-53). Industrial development and coal mining activities prior to the passage of the Clean Water Act of 1972 (CWA; 33 U.S.C 1251 et seq.) and the Surface Mining Control and Reclamation Act of 1977 (SMCRA; 30 U.S.C 1201 et seq.) have left a legacy of contaminated sediment and polluted waters that continue to affect streams in portions of the upper Tennessee River drainage (Hampson et al. 2000, p. 19). Coal mining activity has decreased in the Clinch and Powell River systems in recent years; however, current and previous mining activities continue to impact portions of these stream systems in Tennessee and Virginia (TDEC 2014, p. 51; Ahlstedt et al. 2016, pp. 13-14; Zipper et al. 2016, pp. 604-612; TDEC 2017, pp. 94-97). Insecticides, herbicides, and fungicides are widely used in the upper Tennessee River drainage to control insects, fungi, weeds, and other undesirable organisms (Hampson et al. 2000, pp. 14-18). The compounds vary in their toxicity, persistence in the environment, and transport characteristics, but often become widely distributed in the environment and can pose hazards to non-***target*** organisms such as the sickle darter.Impoundments and Their Effects--Habitat Fragmentation and Loss Impoundments are a threat to the sickle darter and a major factor influencing the species' current distribution within the upper Tennessee River drainage (Etnier and Starnes 1993, p. 576; Jenkins and Burkhead 1993, pp. 101-106; Service 2020a, p. 3). From 1912 to 1963, Tennessee Valley Authority constructed 12 dams, impounding waters in each of the sickle darter's historical tributary systems in Tennessee and Virginia (Miller and Reidinger 1998, pp. 35-37). Two dams were constructed on the Tennessee River mainstem, while the remaining 10 dams were built on tributaries (Clinch River, French Broad River, Holston River, South Fork Holston River, and Watauga River), creating 10 impoundments or reservoirs. Physical, chemical, and biological changes to these systems have been dramatic. Alterations to flow and temperature in the impounded reaches behind the dams and the tailwaters that extend several miles below the dams render these reaches uninhabitable for stream fishes such as the sickle darter. Additionally these dams have diminished and, in some cases, eliminated connectivity of sickle darter populations.Population Fragmentation and Isolation As a result of the loss of populations throughout the historical range, the sickle darter's remaining range is limited. The remaining populations are localized and geographically isolated from one another due to impoundments and other habitat degradation, leaving them vulnerable to localized extinctions from toxic chemical spills, habitat modification, progressive degradation from runoff (non-point source pollutants), natural catastrophic changes to their habitat (e.g , flood scour, drought), other stochastic disturbances, and decreased fitness from reduced genetic diversity. Species that have incurred reductions in range and population size are more likely to suffer loss of genetic diversity due to genetic drift, potentially increasing their susceptibility to inbreeding depression, decreasing their ability to adapt to environmental changes, and reducing the fitness of individuals (Soul[eacute] 1980, pp. 157-158; Hunter 2002, pp. 97-101; Allendorf and Luikart 2007, pp. 117-146). Some small sickle darter populations (e.g , Middle Fork Holston River) may be below the effective population size required to maintain long-term genetic and population viability (Soul[eacute] 1980, pp. 162-164; Hunter 2002, pp. 105-107). The long-term viability of a species depends on the conservation of numerous local populations throughout its geographic range (Harris 1984, pp. 93-104). These separate populations are essential for the species to recover and adapt to environmental changes (Harris 1984, pp. 93-104; Noss and Cooperrider 1994, pp. 264-297). The level of isolation of sickle darter populations makes recolonization following localized extirpations virtually impossible without human intervention.Climate Change Changing climate conditions can influence sickle darter viability through changes in water temperature and precipitation patterns that result in increased flooding, prolonged droughts, or reduced stream flows (McLaughlin et al. 2002, pp. 6060-6074; Cook et al. 2004, pp. 1015-1018; Thomas et al. 2004, pp. 145-148; p. 2065; IPCC 2014, pp. 58-83). The species' early spawning period (February-March) makes it vulnerable to warming temperatures and higher flows--conditions that could interrupt or prevent successful spawning in a given year (Service 2020b, p. 3). Stream temperatures in the Southeast have increased roughly 0.2 to 0.4 [deg]C (0.4 to 0.7 [deg]F) per decade over the past 30 years (Kaushal et al. 2010, p. 463), although the extent to which the increase in temperatures has affected the sickle darter in unknown. Predicted impacts of climate change on fishes include disruptions to their physiology, such as temperature tolerance, dissolved oxygen needs, and metabolic rates; life history, such as timing of reproduction and growth rate; and distribution, including range shifts and migration of new predators (Jackson and Mandrak 2002, pp. 89-98; Heino et al. 2009, pp. 41-51; Strayer and Dudgeon 2010, pp. 350-351; Comte et al. 2013, pp. 627-636).[[Page 71866]] Data on recent trends and predicted changes for the upper Tennessee River drainage allow evaluation of the potential impacts of climate change to the sickle darter in the future. Different ***emission*** scenarios were used to estimate average annual increases in maximum and minimum air temperature, precipitation, snowfall, and other variables (Alder and Hostetler 2017, entire). Depending on the chosen model and ***emission*** scenario (Representative Concentration Pathway (RCP) 4.5 vs. 8.5), annual mean maximum air temperatures for the upper Tennessee River drainage are expected to increase by 2.1 to 3.1 [deg]C (3.8 to 5.6 [deg]F) by 2074, while precipitation models predict that the upper Tennessee River drainage will experience a slight increase in annual mean precipitation (0.2 in per month) through 2074 (Girvetz et al. 2009, pp. 1-19; Alder and Hostetler 2016, pp. 1-9). Because stream temperature is broadly driven by air temperature (Webb and Nobilis 2007, p. 82), water temperatures in the current and historical range of the sickle darter are expected to increase in the future under both RCP 4.5 and RCP 8.5 The upper thermal limits of the sickle darter are unknown, but the species' occurrence in streams ranging in size from large creeks to medium-sized rivers suggests that it may have some tolerance to a variety of water conditions. The species may be less vulnerable to droughts, compared to species occurring in smaller or headwater streams. Relative to other fishes, sickle darter may have some resilience to the effects of climate change. Among more than 700 species in the Appalachian region, six other darter species in the genus Percina are ranked as moderately vulnerable to the effects of climate change (Appalachian Landscape Conservation Cooperative 2017, unpaginated). Moderately vulnerable is defined as abundance and/or range extent within geographical area assessed likely to decrease by 2050. The sickle darter may have some of the same vulnerabilities due to its similar ecology, life history, and small range.Conservation Efforts The sickle darter is listed as threatened by Tennessee (Tennessee Wildlife Resources Commission (TWRC) 2016, p. 3) and Virginia (VDGIF 2018, p. 1), making it unlawful to take the species or damage its habitat without a State permit. Additionally, the sickle darter is identified as a species of greatest conservation need in the Tennessee and Virginia Wildlife Action Plans, which outline actions to promote species conservation. A propagation effort for the sickle darter was initiated in 2015, producing 25 juveniles that were released to the wild. The status of the released fish is unknown, but the effort demonstrates that propagation may be a useful conservation tool to augment sickle darter populations or reintroduce the species to historical localities in the future.Future Scenarios In our SSA report (Service 2020a, entire), we defined viability as the ability of the species to sustain populations in the wild over time. To help address uncertainty associated with the degree and extent of potential future stressors and their impacts on the species' needs, the concepts of resiliency, redundancy, and representation were assessed using three plausible future scenarios. We devised these scenarios by identifying information on the following primary threats anticipated to affect sickle darter in the future: ***Land*** cover, urbanization, climate change, and conservation activity. The three scenarios capture the range of uncertainty in the changing landscape and how sickle darter will respond to the changing conditions (see Table 2, below). We used the best available data and models to project out 50 years into the future (i.e , 2070), a timeframe where we were reasonably certain the ***land*** use change, urbanization, and climate models that we used could forecast patterns in the species' range relevant to the sickle darter and its habitat given the species' life span. For more information on the models and their projections, please see the SSA report (Service 2020a, pp. 54-67). Under Scenario 1 (continuation of current trend), no significant increases or decreases are expected with respect to ***land*** cover, urbanization, or habitat conditions, and habitat restoration efforts (e.g , livestock fencing, riparian plantings, streambank restoration) by the Service and its partners are projected to continue at current levels. In addition, climate change would track RCP 4.5 Three of six extant sickle darter populations are projected to maintain their resiliency categories at current levels. Three extant populations, Clinch River, Middle Fork Holston River, and North Fork Holston River, are projected to become extirpated within 30 years. The species' redundancy and representation are expected to remain at low levels. Under Scenario 2 (improving trend), habitat conditions throughout the upper Tennessee River drainage are projected to improve due to increased conservation efforts and improving ***land*** use practices (e.g , greater ***forest*** cover and reduced ***agricultural*** and development effects). Based on these factors, resiliency of all extant populations would remain at current levels or increase, and the species may be rediscovered or will be reintroduced into portions of the Powell River system and French Broad River system. The species' redundancy would increase to a low-moderate level and representation would remain at a low level because populations will be reintroduced or rediscovered in two historically occupied river systems, increasing the number of extant populations (our measure of redundancy) from 6 to 8. In spite of the two added populations, representation would remain low because individuals would have the same genetic composition of parental stock in the rivers from which they were sourced, or will be founded from very small, previously undetected populations. Under Scenario 3 (worsening trend), habitat conditions are projected to decline within the upper Tennessee River drainage due to reductions in ***forest*** cover, increased urbanization and ***agricultural*** activities, and a climate trend that tracks RCP 8.5 Combined with reduced conservation efforts, these factors will have a negative effect on population resiliency, with projected extirpations of the Clinch River, North Fork Holston River, Middle Fork Holston River, and Sequatchie River populations. Loss of these populations would reduce redundancy and representation, with overall species' redundancy and representation remaining at low levels. One of our plausible scenarios (improving trends) projected improving conditions characterized by an increased percentage of ***forested*** ***land*** cover and a reduced percentage of pasture and hay ***land*** cover. In this scenario, urbanization and climate change rates of increase would be reduced relative to current trends (Service 2020a, pp. 72-73) and additional conservation actions would be implemented. There was greater uncertainty regarding future species' status and conservation action implementation than in the other two future scenarios. For example, the improving trends scenario projected reintroduction and successful establishment of two populations in the species' historical range, but successful establishment of viable populations of sickle darters has not yet been proven, and funding for this type of conservation, as well as other conservation actions such as easements[[Page 71867]]for ***land*** restoration, is uncertain. Therefore, we did not rely on the improving trends scenario to assess the likelihood of the species becoming in danger of extinction in the foreseeable future. (see Status Throughout All of Its Range, below) Table 2--Future Condition of the Sickle Darter by the Year 2070 Under Three Future Scenarios---------------------------------------------------------------------------------------------------------------- Scenario 1: Scenario 2: Scenario 3: Analytical unit (population) Current condition Current trend Improving trend Worsening trend----------------------------------------------------------------------------------------------------------------Emory River..................... Moderate.......... Moderate.......... Moderate.......... Low.Clinch River.................... Low............... Likely Extirpated. Low............... Likely Extirpated.Powell River.................... Extirpated........ Likely Extirpated. Low \*............. Likely Extirpated.Little River.................... Moderate.......... Low............... Moderate.......... Low.French Broad River.............. Extirpated........ Likely Extirpated. Low \*............. Likely Extirpated.Middle Fork Holston River....... Low............... Likely Extirpated. Low............... Likely Extirpated.North Fork Holston River........ Low............... Likely Extirpated. Low............... Likely Extirpated.South Fork Holston River........ Extirpated........ Likely Extirpated. Likely Extirpated. Likely Extirpated.Sequatchie River................ Low............... Low............... Low............... Likely Extirpated.Watauga......................... Extirpated........ Likely Extirpated. Likely Extirpated. Likely Extirpated.----------------------------------------------------------------------------------------------------------------\*Scenario 2 anticipates successful reintroduction or rediscovery of the species in two river systems.Cumulative Effects of Threats We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. Our assessment of the current and future conditions encompasses and incorporates the threats individually and cumulatively. Our current and future condition assessment is iterative because it accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.Determination of Sickle Darter Status Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines ``endangered species'' as a species in danger of extinction throughout all or a significant portion of its range, and ``threatened species'' as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of ``endangered species'' or ``threatened species'' because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.Status Throughout All of Its Range The current conditions as assessed in the sickle darter SSA report show that the species exists in six populations, in six tributary systems in two ecoregions. Two populations, Little River and Emory River, have moderate resiliency, and four populations have low resiliency. Although there are six separate populations distributed within the upper Tennessee River drainage, redundancy is low because four have low resiliency. Representation is currently low because genetic variation has likely been reduced over time as populations became disconnected, isolated, and reduced in size. Further, representation has been diminished with the loss of the species from the Blue Ridge ecoregion. While current resiliency, redundancy, and representation are far from optimal, it is unlikely that the sickle darter is in danger of extinction from a near-term catastrophic event. The occurrence in separate rivers of two populations, which are both in moderate condition and regularly recruiting new age classes (generations), greatly diminishes the possibility that such an event would simultaneously cause extirpation of the two populations, nor is it likely that such an event would simultaneously have the same level of impact on the other four populations in low condition. After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we conclude that the risk factors acting on the sickle darter and its habitat, either singly or in combination, are not of sufficient imminence, intensity, or magnitude to indicate that the species is in danger of extinction now (an endangered species) throughout all of its range. Our analysis of the sickle darter's future conditions shows that the population and habitat factors used to determine resiliency, representation, and redundancy will continue to decline. The primary threats are currently acting on the species and are likely to continue into the future. We selected 50 years as ``foreseeable'' in this case because it includes projections from available models for urbanization, ***land*** use, and climate change, threats which will affect the status of the species over that timeframe. The range of plausible future scenarios of the sickle darter's habitat conditions and water quality factors portend reduced viability into the future. Under the current trend scenario, resiliency is low in two populations and or moderate in one population, and three populations are likely extirpated so that redundancy and representation are reduced. Under the worsening trend scenario, resiliency is low in two populations, and four populations are likely extirpated so that redundancy and representation are substantially reduced. This expected reduction in both the number and distribution of resilient populations is likely to make the species vulnerable to catastrophic disturbance. Thus, after assessing the best available information, we conclude that the sickle darter is not currently in danger of extinction but is likely to become in danger of extinction within the foreseeable future throughout all of its range.[[Page 71868]]Status Throughout a Significant Portion of Its Range Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in Center for Biological Diversity v. Everson, 2020 WL 437289 (D.D.C Jan. 28, 2020) (Center for Biological Diversity), vacated the aspect of our Final Policy on Interpretation of the Phrase ``Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ``Endangered Species'' and ``Threatened Species'' (79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range--that is, whether there is any portion of the species' range for which both (1) the portion is significant, and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the ``significance'' question or the ``status'' question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range. Following the court's holding in Center for Biological Diversity, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e , endangered). In undertaking this analysis for sickle darter, we choose to address the status question first--we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered. For the sickle darter, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the following threats currently acting on the species: Habitat loss and degradation through siltation, water quality degradation, and impoundments and their effects and the associated effects of the species' reduced range. We also examined the cumulative effects of these threats. Our analysis revealed that these threats are likely to continue into the foreseeable future, or approximately 50 years. Siltation and water quality degradation resulting from nutrients, pathogens, municipal and residential development, ***agriculture***, and logging are present in all watersheds where the sickle darter occurs. ***Land*** use changes associated with extraction of energy resources (coal, oil, and gas) are restricted to the Clinch (including Emory River) and Powell River systems, but the stressors associated with these activities, including sedimentation and water quality degradation, also come from sources (e.g , urbanization, grazing, logging) that are common to all watersheds where the species occurs. Isolation as a result of habitat fragmentation affects all sickle darter populations similarly, and all populations will experience the effects of changing climate conditions. Additionally, resiliency of the remaining populations would decline, while our continuing trends and worsening trends future scenarios respectively projected three or four of the six extant populations would become extirpated. The Little River watershed has the highest amount of ***land*** affected by urbanization (development) currently, and that is projected to continue in the future (Service 2020a, pp. 86-87). However, current ***land*** use and future rates of ***land*** use change are not substantially different among the watersheds occupied by the six populations. Overall, the current threats acting on the species and its habitat are expected to continue, and there are no indications that these threats would lessen or that declining populations trends would be reverted. After assessing the best available information, we found no concentration of threats in any portion of the sickle darter's range at a biologically meaningful scale. Thus, there are no portions of the species' range where the species has a different status from its rangewide status. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in Desert Survivors v. Department of the Interior, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D Cal. Aug. 24, 2018), and Center for Biological Diversity v. Jewell, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).Determination of Status Our review of the best available scientific and commercial information indicates that the sickle darter meets the Act's definition of a ``threatened species.'' Therefore, we propose to list the sickle darter as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.Available Conservation Measures Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.Recovery Planning The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems. Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened (``downlisting'') or ***removal*** from protected status (``delisting''), and methods for monitoring recovery progress. Recovery plans also establish[[Page 71869]]a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website ([*http://www.fws.gov/endangered*](http://www.fws.gov/endangered)), or from our Kentucky Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT). Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g , restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal ***lands*** because their range may occur primarily or solely on non-Federal ***lands***. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal ***lands***. If this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of North Carolina, Tennessee, and Virginia would be eligible for Federal funds to implement management actions that promote the protection or recovery of the sickle darter. Information on our grant programs that are available to aid species recovery can be found at: [*http://www.fws.gov/grants*](http://www.fws.gov/grants). Although the sickle darter is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see FOR FURTHER INFORMATION CONTACT). Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service. Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal ***lands*** administered, or on private ***lands*** seeking funding, by Federal agencies, which may include, but are not limited to, the Tennessee Valley Authority, U.S Department of ***Agriculture*** (USDA) U.S ***Forest*** Service, USDA Farm Service Agency, USDA Natural Resources Conservation Service, and Federal Emergency Management Agency; issuance of section 404 CWA permits by the U.S Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration. It is our policy, as published in the Federal Register on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy.Critical HabitatPrudency Determination Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances: (i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species; (ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act; (iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States; (iv) No areas meet the definition of critical habitat; or (v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available. As discussed earlier in this document, there is currently no imminent threat of collection or vandalism identified under Factor B for this species, and identification and mapping of critical habitat is not expected to initiate any such threat. In our SSA and proposed listing determination for the sickle darter, we determined that the present or threatened destruction, modification, or curtailment of habitat or range is a threat to the sickle darter and that those threats in some way can be addressed by section 7(a)(2) consultation measures. The species occurs wholly in the jurisdiction of the United States, and we are able to identify areas that meet the definition of critical habitat. Therefore, because none of the circumstances enumerated in our regulations at 50 CFR 424.12(a)(1) have been met and because there are no other circumstances the Secretary has identified for which this designation of critical habitat would be not prudent, we have determined that the designation of critical habitat is prudent for the sickle darter.Critical Habitat Determinability Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for the sickle darter is determinable. Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist: (i) Data sufficient to perform required analyses are lacking, or (ii) The biological needs of the species are not sufficiently well known to[[Page 71870]]identify any area that meets the definition of ``critical habitat.'' When critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C 1533(b)(6)(C)(ii)). For the sickle darter, the species' needs are sufficiently well known, but a careful assessment of the economic impacts that may occur due to a critical habitat designation is ongoing. Until these efforts are complete, information sufficient to perform a required analysis of the impacts of the designation is lacking, and, therefore, we find designation of critical habitat for the sickle darter to be not determinable at this time. We plan to publish a proposed rule to designate critical habitat for the sickle darter concurrent with the availability of a draft economic analysis of the proposed designation.II. Proposed Rule Issued Under Section 4(d) of the ActBackground Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary of the Interior (Secretary) shall issue such regulations as he deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S Supreme Court has noted that statutory language like ``necessary and advisable'' demonstrates a large degree of deference to the agency (see Webster v. Doe, 486 U.S 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9 of the Act. The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a particular species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife, or include a limited taking prohibition (see Alsea Valley Alliance v. Lautenbacher, 2007 U.S Dist. Lexis 60203 (D. Or. 2007); Washington Environmental Council v. National Marine Fisheries Service, 2002 U.S Dist. Lexis 5432 (W.D Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see State of Louisiana v. Verity, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, ``once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species'' (H.R Rep. No. 412, 93rd Cong., 1st Sess. 1973). Exercising this authority under section 4(d), we have developed a proposed rule that is designed to address the sickle darter's specific threats and conservation needs. Although the statute does not require us to make a ``necessary and advisable'' finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the sickle darter. As discussed above under Summary of Biological Status and Threats, we have concluded that the sickle darter is likely to become in danger of extinction within the foreseeable future primarily due to habitat degradation or loss stemming from hydrologic alterations by impoundments, including dams and other barriers; ***land*** development that does not incorporate BMPs; and diminished water quality from point and nonpoint source pollution and siltation. These threats contribute to the negative effects associated with the species' habitat fragmentation and isolation and potential effects of climate change. The provisions of this proposed 4(d) rule would promote conservation of the sickle darter by encouraging management of the landscape in ways that meet both watershed and riparian management considerations and the species' conservation needs. The provisions of this proposed rule are one of many tools that we would use to promote the conservation of the sickle darter. This proposed 4(d) rule would apply only if and when we make final the listing of the sickle darter as a threatened species.Provisions of the Proposed 4(d) Rule This proposed 4(d) rule would provide for the conservation of the sickle darter by prohibiting the following activities, except as otherwise authorized or permitted: Import or export; take; possession and other acts with unlawfully taken specimens; delivery, receipt, transport, or shipment in interstate or foreign commerce in the course of commercial activity; or sale or offer for sale in interstate or foreign commerce. Threats to the species are noted above and described in detail under Summary of Biological Status and Threats. The most significant threat expected to affect the species in the foreseeable future is loss and fragmentation of habitat from siltation, water quality degradation, and impoundments and their effects. A range of activities have the potential to affect the sickle darter, including commercial activities, ***agriculture***, resource extraction, and ***land*** development. Regulating these activities would help preserve the sickle darter's remaining populations, slow the rate of population decline, and decrease synergistic, negative effects from other stressors. Therefore, regulating activities that increase siltation, diminish water quality, alter stream flow, or reduce fish passage would help preserve and potentially provide for expansion of remaining populations and decrease synergistic, negative effects from other threats. Under the Act, ``take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulations at 50 CFR 17.3 Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating incidental and intentional take would help the species maintain population size and resiliency. We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32 With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act.[[Page 71871]] There are also certain statutory exceptions from the prohibitions, which are found in sections 9 and 10 of the Act, and other standard exceptions from the prohibitions, which are found in our regulations at 50 CFR part 17, subparts C and D. Below, we describe these exceptions to the prohibitions that we are proposing for the sickle darter. Under our proposed 4(d) rule, take of the sickle darter would not be prohibited in the following instances: Take is authorized by a permit issued in accordance with 50 CFR 17.32; Take results from actions of an employee or agent of one of the Services or of a State conservation agency that is operating under a conservation program pursuant to the terms of a cooperative agreement with the Service; Take is in defense of human life; and Take results from actions taken by representatives of one of the Services or of a State conservation agency to aid a sick specimen or to dispose of, salvage, or ***remove*** a dead specimen that is reported to the Office of Law Enforcement. We also propose to allow Federal and State law enforcement officers to possess, deliver, carry, transport, or ship any sickle darters taken in violation of the Act as necessary in performing their official duties. In part, these exceptions to the prohibitions recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Service shall cooperate to the maximum extent practicable with the State in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the sickle darter that may result in otherwise prohibited take for wildlife without additional authorization. In addition to the exceptions to the prohibitions described above, we propose certain species-specific exceptions to the prohibitions to provide for the conservation of the sickle darter. Consistent with all of the proposed exceptions and based on the best available information, our proposed 4(d) rule identifies the following activities, which are unlikely to result in take of the sickle darter in violation of section 9 if carried out in accordance with existing regulations and permit requirements and outside the February through March spawning season: These 4(d) rule exceptions cover actions that improve or restore sickle darter habitat, including channel restoration and streambank stabilization, bridge and culvert replacement (including transportation projects that enhance fish passage), as well as low-head dam ***removal***. To encourage protection of streams occupied by the sickle darter, we have included in the exceptions silvicultural activities that implement State best management practices. Within each occupied river system, these actions will promote expansion of the population's range and reduce the population's fragmentation and isolation. Additionally, these actions can reduce stressors that impact the sickle darter, including runoff of siltation and pollution, and may (through riparian reforestation) mediate local water temperatures expected to increase with climate change. Habitat restoration actions and silvicultural activities excepted by the 4(d) rule may result in some minimal level of harm or temporary disturbance to the sickle darter. For example, a culvert replacement project would likely elevate suspended sediments for several hours and the darters would need to move out of the sediment plume to resume normal feeding behavior. Because the 4(d) rule exceptions do not apply during the sickle darter's two-month spawning period, a critical phase of the species' life history, the potential for take is further minimized. Overall, these activities benefit the species by expanding suitable habitat and reducing within-population fragmentation, contributing to conservation and recovery. Based on the best available information, the following activities may potentially result in violation of section 9 of the Act; this list is not comprehensive: (1) Unauthorized handling, collecting, possessing, selling, delivering, carrying, or transporting of the sickle darter, including interstate transportation across State lines and import or export across international boundaries. (2) Destruction or alteration of the species' habitat by discharge of fill material, draining, ditching, tiling, pond construction, stream channelization or diversion, or diversion or alteration of surface or ground water flow into or out of the stream (i.e , due to roads, impoundments, discharge pipes, stormwater detention basins, etc.). (3) Introduction of nonnative species that compete with or prey upon the sickle darter. (4) Discharge of chemicals or fill material into any waters in which the sickle darter is known to occur. Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Kentucky Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT). Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the sickle darter. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service, where appropriate. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see Information Requested, above).Required DeterminationsClarity of the Rule We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must: (1) Be logically organized; (2) Use the active voice to address readers directly; (3) Use clear language rather than jargon; (4) Be divided into short sections and sentences; and (5) Use lists and tables wherever possible. If you feel that we have not met these requirements, send us comments by one of the methods listed in ADDRESSES. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too[[Page 71872]]long, the sections where you feel lists or tables would be useful, etc.National Environmental Policy Act (42 U.S.C 4321 et seq.) It is our position that we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C 4321 et seq.) in connection with listing a species as an endangered or threatened species under the Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244).Government-to-Government Relationship With Tribes In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal ***lands*** are not subject to the same controls as Federal public ***lands***, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribal ***lands*** fall within the range of the sickle darter, so no Tribal ***lands*** would be affected by the proposed rule.References Cited A complete list of references cited in this rulemaking is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) and upon request from the Kentucky Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).Authors The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Kentucky Ecological Services Field Office.Signing Authority The Director, U.S Fish and Wildlife Service, approved this document and authorized the undersigned to sign and submit the document to the Office of the Federal Register for publication electronically as an official document of the U.S Fish and Wildlife Service. Aurelia Skipwith, Director, U.S Fish and Wildlife Service, approved this document on October 30, 2020, for publication. Dated: October 30, 2020.Madonna Baucum,Regulations and Policy Chief, Division of Policy, Economics, Risk Management, and Analytics, Joint Administrative Operations, U.S Fish and Wildlife Service.List of Subjects in 50 CFR Part 17 Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Proposed Regulation Promulgation Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:PART 17--ENDANGERED AND THREATENED WILDLIFE AND PLANTS01. The authority citation for part 17 continues to read as follows: Authority: 16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.02. Amend Sec. 17.11(h) by adding an entry for ``Darter, sickle'' to the List of Endangered and Threatened Wildlife in alphabetical order under FISHES to read as set forth below:Sec. 17.11 Endangered and threatened wildlife.\* \* \* \* \* (h) \* \* \*---------------------------------------------------------------------------------------------------------------- Listing citations and Common name Scientific name Where listed Status applicable rules---------------------------------------------------------------------------------------------------------------- \* \* \* \* \* \* \*Fishes \* \* \* \* \* \* \*Darter, sickle.................. Percina williamsi.. Wherever found..... T [Federal Register citation when published as a final rule]; 50 CFR 17.44(ff).\4d\ \* \* \* \* \* \* \*----------------------------------------------------------------------------------------------------------------03. Amend Sec. 17.44 by adding a paragraph (ff) to read as set forth below:Sec. 17.44 Special rules--fishes.\* \* \* \* \* (ff) Sickle darter (Percina williamsi). (1) Prohibitions. The following prohibitions that apply to endangered wildlife also apply to the sickle darter. Except as provided under paragraph (ff)(2) of this section and Sec. Sec. 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species: (i) Import or export, as set forth at Sec. 17.21(b) for endangered wildlife. (ii) Take, as set forth at Sec. 17.21(c)(1) for endangered wildlife. (iii) Possession and other acts with unlawfully taken specimens, as set forth at Sec. 17.21(d)(1) for endangered wildlife. (iv) Interstate or foreign commerce in the course of commercial activity, as set forth at Sec. 17.21(e) for endangered wildlife. (v) Sale or offer for sale, as set forth at Sec. 17.21(f) for endangered wildlife. (2) Exceptions from prohibitions. In regard to this species, you may: (i) Conduct activities as authorized by a permit under Sec. 17.32 (ii) Take, as set forth at Sec. 17.21(c)(2) through (c)(4) for endangered wildlife. (iii) Take as set forth at Sec. 17.31(b). (iv) Take incidental to an otherwise lawful activity caused by: (A) Channel restoration projects that create natural, physically stable, ecologically functioning streams (or stream and wetland systems) and that take place between April 1 and January 31. These projects can be accomplished using a variety of methods, but the desired outcome is a natural channel with low shear stress (force of water moving against the channel); bank heights that enable reconnection to the floodplain; a connection of surface and groundwater systems, contributing to[[Page 71873]]perennial flows in the channel; riffles and pools composed of existing soil, rock, and wood instead of large imported materials; low compaction of soils within adjacent riparian areas; and inclusion of riparian wetlands. (B) Streambank stabilization projects that use bioengineering methods to replace pre-existing, bare, eroding stream banks with vegetated, stable stream banks, thereby reducing bank erosion and instream sedimentation and improving habitat conditions for the species, that take place between April 1 and January 31. Stream banks may be stabilized using live stakes (live, vegetative cuttings inserted or tamped into the ground in a manner that allows the stake to take root and grow), live fascines (live branch cuttings, usually willows, bound together into long, cigar-shaped bundles), or brush layering (cuttings or branches of easily rooted tree species layered between successive lifts of soil fill). Stream banks must not be stabilized solely through the use of quarried rock (rip-rap) or the use of rock baskets or gabion structures. (C) Bridge and culvert replacement/***removal*** projects or low head dam ***removal*** projects that ***remove*** migration barriers or generally allow for improved upstream and downstream movements of sickle darters while maintaining normal stream flows, preventing bed and bank erosion, and improving habitat conditions for the species, and that take place between April 1 and January 31. (D) Silviculture practices and ***forest*** management activities that: (1) Implement State best management practices, particularly for Streamside Management Zones and stream crossings; and (2) When such activities involve sickle darter spawning habitat, are carried out between April 1 and January 31. (E) Transportation projects that provide for fish passage at stream crossings. (v) Possess and engage in other acts with unlawfully taken wildlife, as set forth at Sec. 17.21(d)(2) for endangered wildlife.\* \* \* \* \*[FR Doc. 2020-24471 Filed 11-10-20; 8:45 am]BILLING CODE 4333-15-P

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[***Endangered and Threatened Species: Section 4(d) Rule for Sickle Darter***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:619Y-2MW1-F0YC-N3FX-00000-00&context=1516831)

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**Body**

Washington, DC: This Proposed Rule document was issued by the Fish and Wildlife Service (FWS)

Action

Proposed rule.Summary

We, the U.S Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the sickle darter (Percina williamsi), a fish species from the upper Tennessee River drainage in North Carolina, Tennessee, and Virginia, as a threatened species under the Endangered Species Act of 1973, as amended (Act). After a review of the best available scientific and commercial information, we find that listing the species is warranted. Accordingly, we propose to list the sickle darter as a threatened species with a rule issued under section 4(d) of the Act (“4(d) rule”). If we finalize this rule as proposed, it would add this species to the List of Endangered and Threatened Wildlife and extend the Act's protections to the species.Dates

We will accept comments received or postmarked on or before January 11, 2021. Comments submitted electronically using the Federal eRulemaking Portal (see ADDRESSES, below) must be received by 11:59 p.m Eastern Time on the closing date. We must receive requests for a public hearing, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by December 28, 2020.Addresses

You may submit comments by one of the following methods:

(1) Electronically: Go to the Federal eRulemaking Portal: [*http://www.regulations.gov*](http://www.regulations.gov) In the Search box, enter FWS-R4-ES-2020-0094, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment Now!”

(2) By hard copy: Submit by U.S mail to: Public Comments Processing, Attn: FWS-R4-ES-2020-0094, U.S Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on [*http://www.regulations.gov*](http://www.regulations.gov) This generally means that we will post any personal information you provide us (see Information Requested, below, for more information).For Further Information Contact

Lee Andrews, Field Supervisor, U.S Fish and Wildlife Service, Kentucky Ecological Services Field Office, 330 West Broadway, Suite 265, Frankfort, KY 40601; telephone 502-695-0468. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.Supplementary InformationExecutive Summary

Why we need to publish a rule. Under the Act, if we determine that a species may be an endangered or threatened species throughout all or a significant portion of its range, we are required to promptly publish a proposal in the Federal Register and make a determination on our proposal within 1 year. To the maximum extent prudent and determinable, we must designate critical habitat for any species that we determine to be an endangered or threatened species under the Act. Listing a species as an endangered or threatened species and designation of critical habitat can only be completed by issuing a rule.

What this document does. This rule proposes the listing of the sickle darter as a threatened species with a rule under section 4(d) of the Act. This rule summarizes our analysis regarding the status of and threats to the sickle darter.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that threats to the sickle darter include habitat degradation or loss stemming from hydrologic alteration by impoundments, including dams and other barriers; resource extraction, including mining and timber operations; and diminished water quality from point and non-point source chemical contamination and siltation (Factor A). These threats contribute to the negative effects associated with the species' reduced range and potential effects of climate change (Factor E).

Peer review. In accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of five appropriate specialists regarding the species status assessment report. We received responses from four specialists, which informed this proposed rule. The purpose of peer review is to ensure that our listing determinations and 4(d) rules are based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise in the biology, habitat, and threats to the species.

Because we will consider all comments and information we receive during the comment period, our final determination may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the species is endangered instead of threatened, or we may conclude that the species does not warrant listing as either an endangered species or a threatened species. We invite comments on any of these possibilities, as well.Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

(1) The species' biology, range, and population trends, including:

(a) Biological or ecological requirements of the species, including habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat, or both.

(2) Factors that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

(5) Information on regulations that are necessary and advisable to provide for the conservation of the sickle darter and that the Service can consider in developing a 4(d) rule for the species. In particular, we seek information concerning:

(a) The extent to which we should include any of the prohibitions in section 9 of the Act (16 U.S.C 1531 et seq.) in the 4(d) rule or whether any other forms of take should be excepted from the prohibitions in the 4(d) rule;

(b) Whether we should add a specific provision to except from prohibition incidental take resulting from silviculture practices and ***forest*** management activities that implement highest-standard best management practices and comply with ***forest*** practice guidelines related to water quality standards; and

(c) Whether there are additional provisions the Service may wish to consider for the 4(d) rule that are necessary and advisable for the conservation of the sickle darter.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made “solely on the basis of the best scientific and commercial data available. ”

You may submit your comments and materials concerning this proposed rule by one of the methods listed in ADDRESSES. We request that you send comments only by the methods described in ADDRESSES.

If you submit information via [*http://www.regulations.gov*](http://www.regulations.gov), your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on [*http://www.regulations.gov*](http://www.regulations.gov)

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on [*http://www.regulations.gov*](http://www.regulations.gov) Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. We must receive requests for a public hearing, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the Federal Register and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the Federal Register. The use of these virtual public hearings is consistent with our regulations at 50 CFR 424.16(c)(3).Previous Federal Actions

On April 20, 2010, we received a petition from the Center for Biological Diversity (CBD), Alabama Rivers Alliance, Clinch Coalition, Dogwood Alliance, Gulf Restoration Network, Tennessee ***Forests*** Council, and West Virginia Highlands Conservancy (referred to below as the CBD petition) to list 404 aquatic, riparian, and wetland species, including the sickle darter, as endangered or threatened species under the Act. In response to the petition, we published a partial 90-day finding on September 27, 2011 (76 FR 59836), in which we announced our finding that the petition contained substantial information indicating that listing may be warranted for numerous species, including the sickle darter.

On February 18, 2015, the CBD filed a complaint alleging the Service failed to complete a 12-month finding for the sickle darter in accordance with statutory deadlines. On September 9, 2015, the Service and the CBD filed a stipulated settlement in the District of Columbia, agreeing that the Service will submit to the Federal Register a 12-month finding for the sickle darter no later than September 30, 2020 (Center for Biological Diversity v. Jewell, case 1:15-CV-00229-EGS (D.D.C )). This document constitutes our concurrent 12-month warranted petition finding and proposed listing rule.Supporting Documents

An SSA team prepared an SSA report for the sickle darter. The SSA team was composed of Service biologists, in consultation with other species experts from the Tennessee Valley Authority; State agencies in North Carolina, Tennessee, and Virginia; university researchers; and private fish conservation organizations. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. As discussed above under Peer review, we solicited appropriate peer review for the SSA report. The Service sent the SSA report to five independent peer reviewers and received four responses. In addition, we sent the draft SSA report for review to Federal partners, State partners, and scientists with expertise in aquatic ecology and fish biology, taxonomy, and conservation.I. Proposed Listing DeterminationBackground

The sickle darter is a small fish native to the upper Tennessee River drainage in North Carolina, Tennessee, and Virginia. The species currently has a disjunct distribution, with populations in the Emory River, Little River, Sequatchie River, and Emory River systems in Tennessee, and the upper Clinch River, North Fork Holston River, and Middle Fork Holston River systems in Virginia. Populations within the French Broad River system in North Carolina and Tennessee, and the South Fork Holston River, Powell River, and Watauga River systems in Tennessee are extirpated. A thorough review of the taxonomy, life history, and ecology of the sickle darter is presented in the SSA report (version 1.0; Service 2020a, pp. 9-13).

The sickle darter has a long, slender body reaching up to 120 millimeters (mm) (4.7 inches (in)) in length and an elongated, pointed snout. The body color is brown to olive above and white to pale yellow below with a thin black stripe along the top of the body. Spawning occurs in late winter (February-March), and the species has a maximum lifespan of 3 to 4 years.

Sickle darters typically occupy flowing pools over rocky, sandy, or silty substrates in clear creeks or small rivers. Occupied streams tend to have good water quality, with low turbidity and negligible siltation (Etnier and Starnes 1993, p. 576; Alford 2019, p. 9). In these habitats, the species is most often associated with clean sand-detritus or gravel-cobble-boulder substrates, stands of American water willow (Justicia americana), or woody debris piles at water depths ranging from 0.4-1.0 meter (m) (1.3-3.3 feet (ft)) (Etnier and Starnes 1993, p. 576; Page and Near 2007, p. 609; Alford 2019, p. 8). Streams supporting sickle darters range from 9-33 m (29-108 ft) wide and streamside tree canopy cover in these streams ranges from open to nearly closed (Alford 2019, p. 8). The species spends most of its time in the water column, often hovering a few inches above the stream or river bottom (Etnier and Starnes 1993, p. 576).

In winter, sickle darters have been observed in deep pools (depths of up to 3 m (10 ft)) or in slow-flowing, shallow pools in close proximity to cover (Etnier and Starnes 1993, p. 576; Service 2020b, p. 1). The species migrates from the deepest areas of pools to shallow, gravel shoals (riffles) in late winter or early spring (February-March) to spawn (Etnier and Starnes 1993, p. 576). Spawning begins when stream water temperatures reach 10 to 16 Celsius (°C) (50 to 60 Fahrenheit (°F)) (Petty et al. 2017, p. 3). Sexual maturity of males occurs at the end of the first year of life, while sexual maturity of females occurs at the end of their second year of life (Page 1978, p. 663; Petty et al. 2017, p. 3). Females produce up to 355 eggs per clutch, which hatch in 21 days at an average stream temperature of 10 °C (50 °F) (Etnier and Starnes 1993, p. 576). The incubation period is likely shorter (about 2 weeks) when stream temperatures are higher (Service 2020b, p. 1). The larvae move up and down in the water column and presumably feed on zooplankton and other small macroinvertebrates after depleting yolk sac nutrients (Etnier and Starnes 1993, p. 576; Petty et al. 2017, p. 3). After about 30 days, the larvae move to the stream bottom (Petty et al. 2017, p. 3) where they mature. Except for their late winter movements from pools to riffles for spawning, no information is available on the movement behavior of the sickle darter. However, studies of two closely related species in the genus Percina (longhead darter and frecklebelly darter) indicate that the sickle darter likely exhibits seasonal upstream and downstream movements (Eisenhour et al. 2011, p. 15; Eisenhour and Washburn 2016, pp. 19-24).

Sickle darters feed primarily on larval mayflies and midges; minor prey items include riffle beetles, caddisflies, dragonflies, and several other groups of aquatic macroinvertebrates (Page and Near 2007, pp. 609-610; Alford 2019, p. 10). Crayfishes have been reported as a common food item for the closely related longhead darter (Page 1978, p. 663), but have not been observed in the sickle darter's diet (Alford 2019, p. 10).Regulatory and Analytical FrameworkRegulatory Framework

Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an “endangered species” or a “threatened species. ” The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species. ” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species. ” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term “foreseeable future” extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.Analytical Framework

The SSA report documents the results of our comprehensive biological review of the best scientific and commercial data regarding the status of the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be proposed for listing as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS-R4-ES-2020-0094 on [*http://www.regulations.gov*](http://www.regulations.gov)

To assess sickle darter viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the species' ability to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the species' ability to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the species' ability to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time.Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

For sickle darter populations to be resilient, the needs of individuals (slow-flowing pools, substrate, food availability, water quality, and aquatic vegetation or large woody debris) must be met at a larger scale. Stream reaches with suitable habitat must be large enough to support an appropriate number of individuals to avoid negative effects associated with small population size, such as inbreeding depression and the Allee effect (whereby low population density reduces the probability of encountering mates for spawning). Connectivity of stream reaches allows for immigration and emigration between populations and increases the likelihood of recolonization should a population be lost. At the species level, the sickle darter needs a sufficient number and distribution of healthy populations to withstand environmental stochasticity (resiliency) and catastrophes (redundancy) and adapt to biological and physical changes in its environment (representation). To evaluate the current and future viability of the sickle darter, we assessed a range of conditions to allow us to consider the species' resiliency, representation, and redundancy.

We delineated analytical units (populations) using the tributary systems the sickle darter historically occupied. Each population represents demographically linked interbreeding individuals; however, these populations are currently separated by long distances or isolated by impoundments. We identified 10 historical populations across the range of the sickle darter: Emory River, Clinch River, Powell River, Little River, French Broad River, North Fork Holston River, Middle Fork Holston River, South Fork Holston River, Watauga River, and Sequatchie River.

To assess resiliency, we evaluated six components that broadly relate to the species' physical environment or its population demography. Each population's physical environment was assessed by averaging three components determined to have the most influence on the species: Physical habitat quality, connectivity, and water quality. The three components describing population demography were reproduction, occurrence extent (total length of occupied streams compared to historical range), and occupied stream length. Parameters for each component's condition category were established by evaluating the range of existing data and separating those data into categories based on our understanding of the species' demographics and habitat. Using the demographic and habitat parameters, we then categorized the overall condition of each population. We weighted each of the six components equally and determined the average score to describe each population's current condition (see Table 1, below).

Due to a limited amount of species-specific genetic information for the sickle darter, we based our evaluation of the species' representation on the extent and variability of environmental diversity (habitat diversity) across the species' geographical range. Additionally, we assessed sickle darter redundancy (ability of species to withstand catastrophic events) by evaluating the number and distribution of resilient populations throughout the species' range. Highly resilient populations, coupled with a relatively broad distribution, have a positive relationship to species-level redundancy.Table 1—Component Conditions Used To Assess Resiliency for Sickle Darter Populations Component Condition High Moderate Low 0Physical Habitat Slow-flowing pools abundant (ample cover in pools); silt deposition low; no extensive or significant habitat alteration such as recent channelization or riparian clearing; > 75% of available habitat suitable for the species Slow-flowing pools present but not abundant (some pools with cover); silt deposition moderate; habitat alteration at moderate level such that channelization or other habitat disturbance more widespread; 25-75% of available habitat suitable for the species Slow-flowing pools scarce (few pools with cover); silt deposition extensive; habitat severely altered and recognized as impacting the species; < 25% of habitats suitable for the species Habitat unsuitable.Connectivity High immigration potential between populations (no dams or other barriers separating populations) Moderate immigration potential between populations (populations separated by 1 low-head dam, and other partial barriers, such as narrow culverts, may be present) Low immigration potential between populations (populations separated by ≥ 2 low-head dams or other barriers) No connectivity (populations isolated; no immigration potential due to the presence of large reservoirs).Water Quality Minimal or no known water quality issues (i.e , no 303(d) streams\* impacting the species, area sparsely populated, few roads) Water quality issues recognized that may impact species (i.e , some 303(d) streams\*, unpaved roads more common, moderate levels of developed ***land*** use) Water quality issues prevalent within system, likely impacting populations (i.e , numerous 303(d) streams\*) Water quality unsuitable.Reproduction Clear evidence of reproduction, with multiple age classes present Clear evidence of reproduction, juveniles present, but multiple age classes not detected No direct evidence of reproduction (only adults present) Extirpated.Occurrence Extent <10% decline from historical range 10-50% decline from historical range >50% decline from historical range Extirpated.Occupied Stream Length (Continuity) ≥22.5 km (≥ 14 mi) 11.3-22.5 km (7-14 mi) <11.3 km (< 7 mi) Extirpated.Current Condition of Sickle Darter

Currently, the sickle darter is known from six tributary systems in the upper Tennessee River drainage: Emory River, Little River, Clinch River, North Fork Holston River, Middle Fork Holston River, and Sequatchie River. Historical populations in the Powell River, French Broad River, South Fork Holston River, and Watauga River systems are extirpated, including the species' only population within the Blue Ridge ecoregion. Impoundments and water pollution in the upper Tennessee River drainage were major factors in the decline of the sickle darter and several other fishes during the early to mid-20th century (Etnier and Starnes 1993, pp. 15, 576). Current factors affecting the condition of sickle darter populations include habitat and water quality degradation, low connectivity, and small population size (e.g , Clinch River). The Emory River and Little River populations exhibit moderate resiliency, as evidenced by the species' persistence within these systems for over 45 years, recent and repeated evidence of reproduction and recruitment, a relatively long occupied reach in each system (more than 22.5 kilometers (km) (14 miles (mi))), and the physical habitat condition and water quality in both systems. The remaining four populations exhibit low resiliency. They are represented by fewer documented occurrences, no evidence of recruitment, shorter occupied reaches, and occur in areas with limited habitat and water quality.

The species' adaptive potential (representation) is low because of its reduced range (and presumably associated reduction in genetic diversity), and the loss of connectivity caused by dam construction. The sickle darter occupies only two of three historical ecoregions (Ridge and Valley and Southwestern Appalachians), likely reducing its ability to adapt to changing environmental conditions over time.

We assessed the number and distribution of resilient populations across the sickle darter's range as a measure of its redundancy. Construction of dams across the upper Tennessee River drainage has eliminated connectivity between extant populations. However, within the currently occupied streams, large barriers are absent, although some small barriers that hamper movement are present (e.g , defunct low-head mill dams, low-water bridges, narrow or partially blocked culverts). As such, there is connectivity within each occupied stream and opportunity for movement of individuals, decreasing the effect of localized stochastic events. Overall, the sickle darter exhibits a low degree of redundancy based on the number of resilient populations and the amount of isolation observed across the species' range, increasing the species' vulnerability to catastrophic events.Risk Factors for Sickle Darter

Habitat loss and degradation (Factor A) resulting from impoundments, siltation, and water quality degradation, pose the largest risk to the current and future viability of the sickle darter and are the primary contributors to the species' reduced range, population fragmentation, and population loss. Climate change (Factor E) is a potential stressor that may impact the sickle darter in the future. We find the species does not face significant threats from overutilization (Factor B), disease or predation (Factor C), or invasive species (Factor E). A brief summary of relevant stressors is presented below; for a full description, refer to chapter 3 of the SSA report (Service 2020a, entire).Siltation

Siltation is characterized by excess sediments suspended or deposited in a stream. Excessive levels of sediment accumulate and cover the stream bottom, filling the interstitial spaces with finer substrates and homogenizing and decreasing the available habitat for fishes. In severe cases, sediment can bury large substrate particles such as cobble and boulders. Siltation can affect fishes through abrasion of gill tissues, suffocation of eggs or larvae, reductions in disease tolerance, degradation of spawning habitats, modification of migration patterns, and reductions in food availability (Berkman and Rabeni 1987, pp. 285-294; Waters 1995, pp. 5-7; Wood and Armitage 1997, pp. 211-212; Meyer and Sutherland 2005, pp. 2-3). The sickle darter is considered to be intolerant of siltation (Etnier and Starnes 1993, p. 576). Pool habitat, which is the area in streams most often occupied by sickle darters, is affected by sediment deposition earlier and more readily than habitats with faster moving water (Eisenhour et al. 2009, p. 11). However, the sickle darter is occasionally observed in areas with at least low to moderate levels of siltation on some substrates, as in the Emory River (Service 2020b, p. 3).

Siltation continues to be one of the primary stressors of streams in the upper Tennessee River drainage (TDEC 2010, pp. 43-45; TDEC 2014, pp. 48-50; TDEC 2017, pp. 51-128; VDEQ 2018, pp. 89-91). Sediments can originate from a variety of sources, but State agencies continue to cite ***land*** use practices associated with ***agriculture***, ***land*** development, and resource extraction (e.g , coal mining) as primary sediment sources within the current and historical range of the sickle darter (TDEC 2010, pp. 56-65; TDEC 2014, pp. 62-69; VDEQ 2018 (Appendix 5), pp. 2313-2531). Unrestricted livestock access occurs on many streams in the range of the sickle darter and has the potential to cause siltation and other habitat disturbance (Fraley and Ahlstedt 2000, pp. 193-194). Grazing may reduce water infiltration rates and increase stormwater runoff; trampling and vegetation ***removal*** increases the probability of erosion and siltation (Brim Box and Mossa 1999, p. 103). Other sources of siltation in the species' range include croplands, stream channelization, and ***removal*** of riparian (streamside) vegetation, which have the potential to contribute large sediment loads during storm events, thereby causing increased siltation and potentially introducing ***agricultural*** pollutants such as herbicides and pesticides carried on or with sediment particles that wash into streams.

Surface coal mining, oil and gas drilling, and logging may also contribute to siltation of stream habitats in the upper Tennessee River drainage, especially the upper Clinch and Powell River systems (TDEC 2017, pp. 94-97; Zipper et al. 2016, pp. 609-610; VDEQ 2018, pp. 2313-2531). ***Land*** clearing, road construction, and excavation associated with these ***land*** use practices produce new road networks and large areas of bare soil that can contribute large amounts of sediment if best management practices (BMPs) are not used. Siltation from surface coal mining activities, such as the placement of valley fills, ***forest*** clearing, and road construction, has affected the sickle darter's historical range in the mainstem Clinch and Powell Rivers. Over the last decade, forestry BMP implementation rates, to control erosion, runoff, and siltation, have increased within the upper Tennessee River drainage (Clatterbuck et al. 2017, pp. 8-12; VDOF 2014, pp. 1-5); however, siltation continues to impact aquatic habitats in those areas where BMP use is lacking.Water Quality Degradation (Pollution)

Information is lacking on the sickle darter's tolerance to specific pollutants, but overall the species is likely to have low tolerance experienced by other species in its genus. A review of species tolerances to pollution classified five species in the sickle darter genus Percina as intolerant, moderately intolerant, or having intermediate tolerance (Grabarkiewicz and Davis 2008, p. 64). None of these five species were classified as moderately tolerant or tolerant of pollution. A variety of pollutants that may impact the sickle darter continue to degrade stream water quality within the upper Tennessee River drainage (Locke et al. 2006, pp. 197, 202-203; TDEC 2010, pp. 42-48; TDEC 2014, pp. 47-53; Zipper et al. 2016, p. 604; TDEC 2017, pp. 51-106; VDEQ 2018 (Appendix 5), pp. 2313-2531). Major pollutants within the upper Tennessee River drainage include pathogens, domestic sewage, animal waste, nutrients, metals, and toxic organic compounds.

Pathogens (fecal indicator bacteria) are a leading cause of stream pollution across the sickle darter's range (Hampson et al. 2000, p. 7; TDEC 2014a, pp. 47-53, TDEC 2017, pp. 51-106; VDEQ 2018 (Appendix 5), pp. 2313-2531). The effect of high bacterial levels on the sickle darter is unknown, but high bacterial concentrations are one indicator of degraded stream conditions, including low dissolved oxygen that negatively affects fish or that may indicate the presence of other pollutants of concern that could harm the species. In the upper Tennessee River drainage, livestock waste is the primary source of bacterial contamination in rural areas, while deteriorating and leaky sewage systems, faulty sewage treatment plants, urban runoff, and combined sewer overflow (CSO) systems are the primary sources of bacterial contamination in urban streams (Hampson et al. 2000, p. 7). Elevated nutrient concentrations of phosphorus, nitrite/nitrate, and ammonia are another leading cause of stream pollution in the upper Tennessee River drainage (Hampson et al. 2000, p. 8; Price et al. 2011, pp. III-1, IV-1; TDEC 2014, p. 50; TDEC 2017, pp. 51-106; VDEQ 2018, pp. 89-91). Primary sources include wastewater treatment facilities, urban and industrial stormwater systems, and ***agricultural*** runoff (i.e , livestock waste and synthetic fertilizers) (Hampson et al. 2000, p. 9; TDEC 2014, p. 50).

Other stream pollutants in the upper Tennessee River drainage include organic compounds (e.g , polychlorinated biphenyls (PCBs), dioxins), metals (e.g , mercury, iron, manganese), and pesticides (Hampson et al. 2000, pp. 14-19; Soucek et al. 2000, entire; Soucek et al. 2003, entire; Locke et al. 2006, pp. 200-203; Price et al. 2011, p. VI-1; TDEC 2014, pp. 51-53). Industrial development and coal mining activities prior to the passage of the Clean Water Act of 1972 (CWA; 33 U.S.C 1251 et seq.) and the Surface Mining Control and Reclamation Act of 1977 (SMCRA; 30 U.S.C 1201 et seq.) have left a legacy of contaminated sediment and polluted waters that continue to affect streams in portions of the upper Tennessee River drainage (Hampson et al. 2000, p. 19). Coal mining activity has decreased in the Clinch and Powell River systems in recent years; however, current and previous mining activities continue to impact portions of these stream systems in Tennessee and Virginia (TDEC 2014, p. 51; Ahlstedt et al. 2016, pp. 13-14; Zipper et al. 2016, pp. 604-612; TDEC 2017, pp. 94-97). Insecticides, herbicides, and fungicides are widely used in the upper Tennessee River drainage to control insects, fungi, weeds, and other undesirable organisms (Hampson et al. 2000, pp. 14-18). The compounds vary in their toxicity, persistence in the environment, and transport characteristics, but often become widely distributed in the environment and can pose hazards to non-***target*** organisms such as the sickle darter.Impoundments and Their Effects—Habitat Fragmentation and Loss

Impoundments are a threat to the sickle darter and a major factor influencing the species' current distribution within the upper Tennessee River drainage (Etnier and Starnes 1993, p. 576; Jenkins and Burkhead 1993, pp. 101-106; Service 2020a, p. 3). From 1912 to 1963, Tennessee Valley Authority constructed 12 dams, impounding waters in each of the sickle darter's historical tributary systems in Tennessee and Virginia (Miller and Reidinger 1998, pp. 35-37). Two dams were constructed on the Tennessee River mainstem, while the remaining 10 dams were built on tributaries (Clinch River, French Broad River, Holston River, South Fork Holston River, and Watauga River), creating 10 impoundments or reservoirs. Physical, chemical, and biological changes to these systems have been dramatic. Alterations to flow and temperature in the impounded reaches behind the dams and the tailwaters that extend several miles below the dams render these reaches uninhabitable for stream fishes such as the sickle darter. Additionally these dams have diminished and, in some cases, eliminated connectivity of sickle darter populations.Population Fragmentation and Isolation

As a result of the loss of populations throughout the historical range, the sickle darter's remaining range is limited. The remaining populations are localized and geographically isolated from one another due to impoundments and other habitat degradation, leaving them vulnerable to localized extinctions from toxic chemical spills, habitat modification, progressive degradation from runoff (non-point source pollutants), natural catastrophic changes to their habitat (e.g , flood scour, drought), other stochastic disturbances, and decreased fitness from reduced genetic diversity.

Species that have incurred reductions in range and population size are more likely to suffer loss of genetic diversity due to genetic drift, potentially increasing their susceptibility to inbreeding depression, decreasing their ability to adapt to environmental changes, and reducing the fitness of individuals (Soulé 1980, pp. 157-158; Hunter 2002, pp. 97-101; Allendorf and Luikart 2007, pp. 117-146). Some small sickle darter populations (e.g , Middle Fork Holston River) may be below the effective population size required to maintain long-term genetic and population viability (Soulé 1980, pp. 162-164; Hunter 2002, pp. 105-107). The long-term viability of a species depends on the conservation of numerous local populations throughout its geographic range (Harris 1984, pp. 93-104). These separate populations are essential for the species to recover and adapt to environmental changes (Harris 1984, pp. 93-104; Noss and Cooperrider 1994, pp. 264-297). The level of isolation of sickle darter populations makes recolonization following localized extirpations virtually impossible without human intervention.Climate Change

Changing climate conditions can influence sickle darter viability through changes in water temperature and precipitation patterns that result in increased flooding, prolonged droughts, or reduced stream flows (McLaughlin et al. 2002, pp. 6060-6074; Cook et al. 2004, pp. 1015-1018; Thomas et al. 2004, pp. 145-148; p. 2065; IPCC 2014, pp. 58-83). The species' early spawning period (February-March) makes it vulnerable to warming temperatures and higher flows—conditions that could interrupt or prevent successful spawning in a given year (Service 2020b, p. 3). Stream temperatures in the Southeast have increased roughly 0.2 to 0.4 °C (0.4 to 0.7 °F) per decade over the past 30 years (Kaushal et al. 2010, p. 463), although the extent to which the increase in temperatures has affected the sickle darter in unknown. Predicted impacts of climate change on fishes include disruptions to their physiology, such as temperature tolerance, dissolved oxygen needs, and metabolic rates; life history, such as timing of reproduction and growth rate; and distribution, including range shifts and migration of new predators (Jackson and Mandrak 2002, pp. 89-98; Heino et al. 2009, pp. 41-51; Strayer and Dudgeon 2010, pp. 350-351; Comte et al. 2013, pp. 627-636).

Data on recent trends and predicted changes for the upper Tennessee River drainage allow evaluation of the potential impacts of climate change to the sickle darter in the future. Different ***emission*** scenarios were used to estimate average annual increases in maximum and minimum air temperature, precipitation, snowfall, and other variables (Alder and Hostetler 2017, entire). Depending on the chosen model and ***emission*** scenario (Representative Concentration Pathway (RCP) 4.5 vs. 8.5), annual mean maximum air temperatures for the upper Tennessee River drainage are expected to increase by 2.1 to 3.1 °C (3.8 to 5.6 °F) by 2074, while precipitation models predict that the upper Tennessee River drainage will experience a slight increase in annual mean precipitation (0.2 in per month) through 2074 (Girvetz et al. 2009, pp. 1-19; Alder and Hostetler 2016, pp. 1-9). Because stream temperature is broadly driven by air temperature (Webb and Nobilis 2007, p. 82), water temperatures in the current and historical range of the sickle darter are expected to increase in the future under both RCP 4.5 and RCP 8.5

The upper thermal limits of the sickle darter are unknown, but the species' occurrence in streams ranging in size from large creeks to medium-sized rivers suggests that it may have some tolerance to a variety of water conditions. The species may be less vulnerable to droughts, compared to species occurring in smaller or headwater streams. Relative to other fishes, sickle darter may have some resilience to the effects of climate change. Among more than 700 species in the Appalachian region, six other darter species in the genus Percina are ranked as moderately vulnerable to the effects of climate change (Appalachian Landscape Conservation Cooperative 2017, unpaginated). Moderately vulnerable is defined as abundance and/or range extent within geographical area assessed likely to decrease by 2050. The sickle darter may have some of the same vulnerabilities due to its similar ecology, life history, and small range.Conservation Efforts

The sickle darter is listed as threatened by Tennessee (Tennessee Wildlife Resources Commission (TWRC) 2016, p. 3) and Virginia (VDGIF 2018, p. 1), making it unlawful to take the species or damage its habitat without a State permit. Additionally, the sickle darter is identified as a species of greatest conservation need in the Tennessee and Virginia Wildlife Action Plans, which outline actions to promote species conservation. A propagation effort for the sickle darter was initiated in 2015, producing 25 juveniles that were released to the wild. The status of the released fish is unknown, but the effort demonstrates that propagation may be a useful conservation tool to augment sickle darter populations or reintroduce the species to historical localities in the future.Future Scenarios

In our SSA report (Service 2020a, entire), we defined viability as the ability of the species to sustain populations in the wild over time. To help address uncertainty associated with the degree and extent of potential future stressors and their impacts on the species' needs, the concepts of resiliency, redundancy, and representation were assessed using three plausible future scenarios. We devised these scenarios by identifying information on the following primary threats anticipated to affect sickle darter in the future: ***Land*** cover, urbanization, climate change, and conservation activity. The three scenarios capture the range of uncertainty in the changing landscape and how sickle darter will respond to the changing conditions (see Table 2, below). We used the best available data and models to project out 50 years into the future (i.e , 2070), a timeframe where we were reasonably certain the ***land*** use change, urbanization, and climate models that we used could forecast patterns in the species' range relevant to the sickle darter and its habitat given the species' life span. For more information on the models and their projections, please see the SSA report (Service 2020a, pp. 54-67).

Under Scenario 1 (continuation of current trend), no significant increases or decreases are expected with respect to ***land*** cover, urbanization, or habitat conditions, and habitat restoration efforts (e.g , livestock fencing, riparian plantings, streambank restoration) by the Service and its partners are projected to continue at current levels. In addition, climate change would track RCP 4.5 Three of six extant sickle darter populations are projected to maintain their resiliency categories at current levels. Three extant populations, Clinch River, Middle Fork Holston River, and North Fork Holston River, are projected to become extirpated within 30 years. The species' redundancy and representation are expected to remain at low levels.

Under Scenario 2 (improving trend), habitat conditions throughout the upper Tennessee River drainage are projected to improve due to increased conservation efforts and improving ***land*** use practices (e.g , greater ***forest*** cover and reduced ***agricultural*** and development effects). Based on these factors, resiliency of all extant populations would remain at current levels or increase, and the species may be rediscovered or will be reintroduced into portions of the Powell River system and French Broad River system. The species' redundancy would increase to a low-moderate level and representation would remain at a low level because populations will be reintroduced or rediscovered in two historically occupied river systems, increasing the number of extant populations (our measure of redundancy) from 6 to 8. In spite of the two added populations, representation would remain low because individuals would have the same genetic composition of parental stock in the rivers from which they were sourced, or will be founded from very small, previously undetected populations.

Under Scenario 3 (worsening trend), habitat conditions are projected to decline within the upper Tennessee River drainage due to reductions in ***forest*** cover, increased urbanization and ***agricultural*** activities, and a climate trend that tracks RCP 8.5 Combined with reduced conservation efforts, these factors will have a negative effect on population resiliency, with projected extirpations of the Clinch River, North Fork Holston River, Middle Fork Holston River, and Sequatchie River populations. Loss of these populations would reduce redundancy and representation, with overall species' redundancy and representation remaining at low levels.

One of our plausible scenarios (improving trends) projected improving conditions characterized by an increased percentage of ***forested*** ***land*** cover and a reduced percentage of pasture and hay ***land*** cover. In this scenario, urbanization and climate change rates of increase would be reduced relative to current trends (Service 2020a, pp. 72-73) and additional conservation actions would be implemented. There was greater uncertainty regarding future species' status and conservation action implementation than in the other two future scenarios. For example, the improving trends scenario projected reintroduction and successful establishment of two populations in the species' historical range, but successful establishment of viable populations of sickle darters has not yet been proven, and funding for this type of conservation, as well as other conservation actions such as easements for ***land*** restoration, is uncertain. Therefore, we did not rely on the improving trends scenario to assess the likelihood of the species becoming in danger of extinction in the foreseeable future. (see Status Throughout All of Its Range, below)Table 2—Future Condition of the Sickle Darter by the Year 2070 Under Three Future Scenarios Analytical unit(population) Current condition Scenario 1:Current trend Scenario 2:Improving trend Scenario 3:Worsening trendEmory River Moderate Moderate Moderate Low.Clinch River Low Likely Extirpated Low Likely Extirpated.Powell River Extirpated Likely Extirpated Low \* Likely Extirpated.Little River Moderate Low Moderate Low.French Broad River Extirpated Likely Extirpated Low \* Likely Extirpated.Middle Fork Holston River Low Likely Extirpated Low Likely Extirpated.North Fork Holston River Low Likely Extirpated Low Likely Extirpated.South Fork Holston River Extirpated Likely Extirpated Likely Extirpated Likely Extirpated.Sequatchie River Low Low Low Likely Extirpated.Watauga Extirpated Likely Extirpated Likely Extirpated Likely Extirpated.Cumulative Effects of Threats

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. Our assessment of the current and future conditions encompasses and incorporates the threats individually and cumulatively. Our current and future condition assessment is iterative because it accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.Determination of Sickle Darter Status

Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines “endangered species” as a species in danger of extinction throughout all or a significant portion of its range, and “threatened species” as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.Status Throughout All of Its Range

The current conditions as assessed in the sickle darter SSA report show that the species exists in six populations, in six tributary systems in two ecoregions. Two populations, Little River and Emory River, have moderate resiliency, and four populations have low resiliency. Although there are six separate populations distributed within the upper Tennessee River drainage, redundancy is low because four have low resiliency. Representation is currently low because genetic variation has likely been reduced over time as populations became disconnected, isolated, and reduced in size. Further, representation has been diminished with the loss of the species from the Blue Ridge ecoregion. While current resiliency, redundancy, and representation are far from optimal, it is unlikely that the sickle darter is in danger of extinction from a near-term catastrophic event. The occurrence in separate rivers of two populations, which are both in moderate condition and regularly recruiting new age classes (generations), greatly diminishes the possibility that such an event would simultaneously cause extirpation of the two populations, nor is it likely that such an event would simultaneously have the same level of impact on the other four populations in low condition.

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we conclude that the risk factors acting on the sickle darter and its habitat, either singly or in combination, are not of sufficient imminence, intensity, or magnitude to indicate that the species is in danger of extinction now (an endangered species) throughout all of its range.

Our analysis of the sickle darter's future conditions shows that the population and habitat factors used to determine resiliency, representation, and redundancy will continue to decline. The primary threats are currently acting on the species and are likely to continue into the future. We selected 50 years as “foreseeable” in this case because it includes projections from available models for urbanization, ***land*** use, and climate change, threats which will affect the status of the species over that timeframe.

The range of plausible future scenarios of the sickle darter's habitat conditions and water quality factors portend reduced viability into the future. Under the current trend scenario, resiliency is low in two populations and or moderate in one population, and three populations are likely extirpated so that redundancy and representation are reduced. Under the worsening trend scenario, resiliency is low in two populations, and four populations are likely extirpated so that redundancy and representation are substantially reduced. This expected reduction in both the number and distribution of resilient populations is likely to make the species vulnerable to catastrophic disturbance. Thus, after assessing the best available information, we conclude that the sickle darter is not currently in danger of extinction but is likely to become in danger of extinction within the foreseeable future throughout all of its range.Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in Center for Biological Diversity v. Everson, 2020 WL 437289 (D.D.C Jan. 28, 2020) (Center for Biological Diversity), vacated the aspect of our Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act's Definitions of “Endangered Species” and “Threatened Species” (79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant, and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in Center for Biological Diversity, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e , endangered). In undertaking this analysis for sickle darter, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered.

For the sickle darter, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the following threats currently acting on the species: Habitat loss and degradation through siltation, water quality degradation, and impoundments and their effects and the associated effects of the species' reduced range. We also examined the cumulative effects of these threats. Our analysis revealed that these threats are likely to continue into the foreseeable future, or approximately 50 years. Siltation and water quality degradation resulting from nutrients, pathogens, municipal and residential development, ***agriculture***, and logging are present in all watersheds where the sickle darter occurs. ***Land*** use changes associated with extraction of energy resources (coal, oil, and gas) are restricted to the Clinch (including Emory River) and Powell River systems, but the stressors associated with these activities, including sedimentation and water quality degradation, also come from sources (e.g , urbanization, grazing, logging) that are common to all watersheds where the species occurs.

Isolation as a result of habitat fragmentation affects all sickle darter populations similarly, and all populations will experience the effects of changing climate conditions. Additionally, resiliency of the remaining populations would decline, while our continuing trends and worsening trends future scenarios respectively projected three or four of the six extant populations would become extirpated. The Little River watershed has the highest amount of ***land*** affected by urbanization (development) currently, and that is projected to continue in the future (Service 2020a, pp. 86-87). However, current ***land*** use and future rates of ***land*** use change are not substantially different among the watersheds occupied by the six populations.

Overall, the current threats acting on the species and its habitat are expected to continue, and there are no indications that these threats would lessen or that declining populations trends would be reverted. After assessing the best available information, we found no concentration of threats in any portion of the sickle darter's range at a biologically meaningful scale. Thus, there are no portions of the species' range where the species has a different status from its rangewide status. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in Desert Survivors v. Department of the Interior, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D Cal. Aug. 24, 2018), and Center for Biological Diversity v. Jewell, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).Determination of Status

Our review of the best available scientific and commercial information indicates that the sickle darter meets the Act's definition of a “threatened species. ” Therefore, we propose to list the sickle darter as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.Recovery Planning

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened (“downlisting”) or ***removal*** from protected status (“delisting”), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website ([*http://www.fws.gov/endangered*](http://www.fws.gov/endangered)), or from our Kentucky Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g , restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal ***lands*** because their range may occur primarily or solely on non-Federal ***lands***. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal ***lands***.

If this species is listed, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of North Carolina, Tennessee, and Virginia would be eligible for Federal funds to implement management actions that promote the protection or recovery of the sickle darter. Information on our grant programs that are available to aid species recovery can be found at: [*http://www.fws.gov/grants*](http://www.fws.gov/grants).

Although the sickle darter is only proposed for listing under the Act at this time, please let us know if you are interested in participating in recovery efforts for this species. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see FOR FURTHER INFORMATION CONTACT).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal ***lands*** administered, or on private ***lands*** seeking funding, by Federal agencies, which may include, but are not limited to, the Tennessee Valley Authority, U.S Department of ***Agriculture*** (USDA) U.S ***Forest*** Service, USDA Farm Service Agency, USDA Natural Resources Conservation Service, and Federal Emergency Management Agency; issuance of section 404 CWA permits by the U.S Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration.

It is our policy, as published in the Federal Register on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a proposed listing on proposed and ongoing activities within the range of the species proposed for listing. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy.Critical HabitatPrudency Determination

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the Secretary may, but is not required to, determine that a designation would not be prudent in the following circumstances:

(i) The species is threatened by taking or other human activity and identification of critical habitat can be expected to increase the degree of such threat to the species;

(ii) The present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or threats to the species' habitat stem solely from causes that cannot be addressed through management actions resulting from consultations under section 7(a)(2) of the Act;

(iii) Areas within the jurisdiction of the United States provide no more than negligible conservation value, if any, for a species occurring primarily outside the jurisdiction of the United States;

(iv) No areas meet the definition of critical habitat; or

(v) The Secretary otherwise determines that designation of critical habitat would not be prudent based on the best scientific data available.

As discussed earlier in this document, there is currently no imminent threat of collection or vandalism identified under Factor B for this species, and identification and mapping of critical habitat is not expected to initiate any such threat. In our SSA and proposed listing determination for the sickle darter, we determined that the present or threatened destruction, modification, or curtailment of habitat or range is a threat to the sickle darter and that those threats in some way can be addressed by section 7(a)(2) consultation measures. The species occurs wholly in the jurisdiction of the United States, and we are able to identify areas that meet the definition of critical habitat. Therefore, because none of the circumstances enumerated in our regulations at 50 CFR 424.12(a)(1) have been met and because there are no other circumstances the Secretary has identified for which this designation of critical habitat would be not prudent, we have determined that the designation of critical habitat is prudent for the sickle darter.Critical Habitat Determinability

Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for the sickle darter is determinable. Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

(i) Data sufficient to perform required analyses are lacking, or

(ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of “critical habitat. ”

When critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C 1533(b)(6)(C)(ii)).

For the sickle darter, the species' needs are sufficiently well known, but a careful assessment of the economic impacts that may occur due to a critical habitat designation is ongoing. Until these efforts are complete, information sufficient to perform a required analysis of the impacts of the designation is lacking, and, therefore, we find designation of critical habitat for the sickle darter to be not determinable at this time. We plan to publish a proposed rule to designate critical habitat for the sickle darter concurrent with the availability of a draft economic analysis of the proposed designation.II. Proposed Rule Issued Under Section 4(d) of the ActBackground

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary of the Interior (Secretary) shall issue such regulations as he deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S Supreme Court has noted that statutory language like “necessary and advisable” demonstrates a large degree of deference to the agency (see Webster v. Doe, 486 U.S 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9 of the Act.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a particular species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife, or include a limited taking prohibition (see Alsea Valley Alliance v. Lautenbacher, 2007 U.S Dist. Lexis 60203 (D. Or. 2007); Washington Environmental Council v. National Marine Fisheries Service, 2002 U.S Dist. Lexis 5432 (W.D Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see State of Louisiana v. Verity, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species” (H.R Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising this authority under section 4(d), we have developed a proposed rule that is designed to address the sickle darter's specific threats and conservation needs. Although the statute does not require us to make a “necessary and advisable” finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the sickle darter. As discussed above under Summary of Biological Status and Threats, we have concluded that the sickle darter is likely to become in danger of extinction within the foreseeable future primarily due to habitat degradation or loss stemming from hydrologic alterations by impoundments, including dams and other barriers; ***land*** development that does not incorporate BMPs; and diminished water quality from point and nonpoint source pollution and siltation. These threats contribute to the negative effects associated with the species' habitat fragmentation and isolation and potential effects of climate change. The provisions of this proposed 4(d) rule would promote conservation of the sickle darter by encouraging management of the landscape in ways that meet both watershed and riparian management considerations and the species' conservation needs. The provisions of this proposed rule are one of many tools that we would use to promote the conservation of the sickle darter. This proposed 4(d) rule would apply only if and when we make final the listing of the sickle darter as a threatened species.Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of the sickle darter by prohibiting the following activities, except as otherwise authorized or permitted: Import or export; take; possession and other acts with unlawfully taken specimens; delivery, receipt, transport, or shipment in interstate or foreign commerce in the course of commercial activity; or sale or offer for sale in interstate or foreign commerce.

Threats to the species are noted above and described in detail under Summary of Biological Status and Threats. The most significant threat expected to affect the species in the foreseeable future is loss and fragmentation of habitat from siltation, water quality degradation, and impoundments and their effects. A range of activities have the potential to affect the sickle darter, including commercial activities, ***agriculture***, resource extraction, and ***land*** development. Regulating these activities would help preserve the sickle darter's remaining populations, slow the rate of population decline, and decrease synergistic, negative effects from other stressors. Therefore, regulating activities that increase siltation, diminish water quality, alter stream flow, or reduce fish passage would help preserve and potentially provide for expansion of remaining populations and decrease synergistic, negative effects from other threats.

Under the Act, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulations at 50 CFR 17.3 Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating incidental and intentional take would help the species maintain population size and resiliency.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32 With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act.

There are also certain statutory exceptions from the prohibitions, which are found in sections 9 and 10 of the Act, and other standard exceptions from the prohibitions, which are found in our regulations at 50 CFR part 17, subparts C and D. Below, we describe these exceptions to the prohibitions that we are proposing for the sickle darter.

Under our proposed 4(d) rule, take of the sickle darter would not be prohibited in the following instances:

Take is authorized by a permit issued in accordance with 50 CFR 17.32; Take results from actions of an employee or agent of one of the Services or of a State conservation agency that is operating under a conservation program pursuant to the terms of a cooperative agreement with the Service; Take is in defense of human life; and Take results from actions taken by representatives of one of the Services or of a State conservation agency to aid a sick specimen or to dispose of, salvage, or ***remove*** a dead specimen that is reported to the Office of Law Enforcement.

We also propose to allow Federal and State law enforcement officers to possess, deliver, carry, transport, or ship any sickle darters taken in violation of the Act as necessary in performing their official duties.

In part, these exceptions to the prohibitions recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Service shall cooperate to the maximum extent practicable with the State in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the sickle darter that may result in otherwise prohibited take for wildlife without additional authorization.

In addition to the exceptions to the prohibitions described above, we propose certain species-specific exceptions to the prohibitions to provide for the conservation of the sickle darter. Consistent with all of the proposed exceptions and based on the best available information, our proposed 4(d) rule identifies the following activities, which are unlikely to result in take of the sickle darter in violation of section 9 if carried out in accordance with existing regulations and permit requirements and outside the February through March spawning season:

These 4(d) rule exceptions cover actions that improve or restore sickle darter habitat, including channel restoration and streambank stabilization, bridge and culvert replacement (including transportation projects that enhance fish passage), as well as low-head dam ***removal***. To encourage protection of streams occupied by the sickle darter, we have included in the exceptions silvicultural activities that implement State best management practices. Within each occupied river system, these actions will promote expansion of the population's range and reduce the population's fragmentation and isolation. Additionally, these actions can reduce stressors that impact the sickle darter, including runoff of siltation and pollution, and may (through riparian reforestation) mediate local water temperatures expected to increase with climate change.

Habitat restoration actions and silvicultural activities excepted by the 4(d) rule may result in some minimal level of harm or temporary disturbance to the sickle darter. For example, a culvert replacement project would likely elevate suspended sediments for several hours and the darters would need to move out of the sediment plume to resume normal feeding behavior. Because the 4(d) rule exceptions do not apply during the sickle darter's two-month spawning period, a critical phase of the species' life history, the potential for take is further minimized. Overall, these activities benefit the species by expanding suitable habitat and reducing within-population fragmentation, contributing to conservation and recovery.

Based on the best available information, the following activities may potentially result in violation of section 9 of the Act; this list is not comprehensive:

(1) Unauthorized handling, collecting, possessing, selling, delivering, carrying, or transporting of the sickle darter, including interstate transportation across State lines and import or export across international boundaries.

(2) Destruction or alteration of the species' habitat by discharge of fill material, draining, ditching, tiling, pond construction, stream channelization or diversion, or diversion or alteration of surface or ground water flow into or out of the stream (i.e , due to roads, impoundments, discharge pipes, stormwater detention basins, etc.).

(3) Introduction of nonnative species that compete with or prey upon the sickle darter.

(4) Discharge of chemicals or fill material into any waters in which the sickle darter is known to occur.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Kentucky Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the sickle darter. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service, where appropriate. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see Information Requested, above).Required DeterminationsClarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(1) Be logically organized;

(2) Use the active voice to address readers directly;

(3) Use clear language rather than jargon;

(4) Be divided into short sections and sentences; and

(5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in ADDRESSES. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.National Environmental Policy Act (42 U.S.C 4321

It is our position that we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C 4321 et seq.) in connection with listing a species as an endangered or threatened species under the Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244).Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal ***lands*** are not subject to the same controls as Federal public ***lands***, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that no Tribal ***lands*** fall within the range of the sickle darter, so no Tribal ***lands*** would be affected by the proposed rule.References Cited

A complete list of references cited in this rulemaking is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) and upon request from the Kentucky Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).Authors

The primary authors of this proposed rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Kentucky Ecological Services Field Office.Signing Authority

The Director, U.S Fish and Wildlife Service, approved this document and authorized the undersigned to sign and submit the document to the Office of the Federal Register for publication electronically as an official document of the U.S Fish and Wildlife Service. Aurelia Skipwith, Director, U.S Fish and Wildlife Service, approved this document on October 30, 2020, for publication.Dated: October 30, 2020.Madonna Baucum,Regulations and Policy Chief, Division of Policy, Economics, Risk Management, and Analytics, Joint Administrative Operations, U.S Fish and Wildlife Service.List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:Part 17 Endangered and Threatened Wildlife and Plants

1. The authority citation for part 17 continues to read as follows:Authority

16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.

2. Amend § 17.11(h) by adding an entry for “Darter, sickle” to the List of Endangered and Threatened Wildlife in alphabetical order under FISHES to read as set forth below:§ 17.11Endangered and threatened wildlife.

\* \* \* \* \*

(h) \* \* \*Common name Scientific name Where listed Status Listing citations and applicable rules \* \* \* \* \* \* \* Fishes \* \* \* \* \* \* \* Darter, sickle Percina williamsi Wherever found T [Federal Register citation when published as a final rule]; 50 CFR 17.44(ff). 4d \* \* \* \* \* \* \*

3. Amend § 17.44 by adding a paragraph (ff) to read as set forth below:§ 17.44Special rules—fishes.

\* \* \* \* \*

(ff) Sickle darter (Percina williamsi).

(1) Prohibitions. The following prohibitions that apply to endangered wildlife also apply to the sickle darter. Except as provided under paragraph (ff)(2) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(2) Exception s from prohibitions. In regard to this species, you may:

(i) Conduct activities as authorized by a permit under § 17.32

(ii) Take, as set forth at § 17.21(c)(2) through (c)(4) for endangered wildlife.

(iii) Take as set forth at § 17.31(b).

(iv) Take incidental to an otherwise lawful activity caused by:

(A) Channel restoration projects that create natural, physically stable, ecologically functioning streams (or stream and wetland systems) and that take place between April 1 and January 31. These projects can be accomplished using a variety of methods, but the desired outcome is a natural channel with low shear stress (force of water moving against the channel); bank heights that enable reconnection to the floodplain; a connection of surface and groundwater systems, contributing to perennial flows in the channel; riffles and pools composed of existing soil, rock, and wood instead of large imported materials; low compaction of soils within adjacent riparian areas; and inclusion of riparian wetlands.

(B) Streambank stabilization projects that use bioengineering methods to replace pre-existing, bare, eroding stream banks with vegetated, stable stream banks, thereby reducing bank erosion and instream sedimentation and improving habitat conditions for the species, that take place between April 1 and January 31. Stream banks may be stabilized using live stakes (live, vegetative cuttings inserted or tamped into the ground in a manner that allows the stake to take root and grow), live fascines (live branch cuttings, usually willows, bound together into long, cigar-shaped bundles), or brush layering (cuttings or branches of easily rooted tree species layered between successive lifts of soil fill). Stream banks must not be stabilized solely through the use of quarried rock (rip-rap) or the use of rock baskets or gabion structures.

(C) Bridge and culvert replacement/***removal*** projects or low head dam ***removal*** projects that ***remove*** migration barriers or generally allow for improved upstream and downstream movements of sickle darters while maintaining normal stream flows, preventing bed and bank erosion, and improving habitat conditions for the species, and that take place between April 1 and January 31.

(D) Silviculture practices and ***forest*** management activities that:

(1) Implement State best management practices, particularly for Streamside Management Zones and stream crossings; and

(2) When such activities involve sickle darter spawning habitat, are carried out between April 1 and January 31.

(E) Transportation projects that provide for fish passage at stream crossings.

(v) Possess and engage in other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(2) for endangered wildlife.

\* \* \* \* \*[FR Doc. 2020-24471 Filed 11-10-20; 8:45 am]BILLING CODE 4333-15-P

**Load-Date:** November 18, 2020

**End of Document**



[***ARE THESE THE LATEST VICTIMS OF THE TRENDY REWILDING' CRAZE?***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62TN-YJT1-JCBD-D32F-00000-00&context=1516831)

DAILY MAIL (London)

June 2, 2021 Wednesday

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**Section:** Pg. 30

**Length:** 2046 words

**Body**

The Mail apologises for printing these shocking pictures of deer including one in calf killed illegally near a Scottish estate. But as GUY ADAMS reveals, they may be evidence in a criminal inquiry

BY GUY ADAMS

Shortly after 2pm on Tuesday, May 11, a 35-year-old man from Dunvegan, on the north-west coast of Skye, was driving to the next-door village of Claigan when he spotted something grisly by the side of the road.

About 20 yards away, in the heather above Loch Suardal, was the decomposing carcass of a heavily pregnant female deer.

She was lying on her side, eyes wide open and neck twisted backwards, with what looked like a bullet wound in her belly.

It stank to high heaven and had probably been there a few days because the stomach and belly had been eaten out by birds and foxes,' the man tells me.

I tried to turn her over to see whether there was an exit wound from the bullet but when I went to pull the back legs, the body of her calf came slipping out.'

A few hundred yards up the hill, also lying on its side, was the carcass of a second hind (female deer). She also appeared to have been shot, in the shoulder.

Elsewhere on the heather, over the ensuing few days, the man found the decomposing remains of five more deer.

It's more than a month after the end of the stalking season, when hinds are likely to be carrying young and it's illegal to kill them,' he says. So I was outraged that someone would shoot so many, and do it so incompetently that they missed vital organs and left the animals to run off and suffer a long, painful death.

I was also disgusted that, having done this, the people responsible left the carcasses to rot, rather than ***removing*** them from the hill so they could end up in the food chain. It's completely wrong and unethical and I say that as someone who stalks myself.'

The man took photographs. Later that day, he uploaded ten of them to Facebook, with an angry caption.

Fast-forward a couple of weeks and those graphic pictures have been circulated far and wide, generating thousands of shares' and furious comments on social media platforms.

They are also causing ructions in this remote community and are now the subject of a police investigation.

The criminal inquiry revolves around claims the deer were killed as part of an experiment in a trendy, but at times controversial, form of ***land*** management known as rewilding'.

Detectives are trying to establish whether the seven deer (maybe more) were shot illegally to prevent them damaging small trees due to be planted near Loch Suardal as part of a taxpayer-funded native woodland creation project'.

Killing any female deer after April 1 is illegal in Scotland unless a special licence has been secured from NatureScot, the country's environment agency, under rules designed to ensure that dependent young are not left orphaned. No such licence was issued on Skye this year.

At the centre of the probe into what happened and who may be responsible is the well-connected owner of the hill where this massacre seems to have taken place.

He is Hugh Magnus MacLeod, 30th hereditary chief of the MacLeod clan and one of Scotland's highest-ranking toffs, who owns 42,000 acres around 13th-century Dunvegan Castle, which is both his family seat and a popular tourist attraction.

Police are interviewing locals to discover who was responsible for shooting the deer in the photographs. The clan chief will neither confirm nor deny responsibility for their deaths, a spokesman insisting only that he has not authorised an illegal mass cull' in recent weeks.

Behind the scenes is a simmering row with political overtones.

It began last December, when MacLeod, a 47-year-old divorcé and former TV director who divides his time between London and Skye, secured a £1 million grant from the Scottish Government to plant 371,875 trees on farmland near the castle that was previously used for grazing sheep.

The scheme, covering 600 acres, was publicised as a pioneering exercise in rewilding', in which ***agricultural*** ***land*** is taken out of production and allowed to return to its natural' state.

At the time, MacLeod said in an interview that he had come across the modish concept a couple of years ago at a rewilding salon' hosted by Lisbet Rausing, heir to the Tetra Pak fortune.

His initial tree-planting was, he said, to be the first phase in a gradual plan to transform the moorland landscape into a ***forest*** that would support such threatened species as pine martens, red squirrels and beavers. Nature needs a little bit of a helping hand,' he said. If you start planting native woodlands that belong in a place, they start to self-seed and natural regeneration kicks off.'

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Like most rewilding supporters, who are often well-meaning, Goldsmith believes the process brings myriad benefits to plants, animals, insects and birds, may assist in alleviating climate change and will help to reverse the decline of species threatened by modern intensive ***agriculture***.

His brother Zac, who also backs rewilding and is a close ally of Boris Johnson's wife Carrie, was appointed a junior Defra minister by Johnson after the 2019 election. And, thanks in part to his efforts, large amounts of government money are expected to be diverted from traditional farming into rewilding the countryside via schemes such as the Skye project.

Yet in practice, such endeavours often end in bitter controversy.

Opponents point out that taking farmland out of production means the UK needs either to cultivate its remaining ***land*** more intensively or import more food, neither of which helps the environment.

They also argue that the concept usually involves wealthy metropolitan types seeking to interfere with and in some cases destroy the way of life of farming communities, causing ugly disputes in the process.

Last year, Ben Goldsmith was at the centre of one such dispute when he decided to release more than 30 red deer on his 250-acre estate in Somerset, which he is rewilding. He failed to fence them in, so the animals promptly left his ***land*** and caused widespread damage on adjacent farms. He then told a series of lies to his neighbours and fabricated several photographs to try to show he had rounded them up.

But the hoo-ha on Skye appears possibly to revolve around efforts to eliminate, rather than reintroduce, red deer on the site of his fellow eco-toff's rewilding project.

At the heart of the story is a simple truth: that deer love eating small trees, especially their leaves. Indeed, a small herd will, in a few weeks, more or less destroy a juvenile woodland of the sort taxpayers are handing MacLeod £1 million to create.

With this in mind, contractors from Scottish Woodlands Ltd, a firm that will plant the small saplings in the coming months, spent the winter erecting a deer-proof fence around the 600-acre site. However, as the fence neared completion, it became apparent that a large number of deer had become enclosed inside it.

Before April 1, MacLeod and his employees did their best to reduce the population. Indeed, as a condition of their Scottish Government grant, they are required to shoot 45 each year (but only during the legally defined season) to help keep the overall population of deer on Skye in check. Similar deer eradication projects are under way in other corners of Scotland.

Unfortunately, efforts to ***remove*** deer from inside MacLeod's fence were not enough, and dozens remained once the legal season had ended.

A stalker employed by the Dunvegan Estate, Davie Urquart, made efforts to herd the deer out of a gap that remained in the fence. What a day for moving deer,' he declared on Facebook on April 26, posting a picture of his dog sitting in bright sunshine on a hillock by Loch Suardal. A shame, but a better option than culling them out.'

It is unclear how many deer were persuaded to leave. But they are wild animals which, unlike sheep, are not known for their ability to follow the instructions of one man and his dog.

About a fortnight later, the first two illegally shot deer were photographed near by. Both had died inside the fence, within yards of it.

Their deaths are now the subject of fierce debate, with several theories doing the rounds. Some observers have speculated that they may have been shot by poachers, who often ***target*** deer close to main roads.

This is the Wild West of Skye and the fact that they have been so poorly shot makes me wonder if it was a botched job by a poacher, maybe working after dark using car headlights,' says a stalker with connections to a nearby estate. That said, poachers want to sell the carcass and make money, and that obviously didn't happen here.'

Others wonder if the deer may instead have been killed by disgruntled crofters as part of an attempt to create ugly headlines for the clan chief.

There is certainly ill-feeling between MacLeod and the community over the rewilding scheme, as there seems to be with so many such initiatives. This dates back to an interview MacLeod gave to The Times newspaper, in which he said he wanted to restore Skye's unnatural “wet desert” landscape, which is a legacy of centuries of depredation caused by over-grazing'.

The remarks prompted a furious riposte from Hebridean farmers upset at being lectured by, as one put it, a rich aristocrat who divides his time between Scotland and Chelsea'.

Iain Beaton, a nearby crofter, told reporters: The language used to describe the ***land*** on Skye “unnatural wet desert” and a “lunarscape” is deeply offensive to local farmers and crofters who make a living from the ***land***.' The Scottish Crofting Federation said the scheme was pandering to green tokenism with public money that could be better spent'.

Yet informed locals are also sceptical that upset crofters would have either the time or the inclination to kill the deer illegally as part of a counter-offensive. People are angry with the estate, right enough, but the idea that a crofter would pull this sort of stunt is not to my mind credible,' a local councillor tells me. Aside from anything else, it's lambing time and they are way too busy for that.'

The Dunvegan Estate is also keen to play down that suggestion.

A source with knowledge of its affairs said they were at this stage not in a position to say definitively whether the deer whose images went viral on Facebook had, or had not, been shot by MacLeod or one of his employees. But they thought it unlikely that crofters or poachers were to blame.

In a statement, MacLeod's spokesman said he was aware of the images that have been in circulation on social media and the estate is still looking into the incident in detail.

While that is ongoing, the estate does not intend to fuel some of the speculation and rumour that has been circulating on social media.

The estate takes its commitments under deer management regulation and legislation very seriously and we can confirm that no mass culling has taken place out of season.'

Crucially, the statement failed to deny responsibility for the deaths of the deer in the photos, and it is fair to say that killing a few animals does not constitute a mass cull'.

Why carcasses would be left to rot rather than taken away so their meat could enter the human food chain is also a mystery. However, selling venison out of season can be problematic, and some proponents of rewilding do endorse such practices because they believe the venison can provide food for birds of prey and other species.

Mr Urquart, the estate's stalker, said he had written a full report on the whole thing, which has been sent to the estate office. However, he denied being personally responsible for shooting the deer, saying: I do not and will not shoot hinds out of season. Folks that know me know where I stand on this.'

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© Daily Mail

**Load-Date:** June 1, 2021

**End of Document**



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MailOnline

June 1, 2021 Tuesday 8:52 PM GMT

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**Section:** NEWS; Version:1

**Length:** 2076 words

**Byline:** Guy Adams for the Daily Mail

**Body**

* WARNING - Graphic content below

1. Detectives are trying to establish whether seven deer (maybe more) were shot illegally to prevent them damaging small trees to be planted near Loch Suardal
2. Deaths are now subject of fierce debate, with several theories doing the rounds
3. Killing female deer after April is illegal in Scotland unless given a special licence

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**Load-Date:** June 1, 2021

**End of Document**



[***FAILURE OF THE ENDANGERED SPECIES ACT; Congressional Record Vol. 167, No. 103 (House of Representatives - June 14, 2021)***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62XR-M051-F0YC-N0GW-00000-00&context=1516831)

Impact News Service

June 15, 2021 Tuesday

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**Length:** 7374 words

**Body**

Washington: The Library of Congress, The Government of USA has issued the following house proceeding:

The SPEAKER pro tempore. Under the Speaker's announced policy of January 4, 2021, the gentleman from Washington (Mr. Newhouse) is recognized for 60 minutes as the designee of the minority leader. General Leave Mr. NEWHOUSE. Madam Speaker, before I begin, I ask unanimous consent that all Members may have 5 legislative days in which to revise and extend their remarks and include extraneous materials on the topic of my Special Order. The SPEAKER pro tempore. Is there objection to the request of the gentleman from Washington? There was no objection. Mr. NEWHOUSE. Madam Speaker, nearly 50 years ago, President Nixon signed the Endangered Species Act into law, which was designed to do two things: Number 1, prevent species from going extinct; and Number 2, promote their recovery back to health and healthy populations. Since then, hundreds of plants and animals have joined the endangered or threatened species list, spurring conservation and recovery efforts at all levels of government. While this landmark species protection law is well-intentioned and has accomplished many good things, it has become an endless source of conflict and, unfortunately, many rightly consider it a dismal failure. The Endangered Species Act hasn't seen meaningful reform since 1973. And since then, less than 3 percent of species have recovered and been delisted. The Congressional Western Caucus has long advocated for improvements to modernize the ESA and make it more effective for our species and more transparent for the American people. My colleagues in the caucus have advocated on behalf of the rural communities that we represent who are severely impacted by the ESA listing decisions and who, in many cases, are working in collaboration with private landowners, community groups, Tribes, and local governments to promote successful species recovery and ***land*** conservation. And we have advocated to administration after administration the need to follow the science and fulfill the congressional intent of the law, which is to promote recovery of these species and then ***remove*** them from the endangered species list. That is why I am so proud to host this Special Order tonight, where you will hear from several of my Western Caucus colleagues about successful, locally led recovery efforts taking place across the country; the different impacts that ESA listing decisions have had on local communities and economies; and some of the legislative reforms needed to finally bring the ESA into the 21st century. Over the past few years, the Trump administration made great progress by finalizing several updates to the ESA to modernize this bedrock law and to improve our ability to protect endangered and threatened species and celebrate our recovery successes. The Trump administration created a transparent process for designating critical habitat for listed species, and finalized a commonsense definition that a critical habitat must indeed be critical to the species at hand. Who would have thought? They streamlined and modernized the process for consultation between government agencies to determine the scope of listing impacts, including requiring the consideration of the economic impact a listing could have on local economics. Lastly, they finalized a rule that rewards State and landowners for successful recovery actions by loosening mandated regulations on species management as the species begin to recover and are down-listed from endangered to threatened. Unfortunately, earlier this month, the Biden administration announced plans to rescind or reverse these improvements. This is exactly the wrong direction we should be heading, Madam Speaker. As we have seen over the past four decades, the ESA has become a weapon used by extreme environmentalists and serial litigators to slow or halt critical economic development and ***land*** management projects in rural communities throughout the United States. From preventing the restoration of our ***forests***, to creating overburdensome roadblocks for domestic energy development, the ESA, in its current form, simply does more harm than good. Oftentimes, these ESA regulations negatively impact the very people we need as conservation partners. Through ***land*** use restrictions, reduced property values, and costly permitting requirements, unilateral and far-sweeping listing decisions ***remove*** incentive for these local partners to come to the table. In effect, it makes enemies out of the people who are most critical to our efforts instead of treating these species like the assets they are to our local ***lands***. We must empower our local, State, and Tribal partners to collaborate on comprehensive recovery and conservation efforts, and we know this to be true. More stringent regulations will not lead to more successful species recovery. In rural America, we value the responsible management of plants, animals, and native species, but we have to do so in a way that doesn't destroy our economies, decimate our ***lands*** or leave our communities vulnerable to natural disasters. We need flexible tools, not one-size-fits-all regulations from the Federal [[Page H2737]] Government to be successful in our shared goal of recovery of our Nation's endangered and threatened species. Tonight, we are here to raise the voices of rural communities that are impacted by the ESA and to make our message heard. Madam Speaker, I yield to my good friend from the great State of Minnesota (Mr. Stauber), who is the ranking member of the Subcommittee on Energy and Mineral Resources for the Committee on Natural Resources. Mr. STAUBER. Madam Speaker, I rise with my colleagues in the Congressional Western Caucus to discuss abuse of the Endangered Species Act, a law passed with good intentions, but weaponized by radicals to fight hunting, fishing, mining, logging, transportation, and our way of life. In my district in northern Minnesota, the dramatic rise of the gray wolf has posed a threat to our deer herds, our livestock, and our family pets. The Minnesota Deer Hunters Association considers it a top threat to our hunting way of life. Meanwhile, it wreaks havoc on our cattle ranchers throughout northern Minnesota. One rancher lost 26 cows to wolves in just 1 year. In 2013, then-President Obama's Fish and Wildlife Service rightfully delisted the gray wolf. {time} 2045 Why? Because the gray wolf had clearly recovered. It had exceeded population ***targets*** by as much as 300 percent. And, no, this is not a statistic from hunters or ranchers. This is straight out of a 2013 Fish and Wildlife Service press release. Dan Ashe, Obama's Fish and Wildlife Service then-Director, when the gray wolf was delisted, stated: ``An exhaustive review of the latest scientific information . . . shows that we have accomplished that goal with the gray wolf.'' Madam Speaker, what happened next? Activist judges in Washington, D.C , put the gray wolf back on the list just a couple of years later. And when Obama's Fish and Wildlife Service Director took a well- paying job with an activist group, his tune suddenly changed, and he wanted the gray wolf back on the endangered species list. Fortunately, the Trump administration did the right thing, listening to the science, and delisted the gray wolf last fall. However, the same problem with the ESA and activist groups remain, and it is widespread. Recently, the Fish and Wildlife Service declined to list the moose as an endangered species because their numbers are above ***targets***. This time, the radical activist lawyers said the quiet part out loud. In a Minneapolis Star Tribune article, the Center for Biological Diversity, which has significant influence over House Democrats, stated: ``Now it is going to be a lot harder to ensure that things like mines . . . don't go forward without protections for moose in place.'' Could their intentions be any more clearer, Madam Speaker? The purpose of the ESA is pretty straightforward: to protect endangered species. Tragically, the ESA is not always being used for conservation. It is being weaponized as a way to advance the far left's radical agenda. It is being used by the Green New Deal Democrat Party to stop progress. We need to update the Endangered Species Act to allow us to hunt, fish, mine, harvest timber, farm, and for other responsible uses. Let's reform the Endangered Species Act and maintain our way of life. Mr. NEWHOUSE. Madam Speaker, I thank Mr. Stauber and appreciate him bringing his perspective from the great State of Minnesota. Like he and his constituents, we in the State of Washington also understand the impact of the gray wolf and what impact it can have on our local ranchers, farmers, and communities. I thank him very much for his work on bringing control back to the State, where it should be. Madam Speaker, I yield to the gentleman from Arkansas (Mr. Westerman), who is the Republican ranking member on the Committee on Natural Resources. Mr. WESTERMAN. Madam Speaker, I thank the gentleman from Washington not only for holding this important forum tonight but also for his tremendous leadership with the Western Caucus, where we look at real solutions for rural America. Madam Speaker, America is blessed with an incredible abundance of wildlife. Many of these animals have become icons of our country. Look no further than the majestic bald eagle, the national symbol of freedom and American pride. With such rich biodiversity, we have a responsibility to respect and protect the species that call the United States home. When President Nixon signed the Endangered Species Act into law in 1973, its stated intent was simple: protect wildlife most at risk of extinction. While the law had just intentions, ambiguous language and lawsuits have allowed special interest groups to hijack the ESA, using it as a weapon against any projects or actions they oppose. This has had a particularly devastating impact on rural economies across the country as red-tape lawsuits block important projects and essential agency actions. One example of this, as my colleagues from California know, is continual ESA lawsuits over the 3-inch Delta smelt that have diverted trillions of gallons of water away from farmers in the San Joaquin Valley of California to create a man-made drought and double-digit unemployment in recent years. Despite these diversions, the fish populations of the Delta smelt continue decreasing, and more farmers are throwing in the towel because of the uncertainty. We can find another example in the Pacific Northwest. The 1990 listing of the northern spotted owl economically devastated rural communities in Oregon and Washington by virtually decimating the timber industry in the region. The collapse of the timber industry has actually hurt the northern spotted owl by making these ***forests*** into dense, overgrown powder kegs. Now, decades later, Americans are paying higher prices for building materials because much of our mill infrastructure was wiped out, never to return. ESA litigation has also prevented delisting of animals that have fully recovered, like the grizzly bear. The Western States that house grizzly bears undertook a herculean effort to recover them, to the point that the Fish and Wildlife Service found that grizzly bears in the Greater Yellowstone Ecosystem and Northern Continental Divide Ecosystem are fully recovered. This is not a new issue, as they first moved to delist the Greater Yellowstone population back in 2007. However, due to ESA lawsuits from radical special interest groups, both population segments are still listed. Unfortunately, examples like this now fill the endangered species list. This is diverting critical resources away from animals that actually need protection. This should be common sense. If an animal recovers and is thriving in its environment, it should be delisted, plain and simple. Yet, Democrat lawmakers and administration officials are so intent on pleasing the whims of special interest groups that they refuse to follow the science and to look at the facts. We must work together to close these loopholes. Earlier this month, the Biden administration announced it is rolling back significant ESA reforms. It is another example of how out of touch this administration is with rural Americans and endangered species as well. Under these policies, rural America is now what is in the most danger. Many of the reforms put in place under President Trump were born out of input from local communities most affected by the policies created in Washington. Yet, this administration seems bent on reinstating burdensome regulations in order to open up the door for environmental groups to again weaponize the ESA. Republican or Democrat, we can all agree that we want our most vulnerable species not just to survive but to thrive for generations. Using the ESA as a political battering ram will not accomplish this goal. We must return the ESA to its original intent: protecting wildlife that is most at risk. Anything more than that is a bureaucratic overreach and a giveaway to radical environmental groups. Madam Speaker, I thank the gentleman again for hosting this forum. [[Page H2738]] Mr. NEWHOUSE. Madam Speaker, I really thank my friend for his leadership on this very important issue. As was mentioned earlier, the ESA has a dismal recovery rate of just 3 percent. We have to work hard to strengthen this law in order to provide real results. We ought to be incentivizing private investment in species recovery, streamline decision-making, and promote the comprehensive efforts of State and local governments as well as Tribes. I want to just say I greatly appreciate the thoughts of the good gentleman from the Committee on Natural Resources. Madam Speaker, I yield to the gentleman from Indiana (Mr. Baird), one of my fellow farmers in Congress and a war veteran. I thank him for being with us tonight. Mr. BAIRD. Madam Speaker, I want to thank my colleague from the State of Washington for allowing me to have the opportunity to participate in this Special Order. Madam Speaker, I rise today on behalf of the communities and the residents of west central Indiana to share our experience with the Endangered Species Act. As an animal scientist and a farmer, I am a lifelong conservationist. I value the well-intentioned effort of the ESA to protect and conserve our Nation's most iconic species that define our landscapes and have shaped our heritage. Instead, however, I have repeatedly found myself discouraged with the implementation of this important act. As I shared here on the House floor a few weeks ago, Lakes Freeman and Shafer, near Monticello, Indiana, have been a popular tourist destination. It has been home to many small businesses, attractions, and a vibrant local economy for generations of Hoosiers. Unfortunately, though, a series of droughts and a tangle of bureaucratic red tape involving the ESA has made a devastating impact on this community. Following a listing on the endangered species list more than a decade ago of mussels found in the Tippecanoe River, the U.S Fish and Wildlife Service subsequently ordered a new higher volume of water to consistently flow out of the Oakdale Dam that forms Lake Freeman, in an effort to preserve these now-protected mussels. This executive action by unelected bureaucrats has crippled our once-thriving community. Businesses like the Tall Timbers Marina, local resorts, and the Madam Carroll cruise boat, as seen here, report catastrophic losses to revenue and depleted financial reserves. Homeowners along the lake report ruined seawalls, dried-up wells, and slashed resale values, even during this hottest real estate market of our lifetime. With zero regard for the economic and environmental catastrophe created, the Fish and Wildlife Service refuses to negotiate and continues to enforce a mandate designed to protect a population of mussels that have likely already died from the bacterial overload created when this 1,500-acre lake was reduced to a puddle, killing practically all the wildlife that used to call Lake Freeman home. Due to years of misinterpretation of the law, unchecked actions by unelected bureaucrats, and radical environmentalism, this once valuable law, designed to conserve America's natural beauty, has instead proved time and time again to be a death knell to actual ecosystems and the nearby communities. The Service consistently hides behind its ability to point fingers at other agencies, whose compliance is obligated by the ESA as a means to avoid rational management of the act and the species it protects. As thought leaders and policymakers, we have an important responsibility to preserve the natural beauty that God has bestowed on our ***land***. The Endangered Species Act was established with that mission at heart but has gone frightfully astray. It has been 40 years since the enactment of the ESA. Now more than ever, it is time to modernize this important law, to fix its broken parts to better serve its purpose and to allow for responsible solutions to disasters like Lake Freeman. I hope my colleagues will join me in this valuable effort. Mr. NEWHOUSE. Madam Speaker, I thank Mr. Baird and appreciate his leadership on this important issue. From farming to ranching to mining to forestry to recreational opportunities, the far-reaching impacts of the Endangered Species Act go wide. I thank him for bringing up those very important points. Madam Speaker, I yield to the gentleman from Kansas (Mr. Mann), my good friend and colleague from the town of Quinter. Mr. MANN. Madam Speaker, I thank the gentleman from Washington very much for his leadership with the Western Caucus and for hosting this Special Order tonight. Madam Speaker, I rise today, with my colleagues from the Western Caucus, to highlight progress made in the lesser prairie chicken population recovery through voluntary conservation efforts in Kansas. The lesser prairie chicken is a North American species native to the grasslands and southern Great Plains across New Mexico, Colorado, Oklahoma, Texas, and Kansas. These birds use the open areas of the plains to perform their courtship dance and build their nests on the ground, away from any roads or structures. {time} 2100 My district, the Big First of Kansas, is home to the most extensive range and largest population of the lesser prairie-chicken. Since the 1990s, there have been concerns regarding the lesser prairie-chicken population size and habitat, and the U.S Fish and Wildlife Service has considered listing the bird under the Endangered Species Act on multiple occasions. The Fish and Wildlife Service cited habitat fragmentation as one of the reasons for its population decline, as much of the area is used for cropland, grazing, and oil and gas development. However, we have seen perhaps the most significant population changes tied to the prolonged periods of drought across the chicken's range. At its lowest, the lesser prairie-chicken population fell to approximately 15,400 birds during the worst phase of the 2013 drought. As the population declined, stakeholders across the five states began conversations and plans to address this issue and partnered with local landowners and industry. The Kansas Department of Wildlife, Parks and Tourism teamed up with farmers and ranchers, the Lesser Prairie-Chicken Interstate Working Group, and other midwestern States throughout the bird's range to initiate conservation plans. In their work to help the lesser prairie-chicken, Kansans have conserved more than 40,000 acres of habitat through the Conservation Reserve Program at the U.S Department of ***Agriculture*** and private investments. Many of the voluntary conservation efforts have been directly funded by farmers and ranchers, the energy sector, and other landowners. As stakeholders make conservation changes, it is vital that the practices are mutually beneficial to both the lesser prairie- chicken and ***agriculture*** and energy producers. These voluntary efforts have yielded excellent results, with the lesser prairie-chicken population up to more than 34,400 birds in 2020. In Kansas, the population has been stable to increasing since 2013, while the entire population has been increasing since 2016. The population growth has occurred thanks to voluntary efforts, but also because of increased rainfall, which has also benefited many of the ***agricultural*** producers in the area. And so it is especially alarming and disappointing to see the Fish and Wildlife Service release a plan to list the lesser prairie-chicken under the Endangered Species Act as threatened in the northern population and endangered in the southern population. The potential ESA listing flies in the face of years spent and millions invested in voluntary conservation and goes against the clear data that the population has increased under those efforts. As usual, President Biden believes Federal overreach is the answer to a local and State issue, and his administration lacks trust in private landowners to take care of their own ***land***. I strongly and vehemently oppose the listing of the lesser prairie- chicken, and I will continue to push back on the [[Page H2739]] Biden administration's egregious overreach. Mr. NEWHOUSE. Madam Speaker, I appreciate very much Mr. Mann's participation in this Special Order but also his leadership on this very important issue. He gives clear examples in his own district of seeing the success in the recovery of, in his case, the lesser prairie- chicken through, I think I heard him say, voluntary conservation efforts. It just underscores the need for us to be able to recognize all of the efforts that are being taken on these species' behalf, utilize the best available science, and consider all efforts that are being made when assessing these listing decisions. I thank Mr. Mann, and I appreciate very much his contribution. Now, I would like to yield to the gentlewoman from New York (Ms. Tenney), a prospective member of the Western Caucus, one that we would be delighted to have her membership, but certainly appreciate very much her participation this evening to help us illustrate this very important issue to the American public. We are anxious to have her here this evening. Ms. TENNEY. Madam Speaker, I join my colleagues today urging commonsense policies to carry out the goals of the Endangered Species Act while allowing our communities to flourish. As stewards of our planet, we each have a responsibility to care for the environment and protect our wildlife while also caring for and addressing the needs of our human environment, which often gets left out in this conversation. However, today it seems more difficult than ever to have balanced discussions. Deeply entrenched special interests are increasingly using our small communities as pawns for their larger political ambitions. Unfortunately, the bureaucrats in both the Federal and State Government, especially in New York, have become more powerful than the people, and that is unacceptable. I want to bring to your attention what is happening in my community today. I represent New York's 22nd District, which stretches all the way from Lake Ontario, yes, a Great Lake, to the Pennsylvania border in the heart of beautiful, pastoral, upstate New York. On April 16, the U.S Army Corps of Engineers and New York State Department of Environmental Conservation ordered an immediate halting of a routine annual dredging project to clear ingress and egress into the lovely inlet of Sandy Pond, which is on the eastern shore of Lake Ontario, due to the sighting of a piping plover, a small shoreline bird that weighs less than 2 ounces. Even though there are over 10,000 of these birds today throughout the Great Plains and eastern seaboard, they remain listed as an endangered species in the Great Lakes region. The annual dredging project maintains safe ingress and egress into Sandy Pond. The seasonal dredging was one week from completion before the forced government closure. There are several hundred homes and campsites along this beautiful spot on Lake Ontario known as Sandy Pond, where people from around the Northeast have enjoyed this incredibly beautiful and unique place for over a century. The closure has been devastating to local businesses, residents, and visitors, who have already been suffering from the disruptions of the COVID-19 pandemic last summer. Property values alone in this region are in excess of $150 million, not including all the business revenues and sales tax lost from people coming to this region from really all around the Northeast and Canada. Despite this harsh Federal action, the two--there are now two--piping plovers' nests are not even close to the dredging site. I know because I went to the site, and I walked off the distance from the dredging site to the beginning of the designated habitat. The distance was clearly over 3,000 feet, just to get to the beginning of the site, where the birds are much farther down. I want to emphasize that the community cares deeply about the natural environment. They seek to preserve this natural environment and its natural splendor for generations to come, and they deeply care about the continued growth and continued population of this piping plover. The community has proposed a simple dredging, an economy-mode dredging, which would be less intrusive, to dispose of the sand in an alternative location that would be far away. This is a very modest and safe proposal. It is respectful and preserves the nesting site to the bird, and it is a perfectly reasonable accommodation. Unfortunately, the Federal and State bureaucrats have dug in and refuse to compromise, despite the fact that dredging can begin again safely and responsibly without threatening the life or the habitat of the birds. The Federal and State agencies have been unable to support their position yet with data or facts. We have had numerous conversations with them, public meetings, and press conferences, and they refuse to offer any opportunity for the residents to have some relief. All the while, the community at Sandy Pond continues to suffer, and the harm could be irreparable harm as the situation grows more dire each day, as the safe passage into Sandy Pond to and from Lake Ontario becomes impossible. The piping plover, interestingly, has not been seen in this part of Sandy Pond. Really it is sort of a rare resident. And it has been determined that actually piping plovers like dredged sand. It unearths minerals and nutrients for them, and they tend to be flocking now to these nesting sites. Sadly, a few years ago one of the pairs that did show up was killed by a fox, so we were unable to save that particular pair. There are far too many communities that have suffered from the whims of bureaucrats in Washington and Albany who just don't seem to care and seem to be hiding behind many of these rules and regulations when there are reasonable alternatives that will preserve the natural environment as well as the human environment. I am concerned that to make matters worse the Biden administration is barreling down a path of appeasement to the left lobbyists and special interests. The U.S Fish and Wildlife Service has already announced they are repealing recent reforms to the Endangered Species Act put in place under the last administration--and thank you for acknowledging the changes that were made. These changes will enact greater economic costs while doing very little to offer any additional conservation protections for the environment. Our communities need reasonable compromises to ensure the prosperity and enjoyment of our natural environment for all. This includes the economy as well as the wildlife and the natural environment. The Federal Government must be committed to this outcome as well as the State government. That is why I rise today, in support of ***targeted*** reforms to the Endangered Species Act that provide for commonsense solutions that will protect the natural environment for all species. Mr. NEWHOUSE. Madam Speaker, I thank Ms. Tenney for illustrating what is necessary common sense and finding a balance between protecting species as well as protecting a region's economic stability. I thank her very much for her leadership in that overall picture. We look forward to continuing to work with her. Madam Speaker, I yield to the gentleman from California (Mr. LaMalfa), the ranking member of the Subcommittee on Conservation and Forestry of the Committee on Natural Resources. {time} 2110 Mr. LaMALFA. Madam Speaker, I thank my colleague from the State of Washington, a good friend and chairman of our Western Caucus. I appreciate the time and the effort to have this time of education here tonight on the House floor, and for those who would watch and want to actually learn what goes on. So where do we start on the Endangered Species Act? Passed in 1973, signed by Republican President Richard Nixon. Now, if you were to listen to the rhetoric any time Republicans want to talk about reforming the Endangered Species Act or doing things that make sense, I think, out in the woods or with water storage, with mining the critical minerals we are going to need for a lot of these idealistic views, we are going to have more and more use of electricity, you would think that we were [[Page H2740]] going to be the plunderers of the ***land***. Completely not the case. The things that are going on right now in the time of drought we have in the West, in my home State of California, and the ongoing problems we have with nonmanaged timber ***lands***, U.S ***forest*** ***lands***, and the resulting effect that has on private ***lands*** with the bad neighbors of U.S ***lands*** are typically to them. If we are in a time of drought, we need to up our game more so on forestry, ***forest*** management, thinning, and using these materials for the good of people. We had a toilet paper shortage months ago, as ridiculous as that sounds in a first-world country like the United States, yet we are burning millions of acres every year. You could trace a lot of this back to the misuse, the abuse of the Endangered Species Act to stop and block the type of work we need to be doing. We have had hundreds of thousands of acres of fire like over there on the Western Coast, north coast of California. They try to put in a project after a 400,000-acre burn to do a minimal amount, 7,000 acres of clean up, of restoration, of ***removing*** some of the dead trees and brush and other things that were left behind along roadways and somewhere around communities, et cetera. Environmental lawsuits come in and stop them from doing 7,000 acres, less than 2 percent out of the fire. So what is the solution to this? Just watch these ghost trees stay there, watch the brush grow up around all this and become the next tinderbox for the next fire in 5 or 7 years? That seems to be the solution by those on the far left that use the Endangered Species Act as a weapon to stop progress for people, as well as nature, as well as the environment. California is in the throes of drought right now big time. Our reservoirs are way down from just 2 years ago when they were all practically full, and 2 years before that topped off, too. You may recall Lake Oroville, the Oroville Dam had the spillway break apart in the early part of 2017, because the lake was actually flowing over the top of the emergency spillway. The dam is in fine shape. The spillway has been rebuilt. And we have stored a lot of water between then and now. So what has gone on? So much water has been released out to the Pacific Ocean and not used for people use, for ***agricultural*** use or even smart environmental use. The usage of the Endangered Species Act as a weapon has devastated so much of ***agriculture*** in California, which maybe people don't realize that 90 percent of certain types of crops, the vegetable crops that the United States people use come from California. Most of the almonds that you would use come from California. Where is this going to come from if California is out of business because of the misuse and abuse of the Endangered Species Act, because someone might decide the coho salmon up in the Klamath Basin is more valuable than the sucker fish in the Klamath Lake or the water foul that gets forgotten about in the basin right around there? Last year, we had a devastating kill on ducks and other wildlife in that Klamath Basin area because they couldn't get water through the ***agricultural*** system to where the refuges are for the ducks. So what species is it we are going to pick? The water in the Klamath project actually is assigned ***agriculture*** use. The Klamath project added additional water storage space to the existing Klamath Lake. Oregon courts have already ruled a couple times that additional water belongs to ***agriculture***. It is not something for the Bureau of Reclamation and the Department of Interior to use in order to make their equations work out on the failed application to salmon in order to, in their idea, flush a virus out of the Klamath River. There is other evidence out there saying this is actually the opposite of what you should do. That the virus--the C. shasta virus is actually propagated by these additional flows. It is done year after year after year, and the virus keeps returning. Maybe you need to let that stuff dry out. Also, the sucker fish that they are trying to protect in the lake, the bottom feeding fish, too much water in the lake studies show by the NAS--National Academy of Sciences--that too much water in that lake makes them more vulnerable to predators and doesn't help the sucker fish, which is good at living in a shallow amount of water. So we are going in opposite directions. ***Agriculture*** is devastated in the Klamath Basin. You are probably not going to see the potatoes that In-N-Out Burger uses, horseradish, mint, other products, as well as a lot of hay crops. They are not going to happen this year, except for whatever water they can get from wells up there; not going happen. So when you see these things not on your store shelf anymore, you will know that there is something going on, or when you see them highly overpriced because we have to get them from some foreign country. You are going to see the root causes because the California water supply has been frittered away for other things besides useful purposes. And this isn't in defiance of the ESA or helping species, but the right science isn't being used. When you have one-term paper written being used as gospel on the Klamath River as setting policy versus a lot of other evidence--they want to ***remove*** the hydroelectric dams on the Klamath River. Now, when we are talking about drought in California, when we already have lakes and reservoirs that are low, we have--Lake Oroville is going to be at dead pool probably about mid-August. Now, what is the temperature in mid-August? Not quite near what my colleague in Arizona was speaking about, but it is hot. So when we have this water supply run out, unable to produce the hydroelectric power that we normally could because we could store it, then we are going to have more power shortages, not just because of power shutoffs. Because when the wind blows in California, now we have to shut off the power because trees and things might blow branches into the power lines and cause another devastating fire, like what is known as the Camp Fire that devastated the town of Paradise, also in my district. Where is the common sense with this? Where is the common sense of applying if we have drought conditions or, as the left likes to talk about every other speech in this Chamber, climate change, the religion of climate change? Okay. If the blankety-blank climate is changing, why aren't we storing more water since we, as people, are smart enough to know we will need a water supply? Why aren't we doing more to cause electricity be generated at that water storage site? Why aren't we doing more to trim and manage our ***forests*** that are overcrowded? Way too many trees per acre when they have been managed that way for 100 years. Instead, we go on and on, and somebody comes up with a lawsuit to prevent us from managing ***forests*** that way, prevent us from storing additional water. Not to mention when we talk about all cars have to become electric by 2035. I know a lot of people who aren't interested in buying electric cars. What happened to the choice people have of vehicles, the size and the style they seek to have? Yet we are hell-bent on electrifying everything. In the bay area, they want to ban gas stoves and gas appliances in people's homes because of some idealistic view of the environment and somehow tying that back to the misuse of the Endangered Species Act. All this ties together. The Endangered Species Act has been a great tool to shut down the things we need to do, whether it is the expansion of a highway, water storage. Shasta Dam right now in my district could be raised 18 feet and add right away 640,000 acre-feet of water on those full years. 640,000 acre-feet would be enough for 1.2 million homes or 200,000 acres of crops that people watching this right now like to have for their fresh fruits, for their salads, for their vegetables, whatever it would be. And this is all going to be gone. Do you like imported oil? Did you love the oil shortages back in the seventies? Do you like this $4 or $5 or $6 gas and diesel we are having right now? [[Page H2741]] Then you are going to love imported food. And the Endangered Species Act has been used as a weapon to stop people from farming, from timbering, from mining, basic things that we need in order to have our electronics, to have copper for our wiring, any of those things. {time} 2120 It has been such a weapon since 1973, when it was passed with good intentions. And I still think we need to have it. It saved the bald eagle. It saved a lot of things. But also, its record overall, looking at savings of endangered species, is a pretty low number. Why? Because of ridiculous regulations and ridiculous biological opinions that don't even connect the dots of how this is going to help the salmon in the Klamath River or farther up in Washington where they want to rip some of those dams out, too, and take away that hydroelectric power. Where are we going to get the stored water? Where are we going to get the hydroelectric power? You want to completely rely on what is a narrow part of the grid, solar power or wind power? You can't even rely on those, not for a major part of the grid. We need to have 24-7 electricity you can count on with either biomass, wood products stacked on the deck, the waste wood that should come from the forestry that we should be doing but aren't doing nearly fast enough, or natural gas plants. We have so much gas in this country now because of hydraulic fracturing, but that is vilified, too. Pipelines bringing energy where it is needed is vilified, too, because they are using an endangered species somewhere as a tool to stop these developments. Americans, enjoy these high prices you are getting right now. Enjoy these shortages of electricity, of fuel, the higher cost of food, the shortage of certain food items, because the usage of the Endangered Species Act--and the usage of other environmental laws that have been abused--that has been completely taken out of context from the original intent like Congress passed back in 1973 or layered upon in recent years. We have to reform this process. It is not because Republicans want to plunder the planet. That is so tiresome. Any time we talk about ***forest*** management, oh, you are going to clear cut everything--I'm from northern California--from here to Oregon, or somewhere else. That is not it at all. Talk to any smart timber operation, and they have 80- to 100-year plans for the private ***lands*** that they manage. If you could fly over and look at how these timberlands are managed, you can tell there is generally a checkerboard of private ***land*** versus Federal ***land***. You can see the different squares as they are managed either before a fire, ongoing, or after a fire. Just fly over one 3 years after a fire and see who has actually been out there cleaning up their ***lands*** and trying to restore things versus unmanaged Federal ***land***, which is still the big mess it was right after the fire. You will see the way the government is doing it, the way the left is foisting these ridiculous rules and laws upon us and not allowing us to do reasonable reform to bring just a little bit of balance back into what was passed 50 years ago into what we have to deal with. At this time, when we are watching things go way off-kilter here under this administration, I just remind those watching to look at the root cause. It all ties together, the Endangered Species Act, other environmental laws, other lawsuits, when you can't even turn around to do a simple thing without somebody coming after you, suing you over it. Look around your own home. Try to build a deck on your own home and someone is going to try to environmentally slow you down on that these days. Farmers are getting fined for building a pond on their ***land*** in the Western States in order to retain a little more water for their cattle. When you see the high prices of these things all happening, look at the root cause. Enjoy these high prices of fuel and electricity and the shortage there, and know it is not because of our policies here but because of the policies of misuse and abuse of endangered species laws, of environmental laws, and all the lawsuits that go along with them. Mr. NEWHOUSE. Madam Speaker, the gentleman has certainly been a true leader on this issue and a passionate, experienced, and knowledgeable voice. We appreciate his work on the Western Caucus. We cannot continue to use a one-size-fits-all approach. That often leads to mismanagement. The gentleman's examples and illustrations bear that out to be true, and I look forward to continuing to work with him on this issue. As I mentioned earlier, the Biden administration has proposed a massive rollback of recent improvements to the ESA, or the Endangered Species Act. Many members from the caucus and across the country and I are very concerned that these rollbacks will hamper our ability to work with local leaders on species recovery. I think it is also worth mentioning that the administration's actions are in direct contrast to their report on the proposed 30 by 30 initiative, which aims to conserve 30 percent of our Nation's ***lands*** and waters by the year 2030. Their report claims that as part of this initiative, they will recognize and reward voluntary conservation efforts of private landowners and recognize the contributions of farmers and ranchers, ***forest*** owners, and others in rural America. Instead, they are looking to impose even more Federal restrictions on these conservation partners, and that is the opposite to the approach that we should be taking. Madam Speaker, quite frankly, it ignites even greater concerns about the administration's so-called conservation initiative. Madam Speaker, just to remind you, I started off the evening saying that it was nearly 50 years ago that President Nixon signed the Endangered Species Act into law. If you will recall, it was designed to do two things: prevent species from going extinct and promote their recovery back to health and healthy populations. I think we have heard tonight that we can accomplish that, and we need to accomplish that. A strong ESA and strong recovered species can happen, but they don't have to happen at the expense of communities and our economy. Those two things are not mutually exclusive. I think the arguments, the cases, and the illustrations that you have heard tonight perfectly allow us to understand that. Madam Speaker, I thank all of my colleagues from the Western Caucus for participating tonight. This is a very important issue, something that I think all of us in Congress can find a lot of common ground on. I look forward to working with my colleagues on both sides of the aisle on successful reform of the Endangered Species Act. Madam Speaker, I yield back the balance of my time. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Adhesive tape dispensing machines [office requisites]; Adhesive tape for stationery purposes; Adhesive tapes for stationery or household purposes; Adhesive tapes for stationery purposes; Adhesive transfers; Adhesive wall decorations of paper; Adhesive-backed letters and numbers; Adhesive-backed vinyl letters and numbers; Adhesives for art use; Adhesives for do-it-yourself purposes; Adhesives for household purposes; Adhesives for stationery; Adhesives for stationery and household use; Adhesives for stationery or household purposes; Adhesives for stationery or household use; Adhesives for stationery purposes; Adhesives [glues] for stationery or household purposes; Advent calendars; Advertisement boards of card; Advertisement boards of cardboard; Advertisement boards of paper; Advertisement boards of paper or cardboard; Advertising pamphlets; Advertising posters; Advertising publications; Advertising signs of cardboard; Advertising signs of paper; Advertising signs of paper or cardboard; Agenda books; Agendas; Air bubble plastics for packaging; Air bubble plastics for wrapping; Airtight packaging of cardboard; Airtight packaging of paper; Albums; Albums for collecting magnetic cards; Albums for stickers; Almanacs; Anatomical models for instructional and educational purposes; Angle guides [drawing instruments]; Angle plotters [drawing instruments]; Animation cels; Anniversary cards; Announcement cards; Announcement cards [stationery]; Annuals [printed publications]; Apparatus for mounting photographs; Appliques in the form of decals; Appliqués of paper; Appointment books; Aquarelles; Architects' models; Architectural models; Architectural plans; Archival storage pages; Arithmetical tables; Aromatic modeling materials; Art etchings; Art mounts; Art paper; Art pictures; Art prints; Artists' brushes; Babies' bibs of paper; Baby books; Baby books [storybooks]; Baby memory books; Badge holders of plastic [office requisites]; Badge holders [office requisites]; Baggage claim check tags of cardboard; Baggage claim check tags of paper; Baggage tags of paper; Bags and articles for packaging, wrapping and storage of paper, cardboard or plastics; Bags (Conical paper -); Bags [envelopes, pouches] of paper or plastics, for packaging; Bags for microwave cooking; Bags for packaging made of biodegradable paper; Bags for packaging made of biodegradable plastic; Bags (Garbage -) of paper or of plastics; Bags incorporating bubble plastics for packaging; Bags made of paper; Bags made of paper for packaging; Bags made of plastics for packaging; Bags of bubble plastics for packaging; Bags of paper; Bags of paper for foodstuffs; Bags of paper for roasting purposes; Bags of plastics for lining refuse bins; Baking paper; Baking parchment; Ball pens; Ball point pens; Ball-point pen and pencil sets; Ballpoint pen refills; Ballpoint pens; Ball-point pens; Ballpoint refill cartridges; Balls for ball-point pens; Bamboo rolls used as writing brush holders; Bank checks; Banknotes; Banners of paper; Bar code ribbons; Barcode ribbons; Baseball cards; Bathroom tissue; Bathroom tissues; Beer mats; Beer mats of paper; Betting slips; Bibles; Bibs of paper; Bibs, sleeved, of paper; Bill books; Billbooks; Bin liners of paper; Bin liners of plastics; Binder clips; Binder paper; Binders; Binders for office use; Binders for the office; Binders (Loose-leaf -); Binders [office supplies]; Binders (office supplies); Binders [stationery]; Binding materials for books and papers; Binding strips [bookbinding]; Biodegradable paper pulp-based to-go containers for food; Biological samples for use in microscopy [teaching materials]; Birthday books; Birthday cards; Blackboard erasers [chalk erasers]; Blackboard rulers; Blackboards; Blank cards; Blank flip charts; Blank forms; Blank journal books; Blank journals; Blank note cards; Blank paper computer tapes for recording programs; Blank paper notebooks; Blank writing journals; Blister cards; Blister packs for packaging; Block notepads; Blocks for printing; Blotter; Blotters; Blotting pads; Blotting paper; Blueprints; Bond paper; Book binders; Book binding material; Book binding materials; Book bindings; Book covers; Book ends; Book jackets; Book markers; Book markers of precious metal; Cabinets for stationery [office requisites]; Calculating tables; Calendar desk pads; Calendar desk stands; Calendar refills; Calendar stands; Calendars; Calendered paper; Calender-finished paper; Calligraphic works; Calligraphy ink; Calligraphy paper; Canvas boards; Canvas for painting; Canvas panels for artists; Canvas prints; Canvas stretcher bars for artists; Cap erasers; Car stickers; Carbon paper; Carbon paper [finished products]; Carbonising base paper; Carbonless copying paper; Carbonless paper; Card files; Card indexes; Cardboard; Cardboard backing for binding books; Cardboard badges; Cardboard boxes; Cardboard cake boxes; Cardboard cartons; Cardboard containers; Cardboard gift boxes; Cardboard hangtags; Cardboard household storage boxes; Cardboard labels; Cardboard made from paper mulberry (senkasi); Cardboard mailing tubes; Cardboard packaging; Cardboard packaging boxes in collapsible form; Cardboard packaging boxes in made-up form; Cardboard picture mounts; Cardboard pizza boxes; Cardboard shipping containers; Cardboard tubes; Cards; Caricatures; Carrier bags; Carrying cases made of paper; Carrying cases specially adapted to hold collectible trading cards; Carrying cases specially adapted to hold sports trading cards; Cartons for eggs; Cartons made from corrugated board; Cartons of card for packaging; Cartons of cardboard for packaging; Cartoon prints; Cartoon strips; Cartoon strips [printed matter]; Cartridges (Ink -) for writing instruments; Cases for passports; Cases for pens; Cases for stamps [seals]; Cases for stationery; Cases made of corrugated cardboard; Cash receipt books; Cat box liners in the form of plastic bags; Catalogues; Catalogues relating to computer software; CD shredders for home or office use; Celestial globes; Cellulose acetate film for packaging; Cellulose acetate film for wrapping; Cellulose wipes; Chalk; Chalk boards; Chalk boards [blackboards]; Chalk erasers; Chalk for lithography; Chalk holders; Chalk (Marking -); Chalk sticks; Chalkboards; Chalks; Chalks for artists' use; Chalks for colouring; Chalks for drawing; Charcoal for drawing; Charcoal for painters; Charcoal pencils; Chart pointers, non-electronic; Charts; Check book cases; Check book covers; Check book holders; Check books; Checkbook cases; Checkbook covers; Checkbook holders; Checkbooks [cheque books] (Holders for -); Daily newspaper; Daily planners; Data books; Data processing programmes in printed form; Date books; Date indicators; Date stamps; Date stamps [daters]; Day planners; Debit cards without magnetic coding; Decalcomanias; Decals; Decoration and art materials and media; Decorations for pencils; Decorations of cardboard for foodstuffs; Decorations of paper for foodstuffs; Decorative paper bows for wrapping; Decorative paper centerpieces; Decorative paper garlands for parties; Decorative pencil-top ornaments; Decorative stickers for cars; Decorative stickers for helmets; Decorative stickers for soles of shoes; Decorative wrapping paper; Decorators' paintbrushes; Dental tray covers made of paper; Dental tray covers of paper; Desk agendas; Desk baskets for desk accessories; Desk blotters; Desk calendars; Desk diaries; Desk mats; Desk organisers; Desk pads; Desk sets; Desk tidies; Desk top organizers; Desk top planners; Desk trays; Desktop business card holders; Desktop cabinets for stationery [office requisites]; Desktop document racks; Desktop document stands; Desktop organizers; Desktop revolving rotary card files; Diagrams; Diaries; Diaries [printed matter]; Dictation books; Dictionaries; Die-cut paper shapes; Digital printing paper; Dinner mats of card; Dinner mats of cardboard; Dinner mats of paper; Directories; Directory paper; Dispensers (Adhesive tape -) [office requisites]; Display banners made of cardboard; Display banners of paper; Display binders; Display boxes of cardboard; Disposable absorbent training pads for pets; Disposable absorbent underpads for pets; Disposable napkins; Document binding machines for office use; Document covers; Document destroyers [office machines]; Document file racks; Document files; Document files [stationery]; Document folders in the form of wallets; Document holders being articles of stationery; Document holders [stationery]; Document laminators for office use; Document markers; Document page markers; Document portfolios; Document stamp racks; Dot matrix printer ribbons; Double sided adhesive tapes for household use; Double sided adhesive tapes for stationery use; Double-sided adhesive tapes for household use; Drafting compasses; Drafting curves; Drafting instruments; Drafting rulers; Drafting squares; Drafting templates; Drafting triangles; Drawer liners made of scented paper; Drawer liners of paper, perfumed or not; Drawing board pins; Drawing boards; Drawing boards [painters' article]; Drawing boards [painters' articles]; Drawing books; Drawing brushes; Drawing compasses; Easel pads; Easels; Easels for use by artists; Easels (Painters' -); Educational and instructional material; Educational books; Educational equipment; Educational publications; Elastic bands for offices; Electric and electronic franking machines; Electric erasers; Electric hole punches; Electric letter openers; Electric pencil sharpeners; Electric staplers for offices; Electric typewriters; Electrical and electronic typewriters; Electrical heat sealing apparatus for office use; Electrical wood burning artists' pens; Electrocardiograph paper; Electro-cardiograph paper; Electronic and electric franking machines; Electronic typewriters; Electrostatic paper; Electrotypes; Embroidery design patterns; Embroidery designs [patterns]; Encyclopaedias; Engraving plates; Engraving sheets; Engravings; Engravings and their reproductions; Engravings [prints]; Entry tickets; Envelope paper; Envelope papers; Envelope sealing machines, for offices; Envelope sealing machines for offices; Envelopes; Envelopes for stationery use; Envelopes [stationery]; Eraser dusting brushes; Erasers; Erasers (Writing board -); Erasing products; Erasing shields; Etching needles; Etching pens; Etching sheets; Etchings; Event albums; Event programs; Events albums; Events programmes; Exercise books; Exercise-book covers; Expanding files; Expense books; Extensions for pencils; Fabric glue for household use; Fabrics for bookbinding; Face cloths made of paper; Face tissues of paper; Face towels of paper; Facial tissue; Facial tissues of paper; Facsimile transmission paper; Fantasy books; Fanzines; Felt marking pens; Felt mats for calligraphy; Felt mats for Chinese calligraphy (stationery); Felt pens; Felt tip markers; Felt tip pens; Felt writing pens; Felt-tip pens; Fiber paper; Fiberboard boxes; Fiber-tip markers; Fibertip pens; Fiber-tip pens; Fibre-tip markers; Fibre-tip pens; Fiction books; Figures made of paper; Figurines made from cardboard; Figurines made from paper; Figurines of papier mâché; Figurines [statuettes] of papier mâché; File binders; File boxes for storage of business and personal records; File boxes for storage of magazines; File cards; File cases; File covers; File dividers; File folders; File guides; File indexes; File pockets for stationery use; File sorters; File sorters [office requisites]; File trays; Files [office requisites]; Files [stationery]; Filing cards; Filing cases; Filing containers; Filler paper; Film pens; Film (Plastic cling -) extensible, for palletization; Films for wrapping foodstuffs; Filter material of paper; Filter paper; Filtering materials of paper; Filtering materials [paper]; Filters of paper; Filters (Paper coffee -); Fine art prints; Fine paper; Finger moisteners; Finger tip moisteners being office requisites; Fingerprint kits; Fingerstalls being office requisites; Finger-stalls [office requisites]; Flags made from paper; Flags of paper; Flash cards; Flip books; Flip chart carrying cases; Flip chart cases; Flipcharts; Flow sheets [printed matter]; Flower-pot covers of paper; Fluorescent paper; Fluting paper [corrugating medium]; Flyers; Foils of plastic for packaging; Foils of plastic for wrapping; Folders; Folders for blueprints; Folders for letters; Folders for papers; Folders [stationery]; Folios; Food bag tape for freezer use; Food waste bags of paper for household use; Food wrappers; Food wrapping plastic film; Food wrapping plastic film for household use; Food-wrapping paper; Forms, printed; Fountain pen ink cartridges; Fountain pens; Franking machines for office use; Freezer bags; French curves; Galley racks [printing]; Garbage bags of paper [for household use]; Garbage bags of paper or of plastics; Garbage bags of plastic; Garbage bags of plastics [for household use]; Garbage bags of vinyl for household use; Gazetteers; Gel roller pens; Gelatine glue for stationery or household purposes; General feature magazines; General purpose plastic bags; Geographical maps; Giclee prints; Gift bags; Gift books; Gift boxes; Gift boxes made of cardboard; Gift cards; Gift cartons; Gift cases for writing instruments; Gift certificates; Gift packaging; Gift paper; Gift tags; Gift vouchers; Gift wrap; Gift wrap cards; Gift wrap paper; Gift wrapping foil; Gift wrapping paper; Gift wraps; Giftwrapping paper; Gift-wrapping paper; Glassine paper; Glitter for stationery purposes; Glitter glue for stationery purposes; Glitter pens for stationery purposes; Globes; Globes (Terrestrial -); Glue for stationery or household purposes; Glue for stationery or household use; Glue for the office; Glue pens for stationery purposes; Glues for office use; Glues for the office; Gluten [glue] for stationery or household purposes; Golf scorecard holders; Golf scorecards; Golf yardage books; Graining combs; Graph paper; Graphic art books; Graphic art prints; Graphic art reproductions; Graphic drawings; Graphic novels; Graphic prints; Graphic prints and representations; Graphic representations; Graphic reproductions; Graphs; Greaseproof paper; Greeting cards; Greetings cards; Grocery paper; Guest books; Guide books; Guillotine machines for office use; Gum arabic glue for stationery or household purposes; Gummed cloth for stationery purposes; Gummed paper; Gummed tape [stationery]; Gums [adhesives] for stationery or household purposes; Gunpowder wrapping paper; Hand books; Hand labelling appliances; Hand towels of paper; Handbooks; Handbooks [manuals]; Handbooks relating to computers; Handheld label printers [office requisites]; Hand-held paper knives; Handkerchiefs made of paper; Handkerchiefs of paper; Handles made of plastics for paint brushes; Handpainted paper wine bottle labels; Hand-rests for painters; Handwriting specimens for copying; Hanging folders; Hat boxes of cardboard; Hat boxes of paper; Headed notepaper; Heat sensitive paper; Heat transfer paper; Heat transfers; Hectographs; Highlighter pens; Highlighters; Highlighting markers; Highlighting pens; Histological sections for teaching purposes; Holders for adhesive tapes; Holders for checkbooks; Holders for checkbooks [cheque books]; Holders for cheque books; Holders for desk accessories; Holders for files; Holders for letters; Holders for notebooks; Holders for notepads; Holders for stamps [seals]; Holders (Passport -); Hole punchers for office use; Hole punches for office use; Hole punches [office requisites]; Holiday cards; Home shopping catalogs; Home shopping catalogues; Honeycomb paper; Hotel directories; House painters' roller brushes; House painters' rollers; Household paper; Humidity control sheets of paper or plastic for foodstuff packaging; Hygienic hand towels of paper; Hygienic paper; Hymn books; Ice cube bags; Illustrated notepads; Illustrated wall maps; Illustrated wall maps for educational purposes; Illustration boards; Imitation leather paper; Impression stamps; Imprinters (Credit card -), non-electric; Imprinters for office use; Index books; Index cards; Index cards [stationery]; Index files; Indexes; India ink; India ink pens; India paper; Indian inks; Industrial packaging containers of paper; Industrial paper; Industrial paper and cardboard; Inflight magazines; Information booklets; Information books; Informational flyers; Informational letters; Informational sheets; Ink; Ink blotters; Ink cartridges for fountain pens; Ink cartridges for pens; Ink erasers; Ink for fountain pens; Ink for pens; Ink for writing instruments; Ink pads; Ink pads for seals; Ink pen refill cartridges; Ink pens; Ink reservoirs; Ink ribbons; Ink rollers for office machines; Ink sheets for use in reproducing images in the printing industry; Ink stamps; Ink sticks; Ink sticks (sumi); Ink stones; Ink stones [ink reservoirs]; Inked ribbons for typewriters; Inking pads; Inking pads for seals; Inking ribbons; Inking ribbons for computer printers; Inking sheets for document reproducing machines; Inking sheets for duplicators; Inkless pens; Inks; Inks for pads; Inkstands; Inkstones; Inkstones [ink reservoirs]; Inkwells; Instruction manuals; Instruction manuals for exercise equipment; Instruction manuals for music synthesizers; Instruction manuals relating to computer software; Instruction sheets; Instructional and teaching material; Instructional and teaching material (except apparatus); Instructional and teaching materials; Instructional manuals; Instructional manuals for teaching purposes; Instructional material (except apparatus); Instructional materials; Invitation cards; Invitations; Iron-on transfers; Iron-on transfers of paper; Isinglass for household purposes; Isinglass for stationery or household purposes; Ivory manilaboard; Ivory paper; Jackets for papers; Jackets of paper for books; Jacquard looms (Perforated cards for -); Japanese ceremonial paper strings (mizuhiki); Japanese handicraft paper; Japanese paper; Japanese paper (torinoko-gami); Japanese paper [torinoko-gami]; Jotters; Journals; Kitchen paper; Kitchen rolls [paper]; Knitting patterns; Kraft paper; Label paper; Label printing machines for household and stationery use; Labelling machines for office use; Labels, not of textile; Labels of paper; Labels of paper or cardboard; Laminated paper; Laminating machines for office use; Laminators (Document -) for office use; Laser cut paper; Laser print paper; Laser printing paper; Latex glue for stationery or household purposes; Lavatory paper; Law digests; Law reports; Lead holders [propelling pencils]; Leaflets; Leather appointment book covers; Leather book covers; Leather bookmarks; Leather covered diaries; Leather pencil cases; Ledger books; Ledgers [books]; Legal journals; Legal pads; Lenticular postcards; Letter clips; Letter files; Letter holders; Letter inserter machines for office use; Letter openers; Letter openers of precious metal; Letter paper; Letter paper [finished products]; Letter racks; Letter trays; Letterhead paper; Letterheads; Lettering guides; Lettering stencils; Letter-openers; Letters [type]; Lever arch files; Linerboard for corrugated cardboard; Liners of paper for toilet boxes for domestic animals; Liners of paper for toilet trays for domestic animals; Liners of plastic for toilet boxes for domestic animals; Liners of plastic for toilet trays for domestic animals; Lining paper; Lining papers for packaging; Lining papers for wrapping; Lithographic engravings; Lithographic prints; Lithographic stones; Lithographic works of art; Lithographs; Log books; Logbooks [aviation]; Logbooks [book-keeping]; Logbooks [ship's log]; Loose leaf binders; Loose leaf paper; Loose-leaf binders; Loose-leaf pads; Luggage tags of cardboard; Luggage tags of paper; Luminous paper; Machines for office use for folding documents; Machines for office use for sorting documents; Machines for office use for stamping mail; Machines for office use in addressing mail; Magazine covers; Magazine paper; Magazine supplements for newspapers; Magazines; Magazines featuring video and computer games; Magazines in the fields of games and gaming; Magazines [periodicals]; Magnetic boards for scheduling activities and appointments; Magnetic levitation floating globes; Magnetic paint brush holder clips; Magnetic three-ring binders; Mail order catalogues; Mailing labels; Make-up pads of paper for ***removing*** make-up; Manga comic books; Manga graphic novels; Manifolds [stationery]; Manila board; Manila envelopes; Manila folders; Manila paper; Manually operated credit card imprinters; Manuals; Manuals for computer software; Manuals for instructional purposes; Manuals for use with software; Manuals [handbooks]; Manuscript books; Map cases; Map tacks; Mapping pins; Maps; Maps (Geographical -); Maps made of flexible plastics; Marine logs [printed matter]; Marker caddies; Marker pens; Marking chalk; Marking ink containing biologics for use in authentication of objects; Marking inks for stationery purposes; Marking pen refills; Marking pens; Marking pens [stationery]; Marking stamps; Marking tabs; Marking templates; Masking paper; Masking papers; Materials for artists; Mats for beer glasses; Mats of paper for beer glasses; Mats of paper for drinking glasses; Mechanical pencil sharpeners; Mechanical pencils; Mechanically operated pencils; Medical journals; Memo blocks; Memo pad holders; Memo pads; Memo sorters; Memorandum boards; Memorandum books; Memorandum pads; Menu cards; Menus; Metal drawing pins; Metal money clips; Metallic gift wrap; Metallic gift wrapping paper; Metallic paper party decorations; Microwave cooking bags; Microwave cooking (Bags for -); Mildewproof paper; Milk bottle caps [trading cards]; Millboard; Mimeograph apparatus and machines; Mimeograph paper; Mimeograph stencils; Mimeographs; Mini photo albums; Modeling clay; Modeling clay for children; Modeling compounds; Modeling paste; Modeling wax, not for dental purposes; Modelling clay; Modelling clays (Molds for -) [artists' materials]; Modelling clays (Moulds for -) [artists' materials]; Modelling materials; Modelling paste; Modelling wax, not for dental purposes; Models (Architects' -); Moisteners for gummed surfaces [office requisites]; Moisteners [office requisites]; Molds for modelling clays [artists' materials]; Money clips; Nail stencils; Name badge holders [office requisites]; Name badges [office requisites]; Name cards; Napkin paper; Napkins made of paper for household use; Napkins of cellulose for cosmetic purposes; Napkins of cellulose for household purposes; Napkins of paper; Napkins of paper for ***removing*** make-up; Napkins of paper (Table -); Navigation charts for use in sailing craft; News bulletins; Newsletters; Newsletters in the fields of games and gaming; Newspaper cartoons; Newspaper comic strips; Newspapers; Newsprint paper; Nibs; Nibs for writing instruments; Nibs of gold; Nibs of gold for writing instruments; Non metal money clips; Non-electric chart pointers; Non-fiction books; Note books; Note cards; Note pad holders; Note pads; Note paper; Note papers; Noteboards; Notebook covers; Notebook dividers; Notebook paper; Notebooks; Notelets; Notepads; Notepaper; Novels; Numbering apparatus; Numbering guides; Numbering stamps; Numbers [type]; Obliterating stamps; Occasion cards; Office binders; Office decollating machines; Office glues; Office hole punchers; Office labeling machines; Office labelling machines; Office lettering machines; Office machines; Office paper drill machines; Office paper stationery; Office perforating machines; Office perforators; Office requisites; Office requisites, except furniture; Office seals; Office staplers; Office stationery; Offset paper; Offset printing paper for pamphlets; Oil pastels; Oiled paper for paper umbrellas (kasa-gami); Oilproof paper; Oleographs; Omikuji [sacred lots] [printed strips of paper used for fortune telling]; Onion skin paper; Opaque paper; Operating manuals for use with computers; Order forms; Order forms for use in home shopping; Organizers for stationery use; Origami folding paper; Ornamental sculptures made of papier mache; Ovenproof paper; Packaging bags of paper; Packaging boxes of card; Packaging boxes of cardboard; Packaging boxes of paper; Packaging cartons of card; Packaging cartons of cardboard; Packaging containers of card; Packaging containers of paper; Packaging containers of regenerated cellulose; Packaging material made of starches; Packaging materials; Packaging materials made from mineral-based paper substitutes; Packaging materials made of cardboard; Packaging materials made of recycled paper; Packaging materials of plastic for sandwiches; Packaging wrappers of plastic; Packing cardboard; Packing cardboard containers; Packing containers of cardboard; Packing [cushioning, stuffing] materials of paper or cardboard; Packing paper; Padded bags of card; Padded bags of paper; Padding materials of paper or cardboard; Pads for applying paint; Pads of paper; Pads of party invitations; Pads [stationery]; Pads (Writing -); Page holders; Page markers; Paint applicator pads; Paint applicator rollers; Paint applicators in the nature of sponges; Paint boxes; Paint boxes and brushes; Paint boxes [articles for use in school]; Paint boxes for use in schools; Paint brushes; Paint paddles; Paint roller covers; Paint roller handles; Paint roller trays; Paint rollers; Paint stick markers; Paint trays; Paintbrushes; Painters' brushes; Painters' easels; Painting books; Painting canvas; Painting mitts for applying paint; Painting pencils; Painting sets for artists; Painting sets for children; Paintings; Paintings and calligraphic works; Paintings [pictures], framed or unframed; Palettes for painters; Pamphlets; Pantographs [drawing instruments]; Paper; Paper and cardboard; Paper baby bibs; Paper badges; Paper bags; Paper bags and sacks; Paper bags for household use; Paper bags for packaging; Paper bags for use in the sterilisation of medical instruments; Paper bags for use in the sterilization of medical instruments; Paper banners; Paper bibs; Paper bibs for babies; Paper binding machine for office use; Paper board; Paper book markers; Paper bows; Paper bows for gift wrap; Paper bows, other than haberdashery or hair decorations; Paper boxes; Paper boxes for storing greeting cards; Paper bunting; Paper cake decorations; Paper cake toppers; Paper carton sealing tape; Paper cartons for delivering goods; Paper clasps; Paper clip holders; Paper clips; Paper coasters; Paper coated with silicone oil for use on barbeque grills; Paper cocktail parasols; Paper coffee filters; Paper containers; Paper containing mica; Paper crafts materials; Paper creasers [office requisites]; Paper cutters; Paper cutters for office use; Quick reference pocket guides; Radiograms (Paper for -); Recipe binders; Recipe books; Record cards; Recycled bond paper; Recycled paper; Red algae gelatine glue, for stationery or household purposes (funori); Red algae gelatine glue, for stationery or household purposes [funori]; Red ink paste used for seals; Reel paper for printers; Reference books; Reference cards; Refills for ballpoint pens; Refuse bags of paper; Register files; Reinforced stationery tabs; Relief duplicators; Religious books; Religious circular letters; Removable self-stick notes; Removable tattoos [decalcomania]; Reporters' notebooks; Reproduction paper; Reproductions (Graphic -); Reproductions of paintings; Resource books; Retractable pencils; Retractable reels for name badge holders [office requisites]; Revolving circular charts; Ribbons for handheld label printers [office requisites]; Ribbons for typewriters; Ribbons of paper; Ribbons (Paper -); Rice paper; Ring binders; Ring files; Road maps; Role playing game equipment in the nature of manuals; Roller ball pens; Roller date stamps; Rollerball pens; Rollers for applying paint; Rollers for typewriters; Rollers (House painters' -); Rolls of plastic film for packaging; Roll-up pencil cases; Romance novels; Rosettes of paper; Rotary duplicators; Route maps; Rub down transfers; Rubber bands [office requisites]; Rubber bands [stationery]; Rubber cements for stationery; Rubber document stamps; Rubber erasers; Rubber finger tips; Rubber stamp; Rubber stamps; Rubbers for erasing written text; Rubbish bags; Rubbish bags (made of paper or plastic materials); Rule books; Rule books for playing games; Ruled paper [finished products]; Rulers; Rulers (Drawing -); Rulers for drawing; Rulers (Square -); Safety paper; Sandwich bags; Sandwich bags [paper]; Saucers (Watercolor [watercolour] -) for artists; Savings stamps; Scented paper drawer liners; Scented stationery; School cones, empty; School photographs; School supplies [stationery]; School writing books; School yearbooks; Scoops made of card for the disposal of pet excrement; Score books; Score charts; Score pads; Score sheets; Score-books; Score-cards; Scoring cards; Scrap books; Scrapbook albums; Scrapbook pages; Scrapbooks; Scrapers [erasers] for offices; Scratch pads; Scribble pads; Scribbling pads; Sculptures made from papier mache; Seal ink pads; Sealing compounds for stationery purposes; Sealing machines for offices; Sealing stamps; Sealing tape for stationery use; Sealing wafers; Sealing wax; Seals for offices; Seals for the office; Seals [stamps]; Seals [stationery]; Seaweed glue for stationery; Self-adhesive paper for notes; Self-adhesive plastic sheets for lining shelves; Self-adhesive tapes for stationery and household purposes; Self-adhesive tapes for stationery or household purposes; Self-adhesive tapes for stationery use; Semi-processed paper; Series of computer game hint books; Series of fiction books; Series of non-fiction books; Serviettes of paper; Set squares for drawing; Sewing patterns; Sharpeners for cosmetic pencils; Sharpeners (Pencil -); Sheet music; Sheet music in printed form; Sheets for wrapping made of paper; Sheets for wrapping made of plastic material; Sheets of reclaimed cellulose for wrapping; Sheets of recycled cellulose for wrapping; Shelf paper; Shields (Erasing -); Shields of paper; Shields [paper seals]; Shipping labels; Ships logs [printed matter]; Shoji-gami [paper for Japanese sliding partitions]; Shredding machines for office use; Signature books; Signboards of paper or cardboard; Signed photographs; Silk canvas [painters' article]; Silk screen prints; Silver paper; Sketch boards; Sketch books; Sketch pads; Sketchbooks; Sketches; Sketching boards; Skin marker pens; Slate boards for writing; Slate pencils; Sleeves for holding and protecting stamps; Small blackboards; Social note cards; Software programmes in printed form; Song books; Souvenir event programs; Souvenir programmes; Spiral-bound notebooks; Spirit gum for household use; Spirit gum for stationery purposes; Spirit masters for mimeographing; Spools for inking ribbons; Spools for typewriters; Sports trading cards; Spray chalk; Square rulers; Table cloths of paper; Table decorations of paper; Table linen of paper; Table mats of card; Table mats of cardboard; Table mats of paper; Table napkins of paper; Table place setting mats of card; Table place setting mats of cardboard; Table place setting mats paper; Table runners of cellulose; Table runners of paper; Tablecloths of paper; Tablemats of paper; Tables (Arithmetical -); Tables (Calculating -); Tags for index cards; Tailors' chalk; Tamper evident tapes of plastic; Tapes (adhesive -) [stationery]; Tapes for typewriters; Teaching manuals; Teaching materials; Teaching materials [except apparatus]; Tear-off calendars; Tee squares [drawing]; Telephone books; Telephone directories; Television listing magazines; Temporary tattoo transfers; Temporary tattoos; Terrestrial globes; Textbooks; Thank you cards; Thermal paper; Thick Japanese paper [hosho-gami]; Three dimensional models for educational purposes; Three-dimensional decalcomanias for use on any surface; Thumb tacks; Thumbtacks; Thumbtacks [stationery]; Tickets; Till rolls; Timetables; Timetables (Printed -); Tips for ballpoint pens; Tissue paper; Tissue paper for making stencil paper; Tissue paper for use as material of stencil paper (ganpishi); Tissue papers; Tissues; Tissues of paper; Tissues of paper for ***removing*** make-up; Toilet paper; Toilet paper in roll form; Toilet rolls; Toilet tissue; Toilet tissue made of paper; Toilet tissues; Toilet tissues of paper; Towels of paper; Towels of paper for cleaning purposes; Towels of paper for ***removing*** make-up; Tracing cloth; Tracing needles for drawing purposes; Tracing paper; Tracing papers; Tracing patterns; Trade journals; Trading card milk bottle caps; Trading cards; Trading cards other than for games; Trading cards, other than for games; Training manuals; Transfer paper; Transfers; Transfers [decalcomanias]; Transparencies; Transparencies [stationery]; Transparent viscose wrapping film; Trash can liners; Travel books; Travel guide books; Travel guides; Travel magazines; Travellers' cheques; Trays for holding drafting instruments; Trays for holding drawing instruments; Trays for sorting and counting money; Treated paper for wrapping flowers and floral displays; Triangles being drawing instruments; Trimming machines for office use; Trivia cards; T-squares (Drawing -); T-squares for drawing; Tubes (Cardboard -); Type fonts for typewriters; Type [numerals and letters]; Typeface; Typefaces; Unfitted furniture covers of paper; Ungraduated rulers; Unmounted and mounted photographs; User manuals; UV ink markers; Vehicle bumper stickers; Vellum paper; Video game strategy guidebooks; Vignetting apparatus; Viscose sheets for wrapping; Visiting cards; Visitors books; Vouchers; Vouchers of value; Wall calendars; Wall charts; Wall decals; Wall decorations of paper; Wall maps; Wall planners; Wallcoverings (Books containing samples of -); Wallpaper pattern books; Wallpaper sample book; Wallpaper stencils; Washi; Water colours [finished painting]; Water filters of paper; Watercolor boards; Watercolor paintings; Watercolor pictures; Watercolor saucers (Artists' -); Watercolor [watercolour] saucers for artists; Watercolors [paintings]; Watercolour paintings; Watercolour saucers (Artists' -); Watercolours [finished paintings]; Watercolours [paintings]; Waterproof paper; Waterproof paper [other than for use in building]; Waterproofing film (Plastic -) for packaging; Waterproofing film (Plastic -) for wrapping; Water-writing cloths for calligraphy practice; Wax bond paper; Wax paper; Wax (Sealing -); Waxed paper; Waxed paper [other than for use in building]; Wedding albums; Wedding books; Weekly planners; Wet erase markers; Wet erase paper labels; White paperboard; White papers; Whiteboard erasers; Whiteboards; Whiteboards having magnetic properties; Wirebound books; Wood glue for household use; Wood pulp board [stationery]; Wood pulp paper; Workbooks containing exercises; Works of art and figurines of paper and cardboard, and architects' models; Works of art made of paper; Wrappers [stationery]; Wrapping foils for books; Wrapping materials made of card; Wrapping materials made of cardboard; Wrapping materials made of paper; Wrapping paper; Wristbands for the retention of writing instruments; Writing and stamping implements; Writing board erasers; Writing books; Writing brush calligraphy copybooks; Writing brush for calligraphy; Writing brush for Shodo; Writing brush hangers; Writing brush holders; Writing brush washers; Writing brush washing saucers; Writing brushes; Writing brushes for calligraphy; Writing brushes for ground calligraphy; Writing cases [sets]; Writing cases [stationery]; Writing chalk; Writing grips; Writing implements; Writing implements [writing instruments]; Writing ink; Writing instruments; Writing materials; Writing or drawing books; Writing pads; Writing paper; Writing paper holders; Writing paper pads; Writing sets; Writing slates; Writing stationery; Writing tablets; Writing utensils; Writing utensils made of fibres; Xerographic paper; Xuan paper for Chinese painting and calligraphy; Year planners; Yearbooks in the field of soccer.Class 35 Account auditing; Accountancy; Accountancy advice relating to tax preparation; Accountancy advice relating to taxation; Accountancy advice relating to the preparation of tax returns; Accountancy, book keeping and auditing; Accountancy services; Accountancy services relating to accounts receivable; Accounting; Accounting advisory services; Accounting consultancy relating to taxation; Accounting for third parties; Accounting, in particular book-keeping; Accounting services; Accounting services for mergers and acquisitions; Accounting services for pension funds; Accounting services relating to costs for farming enterprises; Accounting services relating to tax planning; Accounts (Drawing up of statements of -); Accounts (Preparation of -); Acquisition (Business -) searches; Acquisition of business information relating to company activities; Acquisition of business information relating to company status; Acquisition of commercial information; Acquisitions (Advice relating to -); Acquisitions (Business -) consulting services; Addressing envelopes; Addressing of envelopes; Administering medication reimbursement programs and services; Administering of professional competency testing; Administering of professional [vocational] certifications; Administering pharmacy reimbursement programs and services; Administration, billing and reconciliation of accounts on behalf of others; Administration (Business -) relating to statistical methods; Administration (Commercial -) of the licensing of the goods and services of others; Administration of a discount program for enabling participants to obtain discounts on goods and services through use of a discount membership card; Administration of business affairs; Administration of business payroll for others; Administration of businesses; Administration of competitions for advertising purposes; Administration of consumer loyalty programs; Administration of contests for advertising purpose; Administration of cultural and educational exchange programs; Administration of customer loyalty and incentive schemes; Administration of employee benefit plans; Administration of employee pension plans; Administration of employee welfare benefit plans; Administration of foreign business affairs; Administration of frequent flyer programmes that allow members to redeem miles for points or awards offered by other loyalty programmes; Administration of frequent flyer programs; Administration of frequent flyer programs that allow members to redeem miles for points or awards offered by other loyalty programs; Administration of incentive award programs to promote the sale of the goods and services of others; Administration of loyalty and incentive schemes; Administration of loyalty programs involving discounts or incentives; Administration of loyalty rewards programmes; Administration of loyalty rewards programs; Administration of loyalty rewards programs featuring trading stamps; Administration of membership schemes; Administration of newspaper subscription [for others]; Administration of patient reimbursement programs; Administration of preferred provider plans; Administration of prepaid health care plans; Administration of sales and promotional incentive schemes; Administration of sales promotion incentive programs; Administration of the business affairs of franchises; Administration of the business affairs of retail stores; Administration relating to business appraisal; Administration relating to business planning; Administration relating to marketing; Administration relating to sales methods; Administrative accounting; Administrative assistance in responding to calls for tenders; Administrative assistance in responding to requests for proposals [RFPs]; Administrative data processing; Administrative hotel management; Administrative loyalty card services; Administrative management of health care clinics; Administrative management of hospitals; Administrative order processing; Administrative processing and organising of mail order services; Administrative processing of computerized purchase orders; Administrative processing of orders; Administrative processing of purchase orders; Administrative processing of purchase orders placed by telephone or computer; Administrative processing of purchase orders within the framework of services provided by mail-order companies; Administrative processing of warranty claims; Administrative services for medical referrals; Administrative services for the relocation of businesses; Administrative services relating to credit card registration; Administrative services relating to customs clearance; Administrative services relating to dental health insurance; Administrative services relating to employee stock plans; Administrative services relating to hospital referrals; Administrative services relating to referrals for general building contractors; Administrative services relating to referrals for insurance agents; Administrative services relating to the management of legal dockets; Administrative services relating to the referral of clients to lawyers; Administrative services relating to the referral of patients; Administrative services relating to the relocation of personnel; Administrative services relating to warranty claims processing; Balance sheet accounting; Banner advertising; Benchmarking (evaluation of business organisation practices); Benchmarking services; Bidding quotation; Bill presentment services; Bill sticking; Billing; Billing services; Billing services in the field of energy; Billing services in the field of healthcare; Bill-posting; Blogger outreach services; Book club services retailing books to its members; Booking agent services for models; Bookkeeping; Book-keeping; Book-keeping and accounting; Book-keeping and accounting services; Bookkeeping for electronic funds transfer; Brand creation services; Brand creation services (advertising and promotion); Brand evaluation services; Brand positioning; Brand positioning services; Brand strategy services; Brand testing; Brokerage of name and address based lists; Business accounting advisory services; Business accounts management; Business acquisitions; Business acquisitions (Advice relating to -); Business acquisitions consultation; Business administration; Business administration and management; Business administration assistance; Business administration consultancy; Business administration for others; Business administration in the field of transport and delivery; Business administration of employee share schemes; Business administration services; Business administration services for processing sales made on the internet; Business administration services for the processing of sales made on a global computer network; Business administration services for the processing of sales made on the Internet; Business administration services in the field of healthcare; Business administration services in the field of transportation; Business administrative services for the relocation of businesses; Business administrative services for the relocation of personnel; Business advertising services relating to franchising; Business advice; Business advice and consultancy relating to franchising; Business advice, inquiries or information; Business advice relating to accounting; Business advice relating to acquisitions; Business advice relating to advertising; Business advice relating to disposals; Business advice relating to financial re-organisation; Business advice relating to franchising; Business advice relating to growth financing; Business advice relating to marketing; Business advice relating to marketing management consultations; Business advice relating to mergers; Business advice relating to restaurant franchising; Business advice relating to strategic marketing; Business advisory and consultancy services; Business advisory services; Business advisory services provided to determine pay and grading structures; Business advisory services relating to business liquidations; Business advisory services relating to company performance; Business advisory services relating to franchising; Business advisory services relating to franchising of a motor dealership; Business advisory services relating to product development; Business advisory services relating to product manufacturing; Business advisory services relating to the establishment and operation of franchises; Business advisory services relating to the establishment of motor dealership; Business advisory services relating to the running of restaurants; Business advisory services relating to the running of sandwich bars; Business advisory services relating to the selection of computers; Business advisory services relating to the setting up of restaurants; Business advisory services relating to the setting up of sandwich bars; Business advisory services relating to the use of computers; Business advisory services to determine pay and grading structures by job evaluation; Business analysis; Business analysis and information services, and market research; Business analysis of markets; Business analysis services; Business and commercial information services; Business and market research; Business appraisal; Business appraisal consultancy; Business appraisal services; Business appraisals; Business appraisals and evaluations in business matters; Business assistance; Business assistance, management and administrative services; Business assistance relating to business image; Business assistance relating to corporate identity; Business assistance relating to franchising; Business assistance relating to starting and running a franchise; Business assistance relating to the establishment of franchises; Career advisory services (other than education and training advice); Career information and advisory services (other than educational and training advice); Career networking services; Career placement; Career placement consulting services; Career planning consultancy; Carrying out auction sales; Casting [recruitment] of performing artists; Chamber of commerce services for the promotion of businesses; Chamber of commerce services for the promotion of commerce; Chamber of commerce services for the promotion of trade; Chartered accountancy business services; Cinema advertising; Cinematographic film advertising; Classified advertising; Classified advertising services; Clerical employment agency services; Clerical services for making appointments; Clerical services for the handling of enquiries; Clerical services for the taking of sales orders; Collating of data in computer databases; Collecting business information; Collecting business statistics; Collecting information for business; Collection and systematisation of information into computer databases; Collection of commercial information; Collection of data; Collection of information relating to advertising; Collection of information relating to market analysis; Collection of information relating to market research; Collection of information relating to market studies; Collection of market research information; Collection of personnel information; Collection of statistics for business; Commercial administration of the licensing of the goods and services of others; Commercial and industrial management assistance; Commercial assistance in business management; Commercial business management; Commercial consultancy; Commercial consultancy services; Commercial information; Commercial information agencies; Commercial information agencies [provides business information, e.g , marketing or demographic data]; Commercial information agency services; Commercial information and advice for consumers [consumer advice shop]; Commercial information and advice for consumers in the choice of products and services; Commercial information and advice services for consumers in the field of beauty products; Commercial information and advice services for consumers in the field of cosmetic products; Commercial information and advice services for consumers in the field of make-up products; Commercial information (Compilation of -); Commercial information provided by means of a computer database; Commercial information (Provision of -); Commercial information research studies; Commercial information services; Commercial information services provided by access to a computer database; Commercial information services relating to wine; Commercial information services, via the internet; Commercial intermediation for business purposes; Commercial intermediation services; Commercial lobbying services; Commercial management; Commercial management assistance; Commercial or industrial management assistance; Communication media (Presentation of goods on -), for retail purposes; Company information (Searches relating to -); Company management [for others]; Company management, including consultancy in demographic matters; Company office secretarial services; Company record keeping [for others]; Company record-keeping; Comparison services (Price -); Comparison shopping services; Competitive intelligence services; Compilation and input of information into computer databases; Compilation and provision of trade and business price and statistical information; Compilation and systematisation of information in databanks; Compilation and systemisation of information into computer databases; Compilation and systemization of information into computer databases; Compilation and systemization of information used in electronic transmissions; Compilation and systemization of written communications and data; Compilation of advertisements; Compilation of advertisements for use as web pages; Compilation of advertisements for use as web pages on the Internet; Compilation of advertisements for use on internet web pages; Compilation of advertisements for use on the internet; Compilation of business data; Compilation of business directories; Compilation of business directories for publishing on the Internet; Compilation of business information; Compilation of business statistics; Compilation of business statistics and commercial information; Compilation of commercial registers; Compilation of company information; Compilation of computer data bases; Compilation of computer databases; Compilation of data; Compilation of data in computer databases; Compilation of direct mailing lists; Compilation of directories for publication on the internet; Compilation of directories for publishing on global computer networks or the internet; Data collection [for others]; Data collection services; Data compilation for others; Data entry and data processing; Data file administration; Data inputting services; Data management; Data management services; Data processing; Data processing for businesses; Data processing for the collection of data for business purposes; Data processing management; Data processing services; Data processing services in the field of healthcare; Data processing services in the field of payroll; Data processing services in the field of transportation; Data processing, systematisation and management; Data processing verification; Data retrieval services; Data search in computer files for others; Data searches in computerised files for others; Data transcription; Database management; Data-base management (Computerised -); Database management services; Database marketing; Data-based stock control; Data-based stock location services; Demonstration [for promotional/advertising purposes]; Demonstration of goods; Demonstration of goods and services by electronic means, also for the benefit of the so-called teleshopping and homeshopping services; Demonstration of goods for advertising purposes; Demonstration of goods for promotional purposes; Demonstration of photographic equipment [for advertising purposes]; Demonstration of products; Design of advertising brochures; Design of advertising flyers; Design of advertising logos; Design of advertising materials; Design of marketing surveys; Design of public opinion surveys; Developing promotional campaigns for business; Developing promotional campaigns for businesses; Development and implementation of marketing strategies for others; Development of advertising concepts; Development of concepts for business economy; Development of hospital management systems; Development of marketing strategies and concepts; Development of promotional campaigns; Digital advertising services; Digital marketing; Direct mail advertising; Direct mail advertising services; Direct mail advertising services provided by lettershops; Direct mail advertising to attract new customers and to maintain the existing customer base; Direct market advertising; Direct marketing; Direct marketing consulting; Direct marketing services; Directories (Compilation of business -); Display services for merchandise; Displaying advertisements for others; Dissemination of advertisements; Dissemination of advertisements and of advertising material [flyers, brochures, leaflets and samples]; Dissemination of advertisements via the Internet; Dissemination of advertising and promotional materials; Dissemination of advertising for others; Dissemination of advertising for others via an on-line communications network on the internet; Dissemination of advertising for others via the Internet; Dissemination of advertising, marketing and publicity materials; Dissemination of advertising material; Dissemination of advertising material [leaflets, brochure and printed matter]; Dissemination of advertising material [leaflets, brochures and printed matter]; Dissemination of advertising materials; Dissemination of advertising matter; Dissemination of advertising matter by mail; Dissemination of advertising matter online; Dissemination of advertising via online communications networks; Dissemination of business information; Dissemination of commercial information; Dissemination of data relating to advertising; Dissemination of data relating to business; Dissemination of information relating to the recruitment of graduates; Dissemination services of advertisement matter; Distribution and dissemination of advertising materials [leaflets, prospectuses, printed material, samples]; Distribution of advertisements and commercial announcements; Distribution of advertising announcements; Distribution of advertising brochures; Distribution of advertising leaflets; Distribution of advertising mail and of advertising supplements attached to regular editions; Distribution of advertising, marketing and promotional material; Distribution of advertising material; Distribution of advertising material by post; Distribution of advertising materials; Distribution of advertising matter; Distribution of advertising samples; Distribution of flyers, brochures, printed matter and samples for advertising purposes; Distribution of printed advertising matter; Distribution of printed promotional material by post; Distribution of products for advertising purposes; Economic analysis for business purposes; Economic forecasting; Economic forecasting analysis for business purposes; Economic forecasting and analysis; Economic forecasting for business purposes; Economic forecasting services; Economic information services for business purposes; Economic studies for business purposes; Editing of publicity texts; Efficiency (Business -) expert services; Efficiency expert services; Efficiency experts; Electricity meter reading for billing purposes; Electronic billboard advertising; Electronic data processing; Electronic order processing; Electronic publication of printed matter for advertising purposes; Electronic stock management services; Employee leasing; Employee record services; Employee relocation services; Employment agencies; Employment agency services; Employment agency services for people skilled in the use of computers; Employment agency services for personnel in general office positions; Employment agency services for temporary work assignments; Employment agency services provided for nannies; Employment agency services relating to au pairs; Employment agency services relating to bilingual staff; Employment agency services relating to nurses; Employment agency services relating to placement of medical and nursing personnel; Employment agency services the provision of staff for the manning of show houses; Employment booking services for film television technicians; Employment booking services for performing artists; Employment bureau services; Employment consultancy; Employment consultancy services; Employment consultancy services relating to data processing personnel; Employment counselling; Employment counselling and consultancy services; Employment counselling services; Employment management services for film television technicians; Employment outplacement services; Employment placement services for butlers; Employment placement services for housekeepers; Employment placement services for personal assistants; Employment recruiting consultancy; Employment recruiting services; Employment recruitment; Energy price comparison services; Estimations for marketing purposes; Evaluating the impact of advertising on audiences; Evaluation of business opportunities; Evaluation of personnel requirements; Evaluations relating to business management in commercial enterprises; Evaluations relating to business management in industrial enterprises; Evaluations relating to business management in professional enterprises; Evaluations relating to commercial matters; Event marketing; Execution of stenographic work to order; Executive placement services; Executive recruiting services; Executive recruitment services; Executive search and placement services; Executive search and selection services; Executive search services; Executive selection services; Exhibitions (Arranging -) for advertising purposes; Exhibitions (Arranging -) for business purposes; Exhibitions (Arranging -) for commercial purposes; Exhibitions (Arranging -) for trade purposes; Exhibitions (Conducting -) for advertising purposes; Exhibitions (Conducting -) for business purposes; Exhibitions (Conducting -) for commercial purposes; Exhibitions (Conducting -) for trade purposes; Exhibitions for commercial or advertising purposes; Expert evaluations and reports relating to business matters; Export agency services; Export and import agencies; Export promotion services; Export-import agency services; Fashion show exhibitions for commercial purposes; Fashion shows for promotional purposes (Organization of -); File management (Computerized -); Filing documents or magnetic-tapes [office functions]; Financial auditing; Financial marketing; Financial records management; Financial statement preparation and analysis for businesses; Forecasting (Economic -); Forecasting (Economic -) for business purposes; Foreign trade consultancy services; Foreign trade information and consultation; Foreign trade information (Provision of -); Foreign trade information (Services for the provision of -); Forensic accounting services; Franchising (Business advice relating to -); Franchising (Business advisory services relating to -); Franchising services providing business assistance; Franchising services providing marketing assistance; Gas meter reading for billing purposes; Gift registry services; Goods import-export agencies; Goods or services price quotations; Grain market analysis; Graphic advertising services; Handbill distribution; Headhunting services; Health care cost management; Health care cost review; Help in the management of business affairs or commercial functions of an industrial or commercial enterprise; Hire of advertising aids; Hire of advertising billboards; Hire of advertising equipment; Hire of advertising hoardings; Hire of office equipment; Hire of office machinery; Hiring of advertising materials; Hiring of machines or apparatus for offices; Hiring of office equipment; Hiring of publicity materials; Hiring of typewriters; Hospital management; Hotel management for others; Hotel management service [for others]; Hotels (Business management of -); Human resources consultancy; Human resources consultation; Human resources management; Human resources management and recruitment services; Import agency services; Import and export agencies; Import and export agencies services; Import and export agency services; Import and export services; Import-export agencies; Import-export agencies in the field of energy; Import-export agency services; Income tax returns (Preparation of -); Industrial management assistance (Commercial or -); Industrial management consultation including cost/yield analyses; Information about sales methods; Information agencies (Commercial -); Information and data compiling and analyzing relating to business management; Information and expert opinions relating to companies and business; Information (Business -); Information in business matters; Information or enquiries on business and marketing; Information services relating to advertising; Information services relating to business matters; Information services relating to businesses; Information services relating to data processing; Information services relating to jobs and career opportunities; Initiating telephone calls for others; Inquiries (Business -); Inserting printed matter into envelopes; Interim business management; Intermediary services relating to advertising; Intermediary services relating to the rental of advertising time and space; Internet marketing; Internship placement services; Interpretation of market research data; Interviewing for market research purposes; Interviewing for qualitative market research; Interviewing services [for personnel recruitment]; Inventories (Preparation of -); Inventory control; Inventory management; Inventory management of parts and components for manufacturers and suppliers; Inventory management services; Inventorying merchandise; Investigations (Business -); Investigations of marketing strategy; Invoicing; Invoicing services; Issuing and updating of advertising texts; Issuing of publicity leaflets; Job agency services; Job agency services for medical personnel; Job agency services for para-medical personnel; Job and personnel placement; Job matching services; Job placement; Job placement consultancy; Key return registration; Keypunching [office functions]; Labor exchanges; Labour exchange services; Layout services for advertising purposes; Leasing of advertising billboards; Leasing of advertising hoardings; Leasing of advertising space on pamphlets; Leasing of advertising space on railway properties; Leasing of advertising space on trains; Leasing of billboards; Leasing of office machines; Leasing of typewriters; Licensing of the goods and services of others (Commercial administration of the -); Lifecycle costing for business purposes; Literary agency services consisting of the negotiation of contracts; Loyalty, incentive and bonus program services; Loyalty scheme services; Magazine advertising; Mail order retail services connected with clothing accessories; Mail order retail services for clothing; Mail order retail services for clothing accessories; Mail order retail services for cosmetics; Mail order retail services related to alcoholic beverages (except beer); Mail order retail services related to beer; Mail order retail services related to foodstuffs; Mail order retail services related to non-alcoholic beverages; Mail sorting, handling and receiving; Mail sorting, handling and receiving [office functions]; Mailing list preparation services; Mailing lists (Compilation of -); Mail-order advertising; Maintaining a registry of animal breeds; Maintaining a registry of certified aerospace technicians; Maintaining a registry of certified medical technical professionals; Maintaining a registry of dog breeds; Maintaining a registry of information; Maintaining a registry of professional vocational evaluators; Maintaining files and records concerning the medical condition of individuals; Maintaining personal medical history records and files; Maintenance of asset registers [for others]; Maintenance of personnel records [for others]; Maintenance of registers [for others]; Management accounting; Management administration of commercial undertakings; Management advice; Management advice relating to the placing of staff; Management advice relating to the recruitment of staff; Management (Advisory services for business -); Management advisory services related to franchising; Management and compilation of computerised databases; Management and operation assistance to commercial businesses; Management assistance; Management assistance (Commercial or industrial -); Management assistance for industrial organisations; Management assistance for promoting business; Management assistance in business affairs; Management assistance in the establishment of commercial undertakings; Management assistance services; Management assistance to commercial companies; Management assistance to commercial firms; Management (Computerized file -); Management consultancy (Personnel -); Management consultancy services; Management consulting; Management of a retail enterprise for others; Management of an airline company; Management of business [for others]; Management of business offices for others; Management of business projects [for others]; Management of computer databases; Management of computer files; Management of computerised files; Management of customer loyalty, incentive or promotional schemes; Management of health care clinics for others; Management of hotel incentive programs of others; Management of performing artists; Management of professional athletes; Management of telephone call centers for other; Management of telephone call centers for others; Management on behalf of industrial and commercial enterprises in terms of supplying them with office requisites; Market analysis; Market analysis and research; Market analysis and research services; Market analysis reports; Market analysis services; Market analysis services relating to the availability of antiques; Market analysis services relating to the availability of goods; Market analysis services relating to the sale of antiques; Market analysis services relating to the sale of goods; Market analysis studies; Market assessment consultancy; Market assessment services; Market campaigns; Market canvassing; Market forecasting; Market information services relating to index levels; Market information services relating to market statistics; Market information services relating to trade reports; Market intelligence services; Market investigation via the telephone; Market opinion polling studies; Market prospecting; Market reporting consultancy; Market reporting services; Market reports and studies; Market research; Market research and analysis; Market research and analysis services; Market research and business analyses; Market research and market analysis; Market research and marketing studies; Market research by means of a computer data base; Market research by means of a computer database; Market research consultancy; Market research data analysis; Market research data collection services; Market research data retrieval services; Nanny placement services; Negotiating and concluding commercial transactions for others; Negotiation and conclusion of commercial transactions for third parties; Negotiation and conclusion of commercial transactions for third parties via telecommunication systems; Negotiation and settlement of commercial transactions for third parties; Negotiation of advertising contracts; Negotiation of business contracts for others; Negotiation of commercial transactions for performing artists; Negotiation of commercial transactions for third parties; Negotiation of contracts relating to the purchase and sale of goods; Negotiation of contracts with health care payors; News and current affairs clipping services; News clipping services; Newspaper advertising; Newspaper subscription services; Newspaper subscription services for others; Newspaper subscriptions; Newspaper subscriptions (Arranging -) for others; Obtaining business statistics [for others]; Office administration services [for others]; Office equipment rental services; Office functions; Office functions services; Office machine rental services; Office machines and equipment rental; Office machines (Rental of -); Office management services [for others]; Office services for electronically collating data; Office services for electronically collecting data; Office services for electronically manipulating data; Office support staff recruitment services; Online advertisements; Online advertising; On-line advertising; On-line advertising and marketing services; Online advertising network matching services for connecting advertisers to websites; Online advertising on a computer network; On-line advertising on a computer network; On-line advertising on computer communication networks; Online advertising on computer networks; On-line advertising on computer networks; Online advertising services; Online advertising via a computer communications network; On-line advertising via a computer communications network; On-line auction bidding for others; On-line auctioneering; On-line auctioneering services via the Internet; Online business networking services; Online community management services; Online data processing services; On-line data processing services; Online marketing; Online ordering services; On-line ordering services in the field of restaurant take-out and delivery; On-line promotion of computer networks and websites; Online retail services for downloadable and pre-recorded music and movies; Online retail services for downloadable digital music; Online retail services for downloadable ring tones; Online retail services relating to clothing; Online retail services relating to cosmetics; Online retail services relating to handbags; Online retail services relating to jewelry; Online retail services relating to luggage; Online retail services relating to toys; Online retail store services in relation to clothing; Online retail store services relating to clothing; Online retail store services relating to cosmetic and beauty products; On-line trading services in which seller posts products to be auctioned and bidding is done via the Internet; Operation of a telephone switchboard for others; Operation of businesses [for others]; Operation of commercial businesses [for others]; Operational business assistance to enterprises; Opinion polling; Ordering services [for others]; Ordering services for third parties; Organisation and conducting of product presentations; Organisation and holding of fairs for commercial or advertising purposes; Organisation and management of business incentive and loyalty schemes; Organisation and management of customer loyalty programs; Organisation for a third party of telephone welcoming services and of telephone receptionist services; Organisation of customer loyalty programs for commercial, promotional or advertising purposes; Organisation of events for commercial and advertising purposes; Organisation of exhibitions and events for commercial or advertising purposes; Organisation of exhibitions and trade fairs for business and promotional purposes; Organisation of exhibitions and trade fairs for commercial and advertising purposes; Organisation of exhibitions and trade fairs for commercial or advertising purposes; Organisation of exhibitions for business or commerce; Organisation of exhibitions for commercial and advertising purposes; Organisation of exhibitions for commercial or advertising purposes; Organisation of exhibitions of flowers and plants for commercial or advertising purposes; Organisation of exhibitions or trade fairs for commercial or advertising purposes; Organisation of fashion shows for commercial purposes; Organisation of internet auctions; Organisation of prize draws for advertising purposes; Organisation of promotions using audiovisual media; Organisation of promotions using audio-visual media; Organisation of trade fairs; Organisation of trade fairs and exhibitions for commercial or advertising purposes; Organisation of trade fairs for advertising purposes; Organisation of trade fairs for commercial or advertising purposes; Organisation, operation and supervision of an incentive scheme; Organisation, operation and supervision of customer loyalty schemes; Organisation, operation and supervision of loyalty and incentive schemes; Organisation, operation and supervision of loyalty schemes and incentive schemes; Organisation, operation and supervision of sales and promotional incentive schemes; Organisational consultancy regarding customer loyalty programmes; Organising and conducting job fairs; Organising exhibitions for commercial or advertising purposes; Organization of art exhibitions for commercial or advertising purposes; Organization of events, exhibitions, fairs and shows for commercial, promotional and advertising purposes; Organization of exhibitions and trade fairs for commercial or advertising purposes; Organization of exhibitions for commercial or advertising purposes; Organization of fairs and exhibitions for commercial and advertising purposes; Organization of fairs for commercial and advertising purposes; Organization of fashion shows for promotional purposes; Organization of trade fairs; Organization of trade fairs for commercial or advertising purposes; Organization, operation and supervision of loyalty and incentive schemes; Pay per click advertising; Payroll advisory services; Payroll assistance; Payroll preparation; Payroll processing services [for others]; Permanent staff recruitment; Personal management consultancy services; Personality testing for recruitment purposes; Personality testing for the selection of personnel; Personnel agency services relating to the electronics industry; Personnel consultancy; Personnel management; Personnel management advice; Personnel management and employment consultancy; Personnel management assistance; Personnel management assistance services; Personnel management consultancy; Personnel management consultancy services; Personnel management consultation; Personnel management consulting; Personnel management for advertising purposes; Personnel management of marketing personnel; Personnel management of sales personnel; Personnel management services; Personnel placement; Personnel placement and recruitment; Personnel placement consultancy; Personnel placement services; Personnel recruitment; Personnel recruitment advertising; Personnel recruitment agency services; Personnel recruitment consultancy; Personnel recruitment services; Personnel recruitment services and employment agencies; Personnel relocation; Personnel resources management; Personnel selection [for others]; Personnel selection using psychological testing; Personnel services; Photocopying; Photocopying services; Placement of design staff; Placement of permanent personnel; Placement of staff; Placement of temporary personnel; Placing advertisements for others; Planning and conducting of trade fairs, exhibitions and presentations for commercial or advertising purposes; Planning and conducting of trade fairs, exhibitions and presentations for economic or advertising purposes; Planning concerning business management, namely, searching for partners for amalgamations and business take-overs as well as for business establishments; Planning of marketing strategies; Planning services for advertising; Planning services for marketing studies; Political advertising services; Political opinion polling; Polling (Opinion -); Preparation and compilation of business and commercial reports and information; Preparation and completion of income tax returns; Preparation and presentation of audio visual displays for advertising purposes; Preparation and realization of media and advertising plans and concepts; Preparation of accounts; Preparation of advertisements; Preparation of advertising campaigns; Preparation of advertising material; Preparation of advertising matter; Preparation of annual returns for business undertakings; Preparation of audio and/or visual displays for businesses; Preparation of business balances; Preparation of business reports; Preparation of business statistical data; Preparation of business statistics; Preparation of business surveys; Preparation of commercial reports; Preparation of custom advertisements for others; Preparation of documents relating to business; Preparation of documents relating to taxation; Preparation of economic reports; Preparation of expert evaluations and reports relating to business matters; Preparation of income tax returns; Preparation of inventories; Preparation of invoices; Preparation of mailing lists; Preparation of mailing lists for direct mail advertising services [other than selling]; Preparation of market analysis reports; Preparation of market reports and studies; Preparation of marketing plans; Preparation of marketing surveys; Preparation of pay packets; Preparation of payrolls [for others]; Preparation of project studies relating to business matters; Preparation of public opinion surveys; Preparation of publicity columns; Preparation of publicity documents; Preparation of publicity leaflets; Preparation of publicity material; Preparation of publicity publications; Preparation of reports for marketing; Preparation of résumés for others; Preparation of statements of accounts; Preparation of statistics [business]; Preparation of tax declarations; Radio advertising; Radio advertising and commercials; Radio and television advertising; Real estate marketing; Real estate marketing analysis; Records management services, namely, document indexing for others; Recruiting of office support staff; Recruitment advertising; Recruitment and personnel management services; Recruitment and placement services; Recruitment [casting] of actors; Recruitment consultancy for lawyers; Recruitment consultancy for legal secretaries; Recruitment consultancy services; Recruitment consultants in the financial services field; Recruitment of airline personnel; Recruitment of airport ground staff; Recruitment of computer staff; Recruitment of executive staff; Recruitment of flight personnel; Recruitment of high-level management personnel; Recruitment of personnel; Recruitment of political operatives; Recruitment of political volunteers; Recruitment of temporary personnel; Recruitment of temporary technical personnel; Recruitment (Personnel -); Recruitment services; Recruitment services for sales and marketing personnel; Referral marketing; Registration and transcription of written communications; Registration of written communications and data; Relocation services (Employee -); Relocation services for business; Relocation services for businesses; Rental of advertisement billboards; Rental of advertisement hoardings; Rental of advertisement space; Rental of advertisement space and advertising material; Rental of advertising material; Rental of advertising matter; Rental of advertising space; Rental of advertising space on the internet; Rental of advertising space on the Internet for employment advertising; Rental of advertising space on web sites; Rental of advertising space on-line; Rental of advertising space, time and materials; Rental of advertising time in cinemas; Rental of advertising time on communication media; Rental of all publicity and marketing presentation materials; Rental of billboards; Rental of billboards [advertising boards]; Rental of card-operated vending machines; Rental of coin-operated vending machines; Rental of copying apparatus; Rental of digital billboards; Rental of electronic point of sale (EPOS) equipment; Rental of office equipment; Rental of office equipment in co-working facilities; Rental of office machinery and equipment; Rental of office machines; Rental of office machines and equipment; Rental of photocopiers; Rental of photocopying machines; Rental of publicity equipment; Rental of publicity material; Rental of publicity matter; Rental of sales stands; Rental of signs for advertising purposes; Rental of typewriters; Rental of typewriters and copying machines; Rental of vending machines; Rental [Office machines and equipment -]; Rental (Publicity material -); Renting of advertising spaces; Reproduction (Document -); Reproduction of advertising material; Reproduction of drawings; Reproduction of files [paper]; Reproduction of records [paper]; Reproduction services (Document -); Reprographic services; Research and analysis in the field of market manipulation; Research (Business -); Research for business purposes; Research (Market -); Research of business information; Research services relating to advertising; Research services relating to advertising and marketing; Research services relating to business; Response advertising; Restaurant management for others; Retail of third-party pre-paid cards for the purchase of clothing; Retail of third-party pre-paid cards for the purchase of entertainment services; Retail of third-party pre-paid cards for the purchase of multimedia content; Retail of third-party pre-paid cards for the purchase of telecommunication services; Retail or wholesale services for pharmaceutical, veterinary and sanitary preparations and medical supplies; Retail purposes (Presentation of goods on communication media, for -); Retail services connected with stationery; Retail services connected with the sale of clothing and clothing accessories; Sales account management; Sales administration; Sales demonstration [for others]; Sales management services; Sales promotion; Sales promotion for others; Sales promotion for others by means of privileged user cards; Sales promotion for others provided through the distribution and the administration of privileged user cards; Sales promotion for others through trading stamp schemes; Sales promotion for third parties; Sales promotion services; Sales promotion services for third parties; Sales promotion through customer loyalty programs; Sales promotion using audiovisual media; Sales promotions at point of purchase or sale, for others; Sales volume tracking for others; Sample distribution; Samples (Distribution of -); School fee accounting services; School fee cost accounting services; Scriptwriting for advertising purposes; Search engine marketing services; Search engine optimisation; Search engine optimisation for sales promotion; Search engine optimisation services; Search engine optimization; Search engine optimization for sales promotion; Secretarial and clerical services; Secretarial employment agency services; Secretarial employment services; Secretarial services; Secretarial services provided by hotels; Secretariat services; Selection of executive personnel; Selection of personnel; Selection of staff; Services comprising the composition of statistical data; Services comprising the recording of statistical data; Services comprising the transcription of statistical data; Services for provision of foreign trade information; Services of advertising agencies; Services rendered by a franchisor, namely, assistance in the running or management of industrial or commercial enterprises; Services with regard to product presentation to the public; Serving as a human resources department for others; Shareholder record keeping services; Shop retail services connected with carpets; Shop window display arrangement services; Shop window dressing; Shop window dressings; Shorthand; Shorthand secretarial services; Shorthand services; Shorthand typing; Shows (Arranging trade -); Shows (Conducting business -); Shows (Conducting trade -); Sponsorship search; Sponsorship search consultancy services; Staff placement services; Staff recruitment; Staff recruitment consultancy services; Staff recruitment services; Staff utilisation planning; Statements of account (Drawing up of -); Statements of accounts (Drawing up of -); Statistical analysis and reporting; Statistical analysis and reporting services for business purposes; Statistical evaluations of marketing data; Statistical information (Provision of business -); Statistical studies (Business -); Statistics (Compilation of -); Statistics (Preparation of business -); Stenographic transcription; Stenography; Stenotyping; Stock control services; Stock management services; Stocktaking; Strategic business analysis; Strategic business consultancy; Strategic business planning; Street dissemination of advertising materials; Subscription to a television channel; Subscription to an information media package; Subscriptions (arranging -) to a telematics, telephone or computer service [internet]; Subscriptions (Arranging -) to telecommunication services for others; Subscriptions (Arranging newspaper -) for others; Subscriptions (arranging of) to books, reviews, newspapers or comic books; Subscriptions for newspapers (Arranging of for others -); Subscriptions to electronic journals; Subscriptions to telecommunications database services; Supervision of businesses on behalf of others; Supply chain management services; Support for employees with regard to business matters; Surveys (Business -); Surveys for business purposes; Surveys (Market -); Systematization of data in computer databases; Systemisation of information into computer databases; Systemization of information into computer databases; Talent agency services [business management of performing artists]; ***Targeted*** marketing; Tariff information and advisory services; Tax advice [accountancy]; Tax assessment [accounts] preparation; Tax assessment preparation; Tax consultancy [accountancy]; Tax consultations [accountancy]; Tax declaration procedure services; Tax filing services; Tax planning [accountancy]; Tax preparation; Tax preparation and consulting services; Tax return advisory [accountancy] services; Tax return preparation; Tax returns (Preparation of -); Taxation [accountancy] advice; Taxation [accountancy] consultancy; Taxation [accountancy] consultation; Telecommunication services (Arranging subscriptions to -) for others; Telemarketing; Telemarketing services; Telephone and television auctions; Telephone answering and message handling services; Telephone answering [for others]; Telephone answering for unavailable subscribers; Telephone answering service; Telephone billing; Telephone marketing services [not selling]; Telephone order-taking services for others; Telephone switchboard services; Telephone welcoming services for third parties; Television advertising; Temporary assignment of employees; Temporary assignment of personnel; Temporary employment agencies; Temporary personnel employment services; Temporary personnel placement services; Temporary personnel services; Temporary placement of employees (Services for the -); Testing (Psychological -) for the selection of personnel; Testing to determine employment skills; Testing to determine job competency; Testing to determine professional competency; Texts (Publication of publicity -); Texts (Writing of publicity -); The bringing together, for the benefit of others, of a variety of insurance services, enabling consumers to conveniently compare and purchase those services; The bringing together, for the benefit of others, of a variety of telecommunications services, enabling consumers to conveniently compare and purchase those services; Theatrical casting agency; Tracking and monitoring energy consumption for others for account auditing purposes; Tracking and monitoring fluctuation in gasoline prices for others for account auditing purposes; Trade fair (Organization of -) for commercial or advertising purposes; Trade fairs (Organization of -) for commercial or advertising purposes; Trade information; Trade information (Provision of -); Trade marketing [other than selling]; Trade promotional services; Trade show and commercial exhibition services; Trade show and exhibition services; Trade show management services; Trade shows (Arranging of -); Trade shows (Conducting of -); Transcription; Transcription of communications; Transcription of communications [office functions]; Transcription of data; Transcription of messages; Transcription of recorded communications; Transcription services; Transportation fleet (business management of -) [for others]; Typewriters (Rental of -); Typewriting; Typewriting agency services; Typing; Typing agency services; Typing services; Unmanned retail store services relating to drink; Unmanned retail store services relating to food; Updating advertising material; Updating and maintenance of data in computer databases; Updating and maintenance of information in registries; Updating of advertising information on a computer data base; Updating of advertising material; Updating of business information on a computer data base; Utility meter reading for billing purposes; Vehicle fleet (business management of a -) [for others]; Vehicular registration and title transfer; Vending machine rental services; Vending machines (Rental of -); Veterinary practice business management; Video recordings for advertising purposes (Production of -); Video recordings for marketing purposes (Production of -); Video recordings for publicity purposes (Production of -); Wage payroll preparation; Wage-packets (Preparation of -); Water meter reading for billing purposes; Web indexing for commercial or advertising purposes; Web site traffic optimisation; Web site traffic optimization; Website traffic optimisation; Website traffic optimization; Wholesale ordering services; Wholesale services for pharmaceutical, veterinary and sanitary preparations and medical supplies; Wholesale services in relation to ***agricultural*** equipment; Wholesale services in relation to alcoholic beverages (except beer); Wholesale services in relation to animal grooming preparations; Wholesale services in relation to art materials; Wholesale services in relation to articles for use with tobacco; Wholesale services in relation to audio-visual equipment; Wholesale services in relation to bags; Wholesale services in relation to baked goods; Wholesale services in relation to beauty implements for animals; Wholesale services in relation to beauty implements for humans; Wholesale services in relation to bedding for animals; Wholesale services in relation to beer; Wholesale services in relation to chemicals for use in ***agriculture***; Wholesale services in relation to chemicals for use in forestry; Wholesale services in relation to chemicals for use in horticulture; Wholesale services in relation to chocolate; Wholesale services in relation to cleaning articles; Wholesale services in relation to cleaning preparations; Wholesale services in relation to clothing; Wholesale services in relation to cocoa; Wholesale services in relation to coffee; Wholesale services in relation to computer hardware; Wholesale services in relation to computer software; Wholesale services in relation to confectionery; Wholesale services in relation to construction equipment; Wholesale services in relation to cookware; Wholesale services in relation to cooling equipment; Wholesale services in relation to cups and glasses; Wholesale services in relation to cutlery; Wholesale services in relation to dairy products; Wholesale services in relation to desserts; Wholesale services in relation to dietary supplements; Wholesale services in relation to dietetic preparations; Wholesale services in relation to domestic electrical equipment; Wholesale services in relation to domestic electronic equipment; Wholesale services in relation to earthmoving equipment; Wholesale services in relation to educational supplies; Wholesale services in relation to fabrics; Wholesale services in relation to festive decorations; Wholesale services in relation to floor coverings; Wholesale services in relation to fodder for animals; Wholesale services in relation to food cooking equipment; Wholesale services in relation to food preparation implements; Wholesale services in relation to foodstuffs; Wholesale services in relation to footwear; Wholesale services in relation to fragrancing preparations; Wholesale services in relation to freezing equipment; Wholesale services in relation to frozen yogurts; Wholesale services in relation to fuels; Wholesale services in relation to furnishings; Wholesale services in relation to furniture; Wholesale services in relation to games; Wholesale services in relation to hand-operated implements for construction; Wholesale services in relation to hand-operated tools for construction; Wholesale services in relation to headgear; Wholesale services in relation to heaters; Wholesale services in relation to heating equipment; Wholesale services in relation to horticulture equipment; Wholesale services in relation to horticulture products; Wholesale services in relation to hygienic implements for animals; Wholesale services in relation to hygienic implements for humans; Wholesale services in relation to ice creams; Wholesale services in relation to information technology equipment; Wholesale services in relation to jewellery; Wholesale services in relation to kitchen appliances; Wholesale services in relation to kitchen knives; Wholesale services in relation to lighting; Wholesale services in relation to litter for animals; Wholesale services in relation to lubricants; Wholesale services in relation to luggage; Wholesale services in relation to meats; Wholesale services in relation to medical apparatus; Wholesale services in relation to medical instruments; Wholesale services in relation to metal hardware; Wholesale services in relation to navigation devices; Wholesale services in relation to non-alcoholic beverages; Wholesale services in relation to pharmaceutical preparations; Wholesale services in relation to preparations for making alcoholic beverages; Wholesale services in relation to preparations for making beverages; Wholesale services in relation to printed matter; Wholesale services in relation to refrigerating equipment; Wholesale services in relation to saddlery; Wholesale services in relation to sanitary installations; Wholesale services in relation to sanitation equipment; Wholesale services in relation to seafood; Wholesale services in relation to sewing articles; Wholesale services in relation to sorbets; Wholesale services in relation to sporting articles; Wholesale services in relation to sporting equipment; Wholesale services in relation to stationery supplies; Xerography.Class 39 Accompaniment of travellers; Accompanying of travellers; Advisory services related to ***removals***; Advisory services relating to road transportation; Advisory services relating to the distribution of goods; Advisory services relating to the handling of goods; Advisory services relating to the packing of goods; Advisory services relating to the repacking of goods; Advisory services relating to the storage of goods; Advisory services relating to the tracking of goods in transit; Advisory services relating to the transportation of goods; Advisory services relating to transport; Aeroplane rental; Agency services for arranging cruises; Agency services for arranging the transportation of goods; Agency services for arranging the transportation of persons; Agency services for arranging the transportation of travellers; Agency services for arranging the transportation of travellers' luggage; Agency services for arranging tours; Agency services for arranging travel; Agents for arranging travel; Air ambulance services; Air cargo transport; Air cargo transport services; Air charter brokerage services; Air charter services; Air courier services; Air freight shipping services; Air freight transportation; Air line services; Air navigation services; Air passenger transport services; Air ticket booking services; Air traffic control services; Air transport; Air transport of passengers; Air transport of valuables; Air transport services; Air transportation; Air transportation of freight; Air transportation of passengers; Air transportation services; Air transportation services featuring a frequent flyer bonus program; Air transportation services for cargo; Air transportation services for freight; Air transportation services for passengers; Air travel services; Aircraft charter brokerage; Aircraft chartering; Aircraft chartering services; Aircraft handling; Aircraft parking; Aircraft parking services; Aircraft rental; Aircraft (Rental of -); Airline and shipping services; Airline bookings; Airline check-in services; Airline services; Airline services for the transportation of cargo; Airline services for the transportation of goods; Airline services for the transportation of passengers; Airline ticket reservation services; Airline ticket services; Airline transport; Airline transportation services; Airplane chartering; Airplane rental; Airport baggage check-in services [not including security inspection]; Airport baggage handling; Airport check-in services; Airport parking services; Airport passenger check-in services; Airport passenger shuttle services between the airport parking facilities and the airport; Airport services; Airport transfer services; Ambulance services; Ambulance transport; Animal rescue services [transport]; Armored car transport; Armored-car transport; Armoured car transport; Armoured vehicle transport; Armoured-car transport; Arrangement for the delivery of parcels by sea and by air; Arrangement for the transportation of passengers by air; Arrangement for the transportation of passengers by sea; Arrangement for the transportation of works of art; Arrangement of excursions; Arrangement of passenger transport; Arrangement of sightseeing tours; Arrangement of taxi transport; Arrangement of the distribution of fuels; Arrangement of the distribution of hydrocarbons; Arrangement of the storage of fuels; Arrangement of the storage of hydrocarbons; Arrangement of the transportation of fuels; Arrangement of the transportation of hydrocarbons; Arrangement of tours; Arrangement of transport; Baggage check-in services; Baggage handling; Baggage handling services; Barge transport; Bicycle rental; Bicycle sharing services; Boat chartering; Boat chartering services; Boat cruises; Boat hire; Boat rental; Boat storage; Boat transport; Boat transportation; Boat transportation services; Boathouse services; Bonded storage; Bonded storage of goods; Bonded storage of wines; Bonded warehousing; Booking agency services for airline travel; Booking agency services for car hire; Booking agency services for sightseeing tours; Booking agency services for travel; Booking agency services relating to travel; Booking and arranging of access to airport lounges; Booking and reservation services for tours; Booking of air tickets; Booking of airport parking; Booking of hire cars; Booking of holiday travel and tours; Booking of rail tickets; Booking of sea passages; Booking of seats for air travel; Booking of seats for coach travel; Booking of seats for rail travel; Booking of seats for transportation by air; Booking of seats for transportation by motor vehicles; Booking of seats for transportation by rail; Booking of seats for transportation by water; Booking of seats for travel; Booking of seats (travel); Booking of sightseeing tours through agencies; Booking of tickets for air travel; Booking of tickets for train travel; Booking of tickets for travel; Booking of transport; Booking of transport via global computer networks; Booking of transportation via a website; Booking of travel through tourist offices; Bottling services; Bridge operation; Bridges (Operation of -); Brokerage (Freight -); Brokerage services relating to storage; Brokerage services relating to transport; Brokerage (Ship -); Brokerage (Transport -); Bulk storage; Bus chartering; Bus ferry services; Bus transport; Bus transport services; Bus transportation services; Cable-car transport; Canal lock gate operation; Canal lock gates (Operation of -); Canal locks (Operating -); Car hire; Car hire services; Car park services; Car parking; Car parking facilities (Provision of -); Car parking services; Car parking [valet] services; Car pooling services; Car rental; Car rental services; Car sharing services; Car transport; Car transport services; Car transporters (Rental of -); Cargo container rental services; Cargo delivery services; Cargo forwarding services; Cargo handling; Cargo handling and freight services; Cargo handling services; Cargo loading services; Cargo services; Cargo ship transport; Cargo tracking services; Cargo transportation; Cargo unloading; Cargo unloading services; Carpooling services; Carriage of persons by urban rapid transit rail systems; Cars (Rental of -); Carting; Carting of furniture; Carting of goods; Carting services; Cash replenishment of automated teller machines; Charitable services in the nature of providing transport for the elderly or disabled persons; Charitable services, namely distribution of blankets; Charitable services, namely distribution of clothing; Charitable services, namely providing transportation; Charitable services, namely, providing transportation to the elderly or handicapped persons; Charter of aircraft; Charter of boats; Charter of helicopters; Charter of motor vehicles; Charter of sea vessels; Charter of ships; Chartering of aircraft; Chartering of boats; Chartering of buses; Chartering of marine vessels; Chartering of shipping; Chartering of ships; Chartering of transport; Chartering of vehicles; Chartering of vehicles for transportation; Chartering of vehicles for travelling; Chartering of watercraft; Chartering of watercraft, yachts, ships, boats and water vehicles; Chartering of yachts; Chauffeur driven car hire services; Chauffeur services; Clearance [***removal*** and transportation] of liquid waste; Clearance [***removal*** and transportation] of waste; Coach hire; Coach (Motor -) rental; Coach (Railway -) rental; Coach transport; Coach transport services; Coach transportation services; Coat check services; Coin wrapping services; Cold store keeping services; Collection and transport of electronic scrap; Collection of cash from vending machines; Collection of commercial waste; Collection of containers for waste materials; Collection of documents; Collection of domestic waste; Collection of freight; Collection of goods; Collection of industrial waste; Collection of letters; Collection of liquid waste; Collection of luggage; Collection of merchandise; Collection of packages; Collection of packages by air; Collection of packages by road; Collection of packages by sea; Collection of recyclable goods [transport]; Collection of refuse; Collection of sewage through public sewers; Collection of waste skips; Collection, transport and delivery of goods; Collection, transport and delivery of goods, documents, parcels and letters; Collection, transport and delivery of palletised goods; Delivery and forwarding of letters and parcels; Delivery and forwarding of mail; Delivery and storage of goods; Delivery by road; Delivery, despatching and distribution of newspapers and magazines; Delivery [distribution] of goods; Delivery (Flower -); Delivery (Message -); Delivery of bottled water to homes and offices; Delivery of cargo by air; Delivery of cargo by ***land***; Delivery of correspondence; Delivery of disposable napkins; Delivery of domestic appliance parts; Delivery of food; Delivery of food and drink prepared for consumption; Delivery of food by restaurants; Delivery of fuel; Delivery of fuel to barges; Delivery of furniture; Delivery of gas cookers; Delivery of gift baskets with selected items regarding a particular occasion or theme; Delivery of goods; Delivery of goods by mail order; Delivery of goods by messenger; Delivery of goods by rail; Delivery of groceries; Delivery of hampers containing food and drink; Delivery of letters; Delivery of magazines; Delivery of mail by courier; Delivery of messages; Delivery of messages by courier; Delivery of messages [courier]; Delivery of newspapers; Delivery of packets; Delivery of parcels; Delivery of parcels by air; Delivery of parcels by courier; Delivery of parcels by ***land***; Delivery of parcels by road; Delivery of parts to grounded aircraft via airplane; Delivery of spirits; Delivery of valuables; Delivery of vehicles; Delivery of water; Delivery of wines; Delivery services; Depository storage; Depot services for the storage of vehicles; Despatch of goods; Disposal [transport] of waste; Distribution and supply of water; Distribution and transmission of electricity; Distribution by pipeline and cable; Distribution of electricity; Distribution of electricity to households; Distribution of energy; Distribution of energy for heating and cooling buildings; Distribution of gas; Distribution of heat; Distribution of renewable energy; Distribution of water; Distribution services; Distribution services relating to beverages, such as alcoholic beverages; Distribution [transport] of frozen semen; Distribution [transport] of goods by air; Distribution [transport] of goods by road; Distribution [transport] of goods by sea; Distribution [transport] of retail goods; Diving bells (Rental of -); Diving services (Salvage -); Diving suits (Rental of -); Document delivery; Document delivery by non-electronic means; Document delivery [hand carried]; Drayage services; Driving services; Dumping [transportation] of sewage waste; Dumping [transportation] of waste; Electricity distribution; Electricity distribution and supply; Electricity distribution services; Electricity distribution via cables; Electricity distribution via wires; Electricity storage; Electricity supply and distribution; Electricity supply services; Embarking services; Emergency auto or truck towing; Emergency automobile towing; Emergency truck towing; Emptying [***removal***] of the contents cesspits; Emptying [***removal***] of the contents septic tanks; Emptying [***removal***] of the contents sumps; Energy distribution; Energy (Distribution of -); Escorting [accompanying] of travellers; Escorting of passengers; Escorting of patients during transportation; Escorting of travelers; Escorting of travellers; Escorting travellers; Excursion arrangement; Excursions (Arranging of -); Expeditions (Arranging of -); Express delivery of freight; Express delivery of goods; Express delivery of letters; Fares (Provision of information relating to -); Ferry boat services; Ferry transport services; Ferryboat operating; Ferryboat transport; Ferry-boat transport; Filling of containers; Filling of machines and containers; Filling of vehicles with freight; Filling of vending machines; Filling of vessels with freight; Flight planning services; Flower delivery; Food delivery; Food delivery services; Food storage services; Food transportation services; Forwarding agency services; Forwarding of freight; Forwarding of goods; Forwarding of letters; Forwarding of parcels; Franking of mail; Freezers (Rental of -); Freight and cargo services; Freight and cargo transportation and ***removal*** services; Freight and transport brokerage; Freight and transport brokerage services; Freight brokerage; Freight brokerage [forwarding (Am.)]; Freight brokerage services; Freight forwarding; Freight forwarding agency services; Freight forwarding between seaports; Freight forwarding by air; Freight forwarding by ***land***; Freight forwarding by sea; Freight forwarding services; Freight loading services; Freight services; Freight ship transport; Freight shipping; Freight [shipping of goods]; Freight train transport; Freight transportation; Freight transportation brokerage; Freight transportation by air; Freight transportation services; Freight warehousing; Freight warehousing services; Freight-forwarding services; Freighting; Freighting services; Frozen food storage services; Frozen storage facilities (Provision of -); Frozen-food locker rental; Fuel bunkering services [storage]; Fuel delivery services; Fuel distribution services; Fur storage; Furniture moving; Furniture ***removals***; Furniture storage; Furniture transportation; Furniture (Transporting -); Garage rental; Garages (Rental of -); Garaging; Garbage collection; Garbage collection [trash pickup only]; Gas distribution services; Gas storage services; Gas supplying [distribution]; Gift delivery; Gift wrapping; Gift-wrapping; Global Positioning System navigation services; Goods (Delivery of -); Goods (Storage of -); Goods warehousing; GPS navigation services; Ground support freight handling services provided at airports; Ground support passenger handling services; Ground traffic control services for aircraft; Ground transportation relating to the aviation industry; Guarded transport; Guarded transport of goods; Guarded transport of money and valuables; Guarded transport of valuables; Guarded transportation; Guarded transportation of valuables; Guarded transportation of valuables and money by lorry; Guarded truck transport; Guide services (Travel -); Handling of baggage; Handling of passengers luggage; Handling [transport] of rubbish; Harboring services for ships and boats; Harbour crane unloading; Haulage services; Haulage services (Road -); Haulier (Services of a -); Hauling; Hauling services; Hazardous materials warehousing; Hazardous waste transport services; Heat supplying [distribution]; Helicopter transport; Hire of aircraft; Hire of boats; Hire of buses; Hire of cars; Hire of fork lift trucks; Hire of garages; Hire of motor vehicles; Hire of pallet cages; Hire of pallet collars; Hire of pallet racks; Hire of pallets; Hire of rail transport; Hire of road transport; Hire of transport vehicles; Hire of vehicles; Hire of warehouse storage space; Hire of waste handling containers; Hire of waste storage containers; Hired car transport; Hiring of cars; Hiring of fork lift trucks; Hiring of horses for transport; Hiring of motor vehicles; Hiring of storage sites; Hiring of transport vehicles; Hiring of vehicles; Holiday travel reservation services; Horse boxes (Rental of -); Horse rental; Horses (Rental of -) for transportation purposes; Household ***removal*** services; Household ***removals***; Ice breaking for the shipping industry; Ice-breaking; Import and export cargo handling services; Industrial ***removal*** services [transportation]; Information and advisory services in relation to the distribution of energy; Information on transport; Information relating to airline services; Information relating to journeys (Services for the provision of -); Information relating to transport services; Information relating to transport (Services for the provision of -); Information relating to travel (Services for the provision of -); Information relating to travelling (Services for the provision of -); Information services relating to guarded transport; Information services relating to methods of transport; Information services relating to refrigerated storage; Information services relating to road conditions; Information services relating to storage; Information services relating to the location of goods; Information services relating to the movement of cargo; Information services relating to the transportation of bitumen; Information services relating to the transportation of crude oil; Information services relating to the transportation of goods; Information services relating to the transportation of petroleum; Information services relating to traffic; Information services relating to traffic congestion; Information services relating to traffic speed; Information services relating to transport timetables; Information services relating to transportation; Information services relating to travel; Information (Transportation -); Inland waterway transport; Inspection of goods for transportation; International air freight shipping services; International ocean freight shipping services; Issuing of tickets for travel; Itinerary planning services; Itinerary travel advice services; Labelling services; ***Land*** freight services; Launch and placement in prescribed orbit of satellites of others; Launching of satellites; Launching of satellites for others; Launching of spacecraft; Leasing of aircraft; Leasing of cargo container chassis; Leasing of cargo containers; Leasing of lorries; Leasing of motor vehicles; Leasing of pallets for industrial and commercial use; Leasing of pallets for the transport or storage of goods; Leasing of railroad flatcars; Leasing of road trailers; Leasing of ships; Leasing of storage units; Leasing of trailers; Leasing of trucks; Leasing of vehicles; Leasing of warehouse units; Leasing the use of power lines to third parties for the transmission of electricity; Letters (Collection of -); Letters (Delivery of -); Lighterage services; Limousine services; Loading and unloading of airplanes; Loading and unloading of goods; Loading and unloading of vehicles; Loading of air freight; Loading of cargo; Loading of coal; Loading of coke; Loading of freight; Loading of freight containers onto rail vehicles; Loading of freight containers onto ships; Loading of freight containers onto trucks; Loading of ore; Loading of scrap; Loading of ships; Loading of slag; Loading of trains; Loading of trucks; Loan of vehicles; Loaning and rental of aeroplanes; Lorries (Rental of -); Luggage storage; Luggage storage services; Luggage trolley service; Mail box rental; Mail delivery; Mail delivery and courier services; Mail forwarding; Mail-boxes (Rental of -); Making travel bookings (Services for -); Making travel reservations (Services for -); Management of vehicular traffic flow through advanced communications network and technology; Marina services; Marina services [berthing, mooring, storage]; Marina services [docking services]; Marine freighting; Marine salvage; Marine towage; Marine towing; Marine transport; Marine transport of liquefied natural gas; Marine transport services; Maritime towing; Maritime towing services; Mass transit services for the general public; Merchandise (Packing of -); Message delivery; Messenger courier services; Messenger (Delivery of goods by -); Messenger services for letters; Messenger services for messages; Minibus transport services; Monorail transport; Mooring facility services; Motor car rental; Motor car transport services; Motor coach rental; Motor ***land*** vehicle hire services; Motor ***land*** vehicle leasing services; Motor ***land*** vehicle renting; Motor vehicle hire services; Motor vehicle recovery services; Motor vehicle rental; Motor vehicle transport services; Motorcycle rental; Moving van services; Moving van transport; Nappy delivery services; Naval tugging services; Navigation (positioning, and route and course plotting); Navigation services; Navigational advisory services; Newspaper delivery; Ocean salvage services; Ocean shipping; Ocean towing services; Oil bunkering services [storage]; Oil distribution services; Omnibus transport services; Operating canal locks; Operating cruises; Operating of road and motorway tolls; Operating of tours; Operating toll roads; Operating tours; Operation of canal lock gates; Operation of ferryboats; Operation of locks and bridges used for transport purposes; Operation of stations used for transport purposes; Operation of transporter bridges; Organisation of city sightseeing; Organisation of cruises; Organisation of excursions; Organisation of holiday travel; Organisation of sightseeing tours; Organisation of tours; Organisation of travel; Organisation of travel tours; Organisation of trips; Organising of excursions; Organising of foreign travel; Organising of travel; Organising the transportation of people; Organising tours; Organization of cruises; Organization of excursions; Organization of sightseeing tours; Organization of tours; Organization of travel; Organization of travel and boat trips; Organization of travel tours; Organization of trips; Organizing and arranging travel; Organizing of travel; Organizing transport for travelers; Overnight storage of letters in depots; Overnight transportation of letters by air; Overnight transportation of letters by road; Overseas ***removal*** services; Package delivery; Package holiday services for arranging travel; Packaging and storage of goods; Packaging and storage services; Packaging articles for transportation; Packaging articles to the order and specification of others; Packaging clothing articles for transportation; Packaging of food; Packaging of goods; Packaging of goods in transit; Packaging of products; Packaging services; Packing; Packing and packaging services; Packing articles for transportation; Packing of aerosols to order and specification; Packing of cargo; Packing of food; Packing of food products; Packing of freight; Packing of goods for ***removal***; Packing of goods in containers; Packing of liquids to order and specification; Packing of merchandise; Packing services; Pallet packaging services; Palletised freight distribution services; Paper and cardboard collection for recycling; Parcel collection services; Parcel delivery; Parcel delivery services; Parcel distribution; Parcel receipt services; Parcel shipping services; Parcel storage services; Parking and vehicle storage, mooring; Parking garages services; Parking lot services; Parking of boats; Parking of cars; Parking place rental; Parking services; Parking services for vehicles; Parking space rental; Passenger cargo services; Passenger coach services; Passenger escort services; Passenger road transport services; Passenger ship transport; Passenger train transport; Passenger transport; Passenger transport services; Passenger transportation services; Passenger transportation services by air; Passenger transportation services by ***land***; Passenger transportation services by rail; Passenger transportation services by sea; Passenger vehicle hire; Passengers (Transportation of -); Personal tour guide services; Pet rescue services; Physical storage of electronically stored computer games; Physical storage of electronically stored data, documents, digital photographs, music, images, video, and computer games; Physical storage of electronically stored data or documents; Physical storage of electronically stored digital data, photographs, audio and image files; Physical storage of electronically stored digital images; Physical storage of electronically stored digital music; Physical storage of electronically stored digital photographs; Physical storage of electronically stored digital video files; Physical storage of electronically stored files and documents; Physical storage of electronically-stored data or documents; Pick-up and delivery of letters; Pickup and delivery of parcels and goods; Pick-up and delivery of textile goods; Piloting; Piloting of civilian drones; Piloting of ships; Pipeline (Transport by -); Pipeline transport of gases; Pipeline transport of liquids; Pipeline (Transport of oil by -); Pizza delivery; Plane chartering; Planning and arranging of sightseeing tours and day trips; Planning and booking of airline travel, via electronic means; Planning and booking of travel and transport, via electronic means; Planning, arranging and booking of travel; Planning, arranging and booking of travel by electronic means; Planning of journeys; Pleasure boat cruises; Pleasure boat transport; Pleasure boat transport services; Port services [docking services]; Porter services; Porter services [transportation]; Porterage; Porterage services; Post restante services; Postal services; Power supply and distribution; Rail freight distribution services; Rail freight services; Rail transport services; Railway coach rental; Railway passenger transport; Railway transport; Railway transport services; Railway truck rental; Recovery of commercial motor ***land*** vehicles; Recovery of vehicles; Recovery services for vehicles; Recovery (Vehicle -); Recovery winching of vehicles; Re-filling of containers; Refilling of vending machines; Refloating of ships; Re-floating of ships; Refrigerated storage; Refrigerated storage of goods; Refrigerated storage of seafood; Refrigerated storage services; Refrigerated transport of cold goods; Refrigerated transport of food; Refrigerated transport of frozen goods; Refrigerated warehousing; Refrigeration storage; Refrigerator rental; Refuse collection services; ***Removal*** of commercial furniture; ***Removal*** of domestic furniture; ***Removal*** of domestic goods; ***Removal*** of household goods; ***Removal*** of office equipment; ***Removal*** of personal effects; ***Removal*** of waste; ***Removal*** services; ***Removal*** services [moving services]; ***Removals***; ***Removals*** (Household -); Rental and hire of aircraft; Rental and hire of vehicles; Rental car reservation; Rental of aero engines; Rental of aeroplanes; Rental of aircraft; Rental of aircraft engines; Rental of aircraft parts; Rental of airplanes; Rental of automobile trailers; Rental of automobiles; Rental of barges; Rental of barrows; Rental of berths for boats; Rental of bicycles; Rental of boats; Rental of buses; Rental of canoes; Rental of car parking spaces; Rental of car transporters; Rental of cars; Rental of chauffeur driven cars; Rental of coaches; Rental of commercial vehicles; Rental of containers; Rental of containers for freight; Rental of containers for warehousing and storage; Rental of crates; Rental of cycles; Rental of deep water diving suits; Rental of diving bells; Rental of diving bells and diving suits; Rental of diving helmets; Rental of diving suits; Rental of dolly tracks; Rental of electric cars; Rental of electric wine cellars; Rental of fork-lift trucks; Rental of freezers; Rental of freezers for commercial use; Rental of freezers for household purposes; Rental of freezing machines and apparatus; Rental of frozen food lockers; Rental of garage parking places; Rental of garage space; Rental of garages; Rental of garages and parking places; Rental of goods vehicles; Rental of GPS equipment for navigational purposes; Rental of GPS-equipped vehicles; Rental of horse-boxes; Rental of horses; Rental of horses for transport; Rental of hydrogen cars; Rental of loading-unloading machines and apparatus; Rental of lorries; Rental of machines which issue tickets for travel; Rental of mail boxes; Rental of means of transportation; Rental of mechanical parking systems; Rental of moorings for boats; Sailboat transportation services; Salvage diving apparatus (Rental of -); Salvage diving services; Salvage of motor vehicles; Salvage of ships; Salvage of ships cargo; Salvage of wrecks; Salvage of yachts; Salvage services; Salvage (Underwater -); Salvaging; Salvaging services; Scheduled passenger airline services; Sea freight forwarding services; Sea freight services; Sea towage services; Seat reservation services for travel; Seat reservation services for travellers; Seat reservations for various forms of transport; Security storage services [transport]; Services for arranging the transportation of travellers; Services for arranging tours; Services for arranging transportation by air; Services for arranging transportation by rail; Services for arranging transportation by road; Services for arranging transportation by water; Services for chartering railway transport; Services for freight-forwarding by air; Services for freight-forwarding by ***land***; Services for freight-forwarding by sea; Services for the arranging of excursions for tourists; Services for the arranging of tours; Services for the arranging of transportation; Services for the booking of seats for travel; Services for the booking of travel; Services for the escorting of travellers; Services for the garaging of vehicles; Services for the operation of tugs; Services for the provision of information relating to motor transport; Services for the provision of information relating to rail transport; Services for the provision of information relating to travel routes; Services for the storage of freight; Services for the supply of water by pipeline; Services for the transportation of baggage; Services for the transportation of freight; Services for the transportation of passengers; Services for the transportation of travellers; Services for transportation; Services of a freight broker; Sewage disposal [transport] services; Sewage transportation; Ship brokerage; Ship bunkering services [storage]; Ship chartering; Ship chartering services; Ship loading services; Ship piloting; Ship refloating; Ship rescue services; Ship transport; Ship transport services; Ship unloading; Shipbrokerage; Shipping; Shipping agency; Shipping agency services; Shipping agency services for arranging the transportation of goods; Shipping of cargo; Shipping of documents; Shipping of goods; Shipping services; Ships in distress (Rescue of -); Ships (Refloating of -); Ships (Rental of -); Sightseeing services; Sightseeing, tour guide and excursion services; Sightseeing [tourism]; Sightseeing tours (Arranging of -); Sightseeing tours (Conducting -); Skip hire service; Slipping of boats; Slipping of yachts; Stevedore services; Stevedoring; Stevedoring services; Storage; Storage and delivery of goods; Storage (Boat -); Storage containers (Rental of -); Storage information; Storage of ***agricultural*** foodstuffs; Storage of aviation fuel; Storage of baggage; Storage of beverages; Storage of boats; Storage of brochures; Storage of cargo; Storage of cargo after transportation; Storage of cargo before transportation; Storage of clothes; Tanker transport; Taxi services; Taxi transport; Taxi transport for people in wheelchairs; Temperature- and humidity-controlled storage of wines; Temperatures controlled storage of chemicals; Temporary safekeeping of personal belongings; Temporary storage of deliveries; Temporary storage of personal belongings; Ticket booking services for travel; Ticket reservation services for travel; Ticket reservation services (Travel -); Ticketing services for travel; Timetable enquiry services relating to travel; Tour arranging; Tour conducting; Tour guide services; Tour operating; Tour operating and organising; Tour operating and organizing; Tour operator services for the booking of travel; Tour organising; Tour organizing; Tour reservation services; Tourist guide services; Tourist travel reservation services; Tours (Arranging of -); Tours (Arranging of travel -); Towage of ships; Towing; Towing and transport of cars as part of vehicle breakdown services; Towing by motor vehicles; Towing of aeroplanes; Towing of motor vehicles; Towing of road vehicles; Towing of vehicles; Towing of vehicles in connection with breakdown services; Towing of vessels; Tracking and tracing of shipments; Tracking and tracing services for letters and parcels; Tracking of passenger or freight vehicles by computer or via GPS; Tracking of passenger vehicles by computer or via GPS; Traffic information; Traffic information services; Tram services; Tram transport; Transit services; Transmission of oil or gas through pipelines; Transport; Transport and delivery of goods; Transport and distribution of natural gas and liquefied gas; Transport and freight brokerage; Transport and freight brokerage services; Transport and storage; Transport and storage of goods; Transport and storage of trash; Transport and storage of waste; Transport brokerage; Transport by air; Transport by barge; Transport by boat; Transport by coach; Transport by ferry; Transport by heavy goods vehicles; Transport by inland water; Transport by ***land***; Transport by man-powered vehicles; Transport by pipeline; Transport by rail; Transport by road; Transport by sea; Transport by ship; Transport by two-wheeled motor vehicles; Transport by water; Transport information, advice and reservation services; Transport information service; Transport of building materials; Transport of cargo by air; Transport of contaminated soil; Transport of contaminated waste; Transport of cranage; Transport of farm products; Transport of food; Transport of freight by air; Transport of freight by rail; Transport of freight containers by lorry; Transport of freight containers by rail; Transport of freight containers by ship; Transport of fuels by pipeline; Transport of furniture; Transport of gas by pipelines; Transport of goods; Transport of goods by inland water; Transport of goods by rail; Transport of goods by ship; Transport of liquefied natural gas by sea; Transport of money; Transport of money and valuables; Transport of motor vehicles; Transport of natural gas; Underwater recovery services; Underwater salvage; Underwater salvage services; Unloading and repackaging services; Unloading cargo; Unloading cargo and luggage; Unloading of cargo; Unloading of cargo (Services for the -); Unloading of goods (Services for the -); Unloading services; Valet parking; Valuables (Guarded transport of -); Vehicle breakdown assistance [towing]; Vehicle breakdown recovery services; Vehicle breakdown towing services; Vehicle contract hire; Vehicle hire; Vehicle hire services; Vehicle leasing services; Vehicle location services; Vehicle parking; Vehicle parking and storage; Vehicle parking services; Vehicle recovery; Vehicle rental; Vehicle rental services; Vehicle rescue [recovery]; Vehicle rescue services; Vehicle routing by computer on data networks; Vehicle salvage services; Vehicle storage; Vehicle towing services; Vehicle transport services; Vehicle-driving services; Vehicles (Recovery of -); Vehicles (Rental of -); Vessel rental; Vessel salvage; Vessel salvage services; Vessel towing services; Vessel transport; Warehouse storage; Warehouse storage services; Warehouses (Rental of -); Warehousing; Warehousing and cellarage services; Warehousing information; Warehousing of baggage; Warehousing of components; Warehousing of finished goods; Warehousing of freight; Warehousing of goods; Warehousing of parts; Warehousing services; Waste collection; Waste disposal [transporation]; Waste ***removal***; Waste ***removal*** [transport]; Waste storage; Waste transport; Water distribution; Water distribution and supply; Water distribution services; Water supply; Water supply and distribution services; Water supply services; Water supplying; Water supplying [distribution]; Water transport services; Weighbridge services; Wharfage services; Wheelbarrows (Rental of -); Winching of vehicles; Wrapping and packaging of goods; Wrapping and packaging services; Wrapping of goods; Wrapping of merchandise; Wrapping services for baggage protection during travel; Yacht and boat charter services; Yacht chartering; Yacht chartering services.Class 41 Abacus instruction; Academic examination services; Academic mentoring of school age children; Academies [education]; Academy education services; Academy services (Education -); Accreditation [certifying] of educational achievement; Accreditation of educational services; Accreditation of professional competency; Administration of lotteries for others; Administration [organisation] of amusement services; Administration [organisation] of competitions; Administration [organisation] of contests; Administration [organisation] of cultural activities; Administration [organisation] of entertainment services; Administration [organisation] of gameshows; Administration [organisation] of gaming services; Administration [organisation] of poker games; Adult education services; Adult education services relating to accounting; Adult education services relating to auditing; Adult education services relating to banking; Adult education services relating to commerce; Adult education services relating to environmental issues; Adult education services relating to finance; Adult education services relating to intellectual property; Adult education services relating to law; Adult education services relating to management; Adult education services relating to medicine; Adult education services relating to pharmacy; Adult training; Adult tuition; Advanced driving instruction for drivers of motor cars; Advanced training; Adventure playground services; Adventure training for children; Advice relating to medical training; Advisory services relating to education; Advisory services relating to entertainment; Advisory services relating to publishing; Advisory services relating to the organisation of sporting events; Advisory services relating to training; Aerial fitness instruction; Aerial photography; Aerial photography via drones; Aerial videography services; Aerobic and dance facilities; Aerobics competitions; Aerobics training services; Aikido instruction; Air shows (Arranging and conducting -); Airplane flight instruction; Amusement and theme park services; Amusement and theme parks, fairs, zoos and museums; Amusement arcade gaming machine rental services; Amusement arcade machine rental services; Amusement arcade services; Amusement arcade services (Providing -); Amusement arcades; Amusement centers; Amusement centre services; Amusement centres; Amusement park and theme park services; Amusement park services; Amusement park services with a theme of films; Amusement park services with a theme of radio productions; Amusement park services with a theme of television productions; Amusement parks; Amusement services; Amusements; Analysing educational test scores and data for others; Analyzing educational tests scores and data for others; Animal dressage; Animal exhibitions; Animal exhibitions and training of animals; Animal exhibitions (Arranging of -); Animal exhibitions (Conducting of -); Animal shows; Animal training; Animated musical entertainment services; Animation production services; Aquatic recreation areas (Operation of -); Arcade game services; Archive library services; Arrangement of conferences for educational purposes; Arrangement of conferences for recreational purposes; Arrangement of conventions for educational purposes; Arrangement of conventions for recreational purposes; Arrangement of professional golf tournaments; Arrangement of seminars for educational purposes; Arrangement of seminars for recreational purposes; Arrangement of sports competitions; Arrangement of training courses in teaching institutes; Arranging and conducting athletic competitions; Arranging and conducting award ceremonies; Arranging and conducting competitions; Arranging and conducting conferences; Arranging and conducting conferences and seminars; Arranging and conducting education fairs; Arranging and conducting educational conferences; Ballet classes; Ballet lessons; Ballet schools; Ballet shows; Balloon decorating services; Band performances (Live -); Baseball camps; Baseball instruction; Basketball camp services; Basketball camps; Basketball instruction; Bath facilities (provision of -) [swimming]; Beach and pool clubs; Beauty arts instruction; Beauty contests (Arranging of -); Beauty contests (Conducting of -); Beauty contests (Organising of -); Beauty pageants (Conducting of -); Beauty pageants (Organising of -); Beauty school services; Betting exchange services; Betting services; Betting shop services; Bibliographic information; Billiard tables (Rental of -); Bingo hall services; Bingo services; Blindness prevention education services; Blindness prevention techniques (Training in -); Boarding school education; Boarding school services; Boarding schools; Bodywork therapy instruction; Book and review publishing; Book club services providing information relating to books; Book lending; Book loaning; Book publishing; Book rental; Booking agencies for concert tickets; Booking agencies for entertainment; Booking agencies for theatre tickets; Booking agency service for cinema tickets; Booking agency services for cinema tickets; Booking agency services for theatre tickets; Booking of entertainment; Booking of entertainment halls; Booking of exercise facilities; Booking of performing artists for events (services of a promoter); Booking of seats for concerts; Booking of seats for entertainment events; Booking of seats for shows; Booking of seats for shows and booking of theatre tickets; Booking of seats for shows and sports events; Booking of sports facilities; Booking of sports personalities for events (services of a promoter); Bookkeeping instruction; Bookmaking [turf accountancy]; Bookmobile services; Bookmobile services [mobile library]; Books (Publication of -); Botanical gardens; Bowling alley services; Bowling alleys; Bowling centre services; Bowling centres (Operation of -); Box office services; Boxing instruction; Braille transcription; Braille translation; Business educational services; Business mentoring services; Business training; Business training consultancy services; Business training provided through a game; Business training provided through a simulation structure; Business training services; Cabaret entertainment services; Cabaret services; Cabarets; Cabarets and discotheques; Cable television programmes (Production of -); Cable television programming [scheduling]; CAD (Computer Aided Design) education; Caddying; Calligraphy academies; Calligraphy instruction; Calligraphy services; Camp services (Holiday -) [entertainment]; Camp services (Sport -); Career advisory services (education or training advice); Career and vocational counselling; Career and vocational training; Career counseling [education]; Career counselling and coaching; Career counselling relating to education and training; Career counselling [training and education advice]; Career information and advisory services (educational and training advice); Casino facilities; Casino facilities [gambling] (Providing -); Casino, gaming and gambling services; Casino services; Casinos; Caves for public admission; Certification in relation to educational awards; Children's adventure playground services; Children's entertainment services; Chiropractic instruction; Cine-film projectors (Rental of -); Cine-films (Production of -); Cine-films (Rental of -); Cinema entertainment; Cinema facilities (Providing -); Cinema presentations; Cinema services; Cinema studio services; Cinema studios; Cinema theaters; Cinematographic adaptation and editing; Cinematographic entertainment services; Cinematographic film showings; Cinematographic film studio services; Circus performances; Circus productions; Circus services; Circus shows; Circuses; Closed circuit television entertainment services; Clowning; Club [cabaret] services; Club [discotheque] services; Club education services; Club entertainment services; Club recreation facilities (Provision of -); Club services [entertainment]; Club services [entertainment or education]; Club sporting facilities (Provision of -); Coaching; Coaching in economic and management matters; Coaching in the field of sports; Coaching relating to finance; Coaching services; Coaching services for sporting activities; Coaching [training]; Colloquiums (Arranging and conducting of -); Comedy club services; Commercial training services; Commercial vehicle driver training; Commercial vehicle driving instruction; Compact disc players (Rental of -); Compact discs (Rental of -); Competitions (organisation of -) [education or entertainment]; Competitions (Organising of education -); Competitions (Organising of entertainment -); Competitions (Organising of sports -); Competitions (Organization of -) [education or entertainment]; Competitions (Organization of sports -); Competitions provided by telephone; Composition of music for others; Computer and video game amusement services; Computer assisted education services; Computer assisted physical education services; Computer assisted teaching services; Computer assisted training services; Computer based educational services; Computer based educational services in the field of business management; Computer based library services; Computer based training; Computer education training; Computer education training services; Computer training; Computer training advisory services; Computer training services; Computerised training; Computerised training in career counselling; Concert booking; Concert booking services; Dance club services; Dance events; Dance hall services; Dance halls (Operation of -); Dance instruction; Dance instruction for adults; Dance instruction for children; Dance schools; Dance studios; Dancing competitions (Organising of -); Dancing displays (Organising of -); Dancing facilities (Provision of -); Demonstration [for instructional purposes]; Demonstration of hairdressing products for training purposes; Demonstration of photographic equipment [for training purposes]; Demonstration [training] in painting and decorating techniques; Desk top publishing; Developing educational manuals; Developing international student exchange programs; Development of educational courses and examinations; Development of educational materials; Development of formats for films; Development of formats for television programmes; Dietary education services; Digital music [not downloadable] provided from mp3 web sites on the internet; Digital music [not downloadable] provided from the internet; Digital video, audio and multimedia entertainment publishing services; Directing of musical shows; Directing of plays; Directing of theater productions; Directing of theatrical shows; Direction of music performances; Direction of theatre shows; Direction or presentation of plays; Disc jockey services; Disc jockey services for parties and special events; Disc jockeys for parties and special events; Discotheque services; Discotheques; Dissemination of educational material; Distance learning courses; Distance learning services; Distance learning services provided online; Diving equipment (Rental of skin -); Diving exhibitions (Organising of -); Diving facilities (Provision of -); Diving instruction; Dog races; Dog shows; Drawing instruction; Drilling technology safety training; Driver safety training; Driver training; Driving academy services; Driving instruction; Driving instruction in road safety; Driving schools; Dubbing; Dubbing services; DVD and CD-ROM film production; Face painting; Facilities for horse riding (Provision of -); Facilities for playing golf (Provision of -); Facilities for the production of films (Provision of -); Fan club organisation; Fan club services; Fan club services (entertainment); Fan clubs; Fan clubs (Organisation of -); Fashion shows for entertainment purposes (Organization of -); Festivals (Organisation of -) for cultural purposes; Festivals (Organisation of -) for educational purposes; Festivals (Organisation of -) for entertainment purposes; Festivals (Organisation of -) for recreational purposes; Fetes (Organisation of -) for cultural purposes; Fetes (Organisation of -) for educational purposes; Fetes (Organisation of -) for entertainment purposes; Fetes (Organisation of -) for recreational purposes; Film and video tape film production; Film demonstrations for instructional purposes; Film directing, other than advertising films; Film distribution; Film editing; Film editing (Cinematographic -); Film editing (Photographic -); Film hire; Film production; Film production for educational purposes; Film production for entertainment purposes; Film production, other than advertising films; Film production services; Film rental; Film showings; Film studio services; Film studios; Fireworks displays; Fishing instruction; Fitness and exercise instruction; Fitness and exercise training services; Fitness club services; Fitness training services; Fitting of golf clubs to individual users; Flight instruction; Flower arrangement instruction; Flying instruction; Football academy services; Football pools services; Foreign language education services; Freelance journalism; Fruit machines (Rental of -); Fun fairs; Fun park services; Funfair services; Funfairs (Operation of -); Further education; Gallery services (Art -); Gambling; Gambling information services; Gambling services; Game equipment rental; Game services; Game services provided by means of communications by computer terminals or mobile telephone; Game services provided online from a computer network; Game services provided on-line from a computer network; Game shows; Games equipment rental; Games offered on-line (on a computer network); Games services provided on-line from a computer network; Games services provided via computer networks and global communication networks; Gaming machine entertainment services; Gaming machine rental; Gaming machines (Rental of -); Gaming services; Gaming services for entertainment purposes; Gardens for public admission; Gillie services; Golf caddie services; Golf courses; Golf driving range services; Golf facilities (Providing -); Golf fitness instruction; Golf instruction; Golf tournaments (Organising of -); Golf tuition; Golfing facilities (Provision of -); Gospel choir singing; Grandstands (Rental of -); Guidance (Vocational -) [education or training advice]; Guitar instruction; Gun firing ranges; Gym activity classes; Gymnasium club services; Gymnasium facilities (Provision of -); Gymnasium services; Gymnasium services relating to body building; Gymnasium services relating to weight training; Gymnasiums; Gymnastic instruction; Gymnastics displays (Organising of -); Gymnastics events (Organising of -); Gymnastics instruction; Gymnastics (Instruction in -); Hairdressing instruction; Handicapping for sporting events; Handicapping services for sporting events; Health and fitness club services; Health and fitness training; Health and wellness training; Health club [fitness] services; Health club services; Health club services [exercise]; Health club services [health and fitness training]; Health education; Higher education services; Hire of animals for recreational purposes; Hire of books; Hire of cine-film projection apparatus; Hire of cine-films; Hire of educational apparatus; Hire of educational materials; Hire of equipment for games; Hire of equipment for sports; Hire of film projectors; Hire of films; Hire of gramophone recordings; Hire of musical instruments; Hire of phonograph records; Hire of printed matter; Hire of recording studios; Hire of sound recording apparatus; Hire of sound reproducing apparatus; Hire of sports facilities; Hire of stage scenery; Hire of tapes; Hire of teaching materials; Hire of televisions; Hire of theatre scenery; Hire of video recorders; Hire of video recordings; Hire of video tapes; Hire of videos; Holiday camp amusement centre services; Holiday camp services; Holiday camp services [entertainment]; Holiday centre entertainment services; Horse jumping events (Organising of -); Horse riding facilities (Provision of -); Horse riding instruction; Horse riding schools; Horse showing; Horse shows; Horse shows (Organising -); Horse training; Horseback riding camps; Horses (Betting on -); Horses (Training of -); Hospitality services (entertainment); Hosting of fantasy sports leagues; Hosting [organising] awards; Hosting [organising] awards relating to films; Hosting [organising] awards relating to television; Hosting [organising] awards relating to videos; Hunting guide services; Hunting instruction; Hypnotist shows [entertainment]; Ice-skating events (Organising of -); Ice-skating facilities (Provision of -); Ice-skating instruction; Ice-skating rinks (Provision of an -); Ice-skating shows (Organising -); Industrial relations training; Industrial training; Information about education; Information about entertainment and entertainment events provided via online networks and the Internet; Information and advisory services relating to entertainment; Information (Education -); Information (Entertainment -); Information on education; Information (Recreation -); Information relating to computer gaming entertainment provided online from a computer database or a global communication network; Information relating to cultural activities; Information relating to education, provided on-line from a computer database or the internet; Information relating to entertainment, provided on-line from a computer database or the internet; Information relating to sports education; Information services relating to books; Information services relating to education; Information services relating to entertainment; Information services relating to recreation; Information services relating to schools; Information services relating to sport; Information services relating to video films; Institutes of education (Services provided by -); Instruction; Instruction courses related to slimming; Instruction courses relating to health; Instruction courses relating to physical fitness; Instruction courses relating to sporting activities; Instruction in ballet; Instruction in body grooming; Instruction in circuit training; Instruction in cosmetic beauty; Instruction in dancing; Instruction in diet [not medical]; Instruction in driving; Instruction in etiquette; Instruction in golfing skills; Instruction in group exercise; Instruction in gymnastics; Instruction in languages; Instruction in martial arts; Instruction in music; Instruction in nutrition [not medical]; Instruction in singing; Instruction in social graces; Instruction in sporting activities; Instruction in sports; Instruction in the design of computers; Instruction in the development of computers; Instruction in the field of automotive repair; Instruction in the field of the performing arts; Instruction in the field of the visual arts; Instruction in the installation of computers; Instruction in the maintenance of computers; Instruction in the repair of computers; Instruction in the use of computers; Instruction in the writing of computer programs; Instruction in weight training; Instruction of ***forestation*** skills; Instruction on formal wearing of kimono; Instruction services; Instruction services relating to driving; Instruction services relating to four wheel drive vehicle driving; Instruction services relating to sports; Instruction services relating to the sale of office furniture; Instruction via broadcasting; Instructional and training services; Instructional services for bob-sledding; Instructional services for horse-riding; Instructional services for skiing; Instructional services relating to data processing; Instructional services relating to the maintenance of vehicles; Instructional services relating to the repair of vehicles; Interactive computer game services; Interactive entertainment; Interactive entertainment services; Internet games (non-downloadable); Internet radio entertainment services; Interpretation and translation services; Interpretation services (Language -); Interpretation (Sign language -); Interpreter services; Interpreter services [language]; Interviewing of contemporary figures for educational purposes; Interviewing of contemporary figures for entertainment purposes; Issue of publications; Issuing of educational awards; Japanese chess instruction (shogi instruction); Jazz music entertainment services; Journalism services; Judo instruction; Karaoke lounge services; Karaoke machine rental services; Karaoke services; Karate instruction; Keep fit instruction services; Keep-fit facilities (Provision of -); Keep-fit instruction; Kendo instruction (Japanese fencing instruction); Kimono-making instruction; Kindergarten services [education or entertainment]; Know-how transfer [training]; Language courses; Language instruction; Language interpretation; Language interpreter services; Language interpreting; Language teaching; Language teaching services; Language training; Language translation; Language tuition; Laser show services; Laser show services [entertainment]; Layout services, other than for advertising purposes; Layout services other than for advertising purposes; Lease of instructional materials; Lease of scenery; Lease of teaching materials; Leasing of casino games; Leasing of cine-film apparatus; Leasing of cine-film projectors; Leasing of cine-films; Leasing of cinemas; Leasing of educational material; Leasing of films; Leasing of game machines; Leasing of interactive and digital compression television equipment; Leasing of motion picture cameras; Leasing of motion picture projectors; Leasing of motion pictures; Leasing of phonographic recordings; Leasing of radio apparatus; Leasing of television cameras; Lecture services relating to management skills; Lecture services relating to marketing skills; Lecture services relating to selling skills; Legal education services; Leisure park services; Leisure services; Lending libraries; Lending libraries for books; Lending libraries for films; Lending libraries for videos; Lending library services; Lending library services and library services; Lending of books; Lending of books and other publications; Lending of books and periodicals; Lending of books relating to accounting; Lending of books relating to auditing; Lending of books relating to banking; Lending of books relating to business intelligence; Lending of books relating to business methodology; Lending of books relating to computer programming; Lending of books relating to computer software; Lending of books relating to computers; Lending of books relating to finance; Libraries; Libraries (Lending -); Library advisory services; Library services; Library services and rental of media; Library services for the exchanging of books; Library services for the lending of books; Library services (Mobile -); Library services provided by means of a computerised database; Library services provided by means of a computerised database containing information extracted from newspapers; Library services related to data stored and retrieved by electronic means; Library services related to documents stored and retrieved by electronic means; Life coaching (training); Lighting apparatus for television (Rental of -); Lighting apparatus for theatre (Rental of -); Lighting productions for entertainment purposes; Lighting technician services for events; Lingual education; Linguistic classes; Linguistic education and training services; Literary agency services; Live band performance services; Live band performances; Live comedy shows; Live dance exhibitions; Live demonstrations for entertainment; Live entertainment; Live entertainment production services; Live entertainment services; Live music concerts; Live music performances; Live music services; Live music shows; Live musical concerts; Live musical performances; Live performance services; Live performances by a musical band; Live performances by a musical bands; Live performances by rock groups; Live performances (Presentation of -); Live show production services; Live stage shows; Loan of books; Loaning of books; Magazine publishing; Magazines (Publication of -); Magic show services; Magic shows (Presentation of -); Male dance exhibitions; Management education services; Management of concerts; Management of education services; Management of events for sporting clubs; Management training consultancy services; Management training services; Manufacturing training services; Martial arts instruction; Master of ceremony services for parties and special events; Medical education services; Medical training and teaching; Medical tuition services; Meditation training; Microfilming; Microfilming for others; Micro-publishing; Military base training; Mobile library services; Mobile petting zoo services; Modeling for artists; Modelling for artists; Modelling services for artists; Motion picture film production; Motion picture production; Motion picture rental; Motion picture (Rental of -); Motion picture song production; Motion picture studio services; Motion picture studios; Motion picture theaters; Motion picture-rental services; Motion pictures (Rental of -); Motorcycle riding instruction; Motorcycle training; Motoring school services; Movement tuition for pre-school children; Movie projectors and accessories (Rental of -); Movie schedule information services; Movie showing; Movie studio services; Movie studios; Movie theater presentations; Movie theaters; Movie theatre facilities (Providing -); Movie theatre presentations; Multimedia entertainment software publishing services; Multimedia publishing; Multimedia publishing of books; Multimedia publishing of electronic publications; Multimedia publishing of journals; Multimedia publishing of magazines; Multimedia publishing of magazines, journals and newspapers; Multimedia publishing of newspapers; Multimedia publishing of printed matter; Mural art painting services; Museum curator services; Museum exhibitions; Museum facilities (Providing -) [presentation, exhibitions]; Museum facilities (Provision of -) for exhibitions; Museum facilities (Provision of -) for presentations; Museum services; Museum services relating to microscopy; Museums; Music cassettes (Rental of -); Music competition services; Music composition for others; Music composition services; Music concert services; Music concerts; Music entertainment services; Music festival services; Music group services; Music instruction; Music library services; Music mixing services; Music performance services; Music performances; Music production; Music production services; Music publishing; Music publishing and music recording services; Music publishing services; Music recording; Music recording studio services; Music transcription for others; Music transcription services; Music tuition by correspondence courses; Musical concert services; Musical concerts by radio; Musical concerts by television; Musical education services; Musical entertainment; Musical entertainment services; Musical events (Arranging of -); Musical floor shows provided at performance venues; News programme services for radio or television; News programming services for transmission across the internet; News reporter services; News reporters services; News reporting; News reporting services; News syndication for the broadcasting industry; News syndication reporting; Newspaper publication; Newspaper publishing; Night club services [entertainment]; Night clubs; Nightclub services; Night-club services; Nightclub services [entertainment]; Non-downloadable electronic publications; Nursery school services; Nursery school services [educational]; Nursery schools; Obedience school training for animals; Obedience training for animals; Occupationally orientated instruction; Occupationally orientated instruction relating to airports; Officiating at sports contests; Online academic library services; Online casino services; On-line casino services; Online computer game services; On-line computer games; Online digital publishing services; Online education services; Online electronic publishing of books and periodicals; On-line entertainment; Online entertainment services; Online gambling services; On-line gambling services; On-line game services; Online game services through mobile devices; Online gaming services; On-line gaming services; Online interactive entertainment; On-line library services, namely, providing electronic library services which feature newspapers, magazines, photographs and pictures via an on-line computer network; Online publication of electronic books and journals; On-line publication of electronic books and journals; On-line publication of electronic books and journals (non-downloadable); On-line publication of electronic books and journals [not downloadable]; Online publication of electronic newspapers; On-line publishing services; Online reference library services; Online research library services; Online sports betting services; On-line ticket agency services for entertainment purposes; Operating lotteries; Operating of a discotheque; Operating of film studios; Operating of lotteries; Operating of martial arts' schools; Operating quizzes; Operating zoological gardens; Operation of lending libraries; Operation of rollercoaster rides; Operation of sports camps; Operation of sports facilities; Operation of swimming baths; Operation of video and audio equipment for the production of radio and television programs; Operation of zoological gardens; Orchestra services; Organisation and conducting of balls; Organisation and holding of fairs for cultural or educational purposes; Organisation and presentation of shows; Organisation of animal exhibitions for cultural or educational purposes; Organisation of artistic competitions; Organisation of automobile races; Organisation of automobile racing events; Organisation of automobile rallies; Organisation of automobile rallies, tours and racing events; Organisation of balls; Organisation of beauty competitions; Organisation of beauty contests; Organisation of chess tournaments; Organisation of comedy shows; Organisation of competitions; Organisation of competitions and awards; Organisation of competitions [education and/or entertainment]; Organisation of competitions [education or entertainment]; Organisation of competitions (education or entertainment); Organisation of competitions for education or entertainment; Organisation of computer related training courses; Organisation of concerts; Organisation of conferences and symposia in the field of medical science; Organisation of conferences, exhibitions and competitions; Organisation of conferences related to entertainment; Organisation of conferences relating to education; Organisation of conferences relating to training; Organisation of conferences relating to vocational training; Organisation of congresses and conferences for cultural and educational purposes; Organisation of continuing educational seminars; Organisation of correspondence courses; Organisation of courses using distance learning methods; Organisation of courses using open learning methods; Organisation of courses using programmed learning methods; Organisation of courses using self-tuition methods; Organisation of cultural activities for summer camps; Organisation of cultural events; Organisation of cycling events; Organisation of dancing competitions; Organisation of dancing displays; Organisation of dog competitions; Organisation of dog races; Organisation of dog shows; Organisation of educational activities for summer camps; Organisation of educational events; Organisation of educational seminars; Organisation of educational shows; Organisation of entertainment activities for summer camps; Organisation of entertainment and cultural events; Organisation of entertainment competitions; Organisation of entertainment events; Organisation of entertainment for birthday parties; Painting instruction; Park services (Amusement -); Parks (Amusement -); Party planning; Party planning consultation; Party planning [entertainment]; Party planning services; Perceptual teaching services; Perceptual tuition services; Performance of dance, music and drama; Performance of films; Performance of music; Performance of music and singing; Performance of musical programmes; Performance of radio programmes; Performances (Presentation of live -); Performing of music and singing; Personal coaching services in the field of ballet; Personal coaching [training]; Personal development courses; Personal development training; Personal fitness training services; Personal trainer services; Personal trainer services [fitness training]; Personal training services; Personnel training; Petting zoo services; Petting zoos; Photo editing; Photograph library searching services; Photographer services; Photographic composition for others; Photographic library services; Photographic reporting; Photography; Photography instruction; Photography services; Physical education; Physical education facilities (Provision of -); Physical education instruction; Physical education services; Physical fitness assessment services for training purposes; Physical fitness centre services; Physical fitness centres; Physical fitness centres (Operation of -); Physical fitness consultation; Physical fitness education services; Physical fitness instruction; Physical fitness instruction for adults and children; Physical fitness training services; Physical fitness tuition; Physical health education; Physical training services; Physical-education services; Piano instruction; Pilates instruction; Pilot and cabin crew training; Planetarium services; Planning and conducting of parties [entertainment]; Planning of conferences for educational purposes; Planning of lectures for educational purposes; Planning of movie shows; Planning of plays or musical shows; Planning of professional golf tournaments; Planning of seminars for educational purposes; Planning of shows; Planning (Party -) [entertainment]; Plant exhibitions; Play schemes [entertainment/education]; Pleasure ground services; Poker game services; Pole dancing instruction; Political debate training and coaching; Political speech training and coaching; Political speech writing; Pop music concerts (Organisation of -); Popular entertainment services; Portrait painting; Portrait painting services; Portrait photography; Portrait photography services; Postgraduate training courses; Postgraduate training courses relating to engineering technology; Postgraduate training courses relating to management studies; Post-production editing services in the field of music, videos and film; Power station visitor centre services [for education]; Practical training; Practical training [demonstration]; Practical training in the field of welding; Practical training services; Pregnancy gymnastics instruction; Preparation of documentary programmes for broadcasting; Preparation of documentary programmes for the cinema; Preparation of educational courses and examinations; Preparation of entertainment programmes for broadcasting; Preparation of entertainment programmes for the cinema; Preparation of news programmes for broadcasting; Preparation of news programmes for the cinema; Preparation of radio and television programmes; Preparation of radio programmes; Racing driver instruction; Racing driver training; Racing information services; Racing information services provided by telephone; Radio and television entertainment; Radio and television entertainment services; Radio and television programmes (Production of -); Radio and television sets (Rental of -); Radio entertainment; Radio entertainment production; Radio entertainment services; Radio production services; Radio programmes (Production of -); Radio programming [scheduling]; Radio services for the provision of educational revision; Radio sets (Rental of -); Record master production; Record mastering; Record masters (Production of -); Record players (Rental of -); Recorders (Rental of video cassette -); Recording, film, video and television studio services; Recording of music; Recording services; Recording studio facilities (Provision of -); Recording studio services; Recording studio services for films; Recording studio services for television; Recording studio services for the production of sound bearing discs; Recording studio services for videos; Recording studios; Recreation and training services; Recreation facilities (Providing -); Recreation facilities (Provision of -); Recreation information; Recreation (Information relating to -); Recreation information services; Recreation services; Recreational camp services; Recreational camps; Recreational facilities; Recreational facilities (Provision of -); Recreational park services; Recreational services; Recreational services for the elderly; Recreational services relating to back-packing; Recreational services relating to bob-sledding; Recreational services relating to hiking; Recreational services relating to horse riding; Recreational services relating to skating; Recreational services relating to skiing; Reference libraries of literature and documentary records; Reference library services; Rehearsal [recording] studio services; Religious education; Religious educational services; Religious training; Remedial tuition; Remedial tuition in language; Remedial tuition in speech; Rendering of musical entertainment by instrumental groups; Rendering of musical entertainment by vocal groups; Rental and leasing of movie projectors and accessories; Rental of acoustic recording equipment; Rental of acoustic reproduction equipment; Rental of amusement machines; Rental of amusement machines and apparatus; Rental of apparatus for the playing of games; Rental of apparatus for the recording of audio signals; Rental of apparatus for the recording of video signals; Rental of arcade video game machines; Rental of artwork; Rental of audio books; Rental of audio cassettes; Rental of audio discs; Rental of audio equipment; Rental of audio recordings; Rental of audio tapes; Rental of audio tapes bearing recorded music; Rental of audio tapes for language training; Rental of audio/visual and photographic equipment and facilities; Rental of audio-visual apparatus; Rental of audio-visual recordings; Rental of billiard tables; Rental of books; Rental of bounce houses; Rental of camcorders; Rental of cameras; Rental of casino games; Rental of cassette players; Rental of cassette recorders; Rental of cassette tapes; Rental of cd-roms; Rental of cine-film projectors; Rental of cine-films; Rental of cinema films; Rental of cinema projection apparatus and accessories; Rental of cinema projection equipment; Rental of cinema projectors; Rental of cinematographic and motion picture films; Sado instruction [tea ceremony instruction]; Sailing instruction; Sales personnel training services; Sales training services; Sales training services for retailers; Satellite television series; Satellite television shows; Scenery for television studios (Rental of -); Scenery for theatres (Rental of -); School courses relating to examination preparation; School courses relating to study assistance; School services; School services for the teaching of art; School services for the teaching of construction draughting; School services for the teaching of languages; Schools (Boarding -); Schools for wine waiters; Schools (Nursery -); Screenplay writing; Script writing services; Scriptwriting, other than for advertising purposes; Scriptwriting services; Scriptwriting services for non-advertising purposes; Sea-life centres [recreational]; Second language educational services; Secondary school educational services; Selection and compilation of pre-recorded music for broadcasting by others; Self-awareness courses [instruction]; Seminars; Seminars (Arranging and conducting of -); Services for animal training; Services for arranging teaching programmes; Services for data processing instruction; Services for production of cine-films; Services for providing recreational facilities; Services for setting up data processing teaching programs; Services for teaching languages; Services for the operation of computerised bingo; Services for the organisation of competitions; Services for the organisation of football events; Services for the organisation of games; Services for the organisation of quizzes; Services for the organisation of sports events; Services for the production of cine-films; Services for the production of entertainment in the form of film; Services for the production of entertainment in the form of television; Services for the production of entertainment in the form of video; Services for the production of radio programmes; Services for the provision of exercise equipment; Services for the provision of recreational facilities; Services for the provision of sporting facilities; Services for the provision of training in the use of computer keyboards; Services for the provision of training in the use of computers; Services for the publication of books; Services for the publication of guide books; Services for the publication of magazines; Services for the publication of maps; Services for the publication of newsletters; Services for the publication of travel guides; Services for the showing of cinematographic films; Services for the showing of video recordings; Services in the production of animated motion picture entertainment; Services in the production of animated motion pictures and television features; Services of a disk jockey; Services of reference libraries for literature and documentary records; Services of schools [education]; Services providing entertainment in the form of live musical performances; Setting of educational standards; Setting of training standards; Sewing instruction; Shodo instruction; Show production services; Show scenery (Rental of -); Showing of cinematographic and motion picture films; Showing of cinematographic films; Showing of films; Showing of prerecorded entertainment; Shows and films production; Shows (Production of -); Sign language interpretation; Sign language interpretation services; Singing classes; Singing concert services; Singing education; Ski instruction; Ski schools; Ski-ing facilities (Provision of -); Ski-ing instruction; Skin diving equipment (Rental of -); Snooker hall services; Soccer camp services; Soccer camps; Soccer instruction; Social club services for entertainment purposes; Song publishing; Song writing services; Songwriting; Songwriting services for non-advertising purposes; Sound engineering services for events; Sound recording and video entertainment services; Taekwondo instruction; Tailoring or dressmaking instruction; Tea ceremony instruction; Teacher training services; Teaching; Teaching academy services; Teaching and training in business, industry and information technology; Teaching assessments for counteracting learning difficulties; Teaching at elementary schools; Teaching at junior high schools; Teaching by correspondence courses; Teaching in the field of medicine; Teaching in the field of remedial reading; Teaching of beauty skills; Teaching of chinese martial arts; Teaching of dental care; Teaching of diet education; Teaching of foreign languages; Teaching of french to children through recreation; Teaching of interior design; Teaching of languages; Teaching of life saving techniques; Teaching of meditation practices; Teaching of music; Teaching of needlework; Teaching of pet care; Teaching of pet care in the management of pet exhibitions; Teaching of pet care in the management of pet shows; Teaching of petcare; Teaching of swimming; Teaching services; Teaching services for communication skills; Teaching services relating to business assistance; Teaching services relating to pedagogy techniques; Teaching services relating to the dental field; Teaching services relating to the medical field; Teaching services relating to the optical field; Teaching services relating to the surgical field; Team building (education); Technical training relating to chemical analysis; Technical training relating to fire risk; Technical training relating to geotechnics; Technical training relating to hygiene; Technical training relating to industrial risk; Technical training relating to safety; Technological education services; Telephone conversation services for amusement purposes; Telephone conversation services for entertainment purposes; Telephone information services relating to education; Telephone information services relating to entertainment; Television and radio entertainment; Television and radio entertainment services; Television and radio programme preparation and production; Television and radio programming [scheduling]; Television entertainment; Television entertainment services; Television production; Television program production; Television program syndication; Television programme production; Television programmes (Production of radio and -); Television programming [scheduling]; Television programming services; Television, radio and film production; Television scheduling [programming]; Television sets (Rental of radio and -); Television show production; Television studio services; Television viewing guide services; Tennis instruction; Tenpin bowling centre services; Texts (Publication of -), other than publicity texts; Texts (Writing of -), other than publicity texts; Theater performances; Theater production; Theater production services; Theater productions; Theatre and concert tickets reservation services; Theatre booking services; Theatre entertainment; Theatre performances; Theatre production; Theatre production services; Theatre productions; Theatre services; Theatre ticket agency services; Theatre ticket booking services; Theatrical booking agencies; Theatrical floor shows provided at performance venues; Theatrical performances; Theatrical performances both animated and live action; Theatrical production services; Theatrical shows provided at performance venues; Theatrical ticket agency services; Theme park services; Theme parks; Ticket agency services [entertainment]; Ticket information services for entertainment events; Ticket information services for esports events; Ticket information services for shows; University education services; University services; Vehicle driving instruction; Vehicle maintenance instruction; Vehicle-driving instruction; Video and audio rental services; Video and DVD film production; Video arcade services; Video cameras (Rental of -); Video cassette hire; Video cassette leasing; Video cassette rental; Video cassettes (Rental of -); Video editing; Video editing services for events; Video entertainment services; Video equipment hire; Video film production; Video game arcade services; Video game entertainment services; Video game services; Video library services; Video production; Video production services; Video recorders (Rental of -); Video recording services; Video recordings [not downloadable] provided from the internet; Video rental services; Video tape editing; Video tape film production; Video tape production; Video taping; Videotape editing; Videotape film production; Videotape production; Videotapes (Rental of -); Videotaping; Virtual reality arcade services; Virtual reality game services provided on-line from a computer network; Vocational education; Vocational education and training services; Vocational education for young people; Vocational education in the field of mechanics; Vocational education relating to avoidance of drug related problems; Vocational education relating to avoidance of health related problems; Vocational education relating to first aid; Vocational education relating to home safety; Vocational education relating to personal safety; Vocational education relating to protection of personal property; Vocational education relating to self-defence; Vocational guidance; Vocational guidance [education or training advice]; Vocational retraining; Vocational skills training; Vocational skills training (Provision of -); Vocational testing; Vocational training; Vocational training courses (Provision of -); Vocational training services; Voice training; Wagering services; War game services; Water chute complex operation; Wedding celebrations (Organisation of entertainment for -); Wildlife centre services [for recreational purposes]; Wine tasting events for educational purposes; Wine tasting services (education); Wine tastings [educational services]; Wine tastings [entertainment services]; Winter sports instruction; Wood-working training; Workshops (Arranging and conducting of -) [training]; Workshops for cultural purposes; Workshops for educational purposes; Workshops for recreational purposes; Workshops for training purposes; Writing and publishing of texts, other than publicity texts; Writing of texts; Writing of texts [other than publicity texts]; Writing of texts, other than publicity texts; Writing of texts, other than publicity texts, for broadcast via teletext services; Writing screenplays; Writing services for blogs; Written text editing; Written training courses; Yoga instruction; Zoological garden services; Zoos; Ecologically orientated aquatic instruction; Editing of audio recordings; Editing of audio-tapes; Editing of cine-films; Editing of printed matter containing pictures, other than for advertising purposes; Editing of radio programmes; Editing of television programmes; Editing of texts (except publicity texts); Editing of video recordings; Editing of video-tapes; Editing of written text; Editing of written texts; Editing of written texts, other than publicity texts; Editing or recording of sounds and images; Editing (Videotape -); Editorial consultation; Educating at senior high schools; Educating at universities or colleges; Educating at university or colleges; Education; Education academy services; Education academy services for teaching acting; Education academy services for teaching art history; Education academy services for teaching construction drafting; Education academy services for teaching languages; Education advisory services relating to accountancy; Education and instruction; Education and instruction services; Education and training; Education and training consultancy; Education and training in the field of automotive engineering; Education and training in the field of business management; Education and training in the field of electronic data processing; Education and training in the field of music and entertainment; Education and training in the field of occupational health and safety; Education and training relating to nature conservation and the environment; Education and training services; Education and training services in relation to business management; Education and training services in relation to real estate management; Education and training services in the field of occupational health and safety; Education courses relating to automation; Education courses relating to the travel industry; Education, entertainment and sport services; Education, entertainment and sports; Education examination; Education in movement awareness; Education in road safety; Education in the field of art rendered through correspondence courses; Education in the field of computing; Education in the field of computing science; Education in the field of data processing; Education in the field of occupational health and safety; Education information; Education (Information relating to -); Education information services; Education (Religious -); Education services; Education services for imparting data processing teaching methods; Education services for imparting language teaching methods; Education services for managerial staff; Education services in the field of quantum computing; Education services in the form of music television programmes; Education services in the nature of courses at the university level; Education services provided by holiday resort establishments; Education services provided by radio; Education services provided by television; Education services provided by television programmes; Education services provided by tourist resort establishments; Education services related to the arts; Education services relating to ayurvedic magnetism; Education services relating to banking; Education services relating to business franchise management; Education services relating to business training; Education services relating to commerce; Education services relating to communication skills; Education services relating to computer software; Education services relating to computer systems; Education services relating to computers; Education services relating to conservation; Education services relating to conservation of the environment; Education services relating to cooking; Education services relating to customer satisfaction; Education services relating to data processing; Education services relating to design; Education services relating to fashion; Education services relating to food technology; Education services relating to health; Education services relating to hygiene; Education services relating to industry; Education services relating to languages; Education services relating to management; Education services relating to medicine; Education services relating to meditation; Education services relating to modelling; Education services relating to music; Education services relating to nutrition; Education services relating to painting; Education services relating to pharmacy; Education services relating to photographic developing; Education services relating to photographic printing.

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[***Data-driven and interpretable machine-learning modeling to explore the fine-scale environmental determinants of malaria vectors biting rates in rural Burkina Faso***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:693W-H7S1-F129-P3NT-00000-00&context=1516831)

Parasites Vectors

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**Body**

Background

Malaria is a vector-borne disease transmitted by Anopheles mosquitoes still affecting 229 million people and causing more than 400,000 deaths worldwide annually []. Malaria control efforts, mainly through the massive use of long-lasting insecticidal nets [], led to a sustained decrease of the disease burden between 2000 and 2015 []. However, malaria cases have plateaued in the past 5 years or even increased in certain areas []. Vector resistance to insecticides, population growth and environmental changes are involved in such worrying trends [, ]. For effective and sustainable vector control (VC), locally tailored interventions, built on a thorough knowledge of the local determinants of malaria transmission, are needed [–]. To do so, it is of particular importance to decipher with vector bio-ecology at fine and operational spatiotemporal scales [, , ].

To develop efficient (i.e. species-, place- and time-specific) vector control strategies, important features of malaria vector ecology such as breeding site typologies, development and survival rates, flight ranges, or dispersal have to be considered. Meteorological conditions (temperature, precipitation) and ***land*** cover are major environmental factors frequently used to define the ecological niche of malaria mosquitoes [] in complex, sometimes hardly hypothesizable, ways. Temperature affects the mosquito life history traits, nonlinearly, at each stage of its life cycle (e.g. larval growth, adult survival, biting rate). For example, the daily mortality rate of several adult Anopheles species follows a unimodal relationship with air temperature, with an optimal adult survival rate at around 25 °C [–]. Rainfall generates additional mosquito breeding sites and is therefore an important factor explaining the seasonality in species abundance. However, excessive rainfall can destroy developing larvae by flushing them out of their aquatic habitat [, ]. ***Land*** cover may affect mosquito population dynamics by creating breeding sites in hydromorphic areas or altering the dispersal ability of mosquitoes. A modification of ***land*** cover/use may therefore either increase or decrease vector abundance relative to species ecological preferences. As an example, deforestation can increase larval breeding sites of malaria vectors growing in sunny puddles, whereas it destroys habitats of some deep-***forest*** Anopheles species [, ]. Moreover, even when found together, Anopheles species often exhibit specific ecological preferences [, ]. As an example, Anopheles gambiae s.s. was more frequently observed in temporary, rainfall-dependent breeding sites [–], whereas Anopheles coluzzii showed a preference for more permanent breeding sites [–]. Altogether, these examples illustrate that vector ecology is finely tuned with the environment. Using large-scale environmental indicators could therefore jeopardize the characterization of ecological niches of malaria vectors and consequently lead to suboptimal or even inappropriate VC intervention at a smaller scale []. To overcome this issue, we propose the use of high-resolution Earth observation (EO) data and develop novel statistical modeling approaches.

Indeed, in malariometric statistical modeling studies, “data” models [] like linear or logistic regression are traditionally used with environmental variables extracted from EO data [–]. These models are well suited for testing pre-established hypotheses about theoretical constructs (e.g. to answer questions like “how much higher is mosquito abundance for each additional millimeter of rainfall?”); however, to explore hypotheses and extract knowledge in complex systems, machine-learning (ML) “algorithmic” models might be more suitable [, ]. In fact, these models are inherently able to capture complex patterns (such as nonlinear relationships and complex interactions between variables) contained in data. After a good predictive algorithm is fitted to a dataset, post hoc interpretation methods may uncover the complex relationships contained in the data and learned by the model, which in turn can be carefully linked to prior knowledge to identify meaningful—possibly unforeseen—cause–effect relationships, valuable thresholds or interactions [–]. This predict-then-explain modeling workflow is being increasingly used to generate knowledge from complex datasets [, ] and is commonly referred to as “interpretable machine learning” (IML) [, ].

The main objective of this study was to improve our overall understanding of the ecological niche and determinants of the biting rates of the main malaria vectors in a rural area of southwestern Burkina Faso. To do so, we used entomological collections and environmental variables extracted from high-resolution EO data, in a data-driven and IML modeling framework. In this research article, after a presentation of the methods and results, we discuss the environmental (landscape and meteorological) drivers of the human-biting activity of the main malaria vectors in the Diébougou area. We also briefly present some potential practical uses of our results to support the conceptualization and deployment of locally tailored VC interventions. We conclude with methodological insight regarding the use of algorithmic models and IML for knowledge-building in the field of landscape entomology.

Methods

Data collection and preparation

Entomological data

Anopheles human-biting activity was monitored as part of a study carried out in the Diébougou rural health district located in southwest Burkina Faso []. Twenty-seven villages in this 2500 km2 wide area were selected according to the following criteria: accessibility during the rainy season, 200–500 inhabitants per village, and distance between two villages greater than 2 km. Seven rounds of mosquito collection were conducted in each village between January 2017 and March 2018. The periods of the surveys span some of the typical climatic conditions of this tropical area (three surveys in the “dry-cold” season, two in the “dry-hot” season, one at each extremum of the rainy season) (see Additional file : Summary of the meteorological conditions around the sampling points).

Mosquitoes were collected using the human ***landing*** catch (HLC) technique from 17:00 to 09:00 both indoors and outdoors at four sites per village for one night during each survey. The procedure for conducting HLC was for a person to sit on a stool, and mosquitoes to alight on his exposed legs, where they were then collected using a hemolysis tube. Collectors were rotated hourly between collection sites and/or position (indoor/outdoor). Independent staff supervised rotations and regularly checked the quality of mosquito collections. Malaria vectors were identified using morphological keys [, ]. Individuals belonging to the Anopheles gambiae complex and the Anopheles funestus group were identified to species by PCR [–]. Mosquito collection design for this study has been described extensively elsewhere [].

HLC enabled us to measure the presence and abundance of aggressive malaria vectors in time and space. In fact, ***landing*** on human legs is the behavioral event preceding the biting event. To avoid exposing mosquito collectors to infectious bites, we used ***landing*** as a proxy for biting, and in turn biting probability/rate as a proxy for the overall presence/abundance of aggressive vectors at the time and place of collection.

Landscape data

A ***land*** cover map of the study area was produced by carrying out a geographic object-based image analysis (GEOBIA) [] using multisource very-high- and high-resolution satellite-derived products. The GEOBIA involved the following main steps: acquisition/collation of the satellite products (Satellite Pour l'Observation de la Terre (SPOT)-6 image acquired on 2017-10-11, Sentinel-2 image acquired on 2018-11-16, and a digital elevation model (DEM) from the Shuttle Radar Topography Mission []), acquisition of a ground-truth dataset composed of 420 known ***land*** cover samples by both fieldwork (held in November 2018) and photo-interpretation of satellite images, and classification of the ***land*** cover over the whole study area using a random ***forest*** (RF) algorithm []. The definitions of ***land*** cover classes were those proposed by the Permanent Interstate Committee for Drought Control in the Sahel []. The resulting dataset was a georeferenced raster image, where each 1.5 × 1.5 m pixel was assigned a ***land*** cover class. The confusion matrix was generated using the internal RF validation procedure based on the out-of-bag observations, and the quality of the final classification was assessed by calculating the overall accuracy from the confusion matrix [].

Spatial buffers were then defined to characterize the environmental conditions at the neighborhood of each HLC collection point. Four buffer radii were considered: 250 m, 500 m, 1 km, 2 km. The distance of 2 km was chosen as the largest radius to minimize overlaps among buffers coming from different villages and because local dispersal of Anopheles beyond this distance can be considered negligible [, –]. We calculated the percentage of landscape occupied by each ***land*** cover class in each buffer zone around each collection site.

Additional indices related to the presence of water were calculated. The theoretical stream network was produced for the study area by first generating a flow accumulation raster dataset from the DEM and then applying a threshold value to select cells with accumulated flow greater than 1000 []. The quality of the product was assessed visually by overlaying it on the SPOT-6 satellite image. We then derived two indices for each collection site: the length of streams in each buffer zone, and the shortest distance to the streams.

In order to describe attractiveness and penetrability of households for malaria vectors, the geographical location of the households in the villages were recorded and two indices were computed. First, the Clark and Evans aggregation index [] was calculated to describe the degree of clustering of the households in each village, as it has been suggested that scattered habitations in a village might increase the attractiveness for some vector species []. Second, we calculated the distance from each collection point to the edge of the village (defined as the convex hull polygon of each village—i.e. the minimum polygon that encompasses all the locations of the households), as it has been suggested elsewhere that living on the edge can increase biting rates [].

Meteorological data

Daily rainfall estimates were extracted from the Global Precipitation Measurement (GPM) Integrated Multi-satellitE Retrievals for GPM (IMERG) Final products []. The raw satellite products were resampled from their original 10-km spatial resolution to a 1-km resolution using a bilinear interpolation method.

Daily diurnal and nocturnal temperatures were derived from the Moderate Resolution Imaging Spectroradiometer (MODIS) ***Land*** Surface Temperature (LST) Terra and Aqua products [, ]. Terra and Aqua daily products were first combined, keeping the highest (or lowest) available pixel values for the diurnal (nocturnal) temperature. Missing values in pixels (mostly due to cloud presence) were then filled by temporally interpolating the values of the closest preceding and following available dates.

These meteorological data (daily rainfall, daily diurnal temperatures, daily nocturnal temperatures) were collected up to 42 days (i.e. 6 weeks) preceding each mosquito collection, so as to encompass largely the whole duration of the Anopheles life cycle in the field (including aquatic and aerial stages) []. They were then aggregated pixel-by-pixel on a weekly scale (cumulative 7-day rainfall and average 7-day diurnal and nocturnal LST). This temporal granularity represents a reasonable trade-off between the raw, daily information—which might overfit in the statistical models—and larger scales, which might prevent them from capturing fine-scale temporal relationships. Next, we calculated the cumulative rainfall and average temperatures for all possible intervals of time available in the data (e.g. b/w 0 and 1 week before the dates of collection, b/w 0 and 2 weeks, b/w 1 and 2 weeks, etc.). The data were finally averaged in the 2-km buffer zone only (considering the 1-km spatial resolution of the source data).

Statistical analyses

Overall approach

We used a two-step statistical modeling approach to study the relationships between the biting rates of each vector species and the environmental conditions. We first calculated correlation coefficients between the biting rates and the environmental variables at the various buffer sizes/time lags considered. The objectives of this bivariate analysis were twofold: (i) to better apprehend several aspects of the ecology of the vectors in the study area, and (ii) to screen out variables for the multivariate analysis. In a second stage, we integrated selected variables in multivariate algorithmic models that we further analyzed using interpretable machine-learning tools, to search for potential complex links (nonlinear relationships, relevant thresholds) between the environmental factors and the biting rates.

We ran the whole modeling framework separately for each species, as they might exhibit different ecological preferences.

From a statistical point of view, most algorithmic machine-learning models, although nonparametric, have difficulty coping with zero-inflated negative binomial response variables [, ], which are typically found in insect count data such as mosquito biting rates []. An alternative approach to model such data is the hurdle model that considers the data responding to two processes: one causing zero versus nonzero and the second process explaining the nonzero counts []. The hurdle methodology in the frame of a widely used algorithmic model (random ***forest***) was proposed elsewhere to deal with such distributions of data []. Besides, this separation is biologically pertinent since it has been shown that the drivers of the presence might differ from those of the abundance [, , ]. Lastly, separate modeling of presence and abundance might enable us to identify distinct ***targets*** for vector control answering to, respectively, eradication (absence of bites) and control (reduction of the number of bites) [].

We therefore separately modeled the probability of human–vector contact (called “presence” models in the rest of this article) and the positive counts of human–vector contact (called “abundance” models). Given that HLC data are used as a proxy for human-biting rate, presence models analyzed the probability of at least one individual biting a human during a night, while abundance models analyzed the number of bites received by one human in one night conditional on their presence (i.e. zero-truncated data). Hence, in our presence models, the dependent variable was the presence/absence of vectors (binarized as 1/0) collected during 1512 nights of HLC (27 villages × 4 collection sites × 2 places (indoors and outdoors) × 7 surveys), while in the abundance models, the dependent variable was the number of bites per human during the positive catch sessions—i.e. the sessions with at least one bite.

Bivariate analysis using correlation coefficients

The bivariate relationship between the presence/abundance of each vector species and the environmental variables was assessed using multilevel Spearman correlation coefficients [] with the village entered as a random effect. Multilevel correlations, contrary to simple correlation, account for non-independency between observations in a dataset, by introducing a factor as a random effect in the correlation (on the same principle as random effects in mixed linear regressions).

Landscape variables: The correlation coefficient was calculated for each landscape variable (i.e. percentage of landscape occupied by each ***land*** cover class in each buffer zone).

Meteorological variables: Past weather is likely to influence the size of the sampled mosquito generation with varied delays. For example, (i) past weather in the week preceding the collection may influence adult survival rates of the collected generation, (ii) weather during 1 or 2 weeks preceding the collection may influence the development rates of the collected generation during the larval stages, and (iii) weather beyond the third week preceding the collection date may influence the development rates of parent generations. For the meteorological variables, cross-correlation maps (CCM) were hence computed [] to assess the relationships between the biting rates and the precipitation and temperatures preceding the dates of collection. A CCM enables one to study the influence of environmental conditions during time intervals (instead of single time points) prior to the collection event. CCMs hence allowed us to account for the effects of cumulative precipitation and average temperature on the collected mosquito generation over intervals of weeks preceding the bites (e.g. average diurnal temperature between 1 and 3 weeks preceding the bite), instead of single weeks (e.g. average diurnal temperature during the third week preceding the bite).

Multivariate analysis using random ***forests*** and interpretable machine learning

We used the results of the bivariate analysis to select the environmental variables to include as predictors in the multivariate analysis. We first excluded variables that were poorly correlated with the response variable (i.e. correlation coefficients less than 0.1 or p-values greater than 0.2 at all time associations or buffer radii considered), except for variables related to the presence of water—i.e. possible breeding sites—which were all retained whatever their correlation. Then, for each meteorological (or landscape) variable, we retained the time lag interval (buffer radius) showing the higher absolute correlation coefficient value (see Additional file : Feature selection for the multivariate models). Because the entomological data used in this study were part of a trial, different vector control strategies were implemented in the villages of the study after the third survey. The implemented VC strategies and the place of collection (interior/exterior) were therefore introduced as adjustment variables in our models, but their effect on the biting rate was found to be negligible in our analysis (see “Results” section), and these results will not be discussed further.

Random ***forest*** classifiers were then trained for each species and response variable (presence and abundance models). Random ***forests*** are an ensemble machine-learning method that generates a multitude of random decision trees that are then aggregated to compute a classification or a regression []. They are known for their good predictive capacity, which is mainly due to their ability to inherently capture complex associations between the variables []. Binary classification RFs were generated for the presence models and regression RFs were generated for the abundance models. The modeling process involved the following steps:

Feature collinearity: Collinear covariates (i.e. Pearson correlation coefficient > 0.7) were checked for and removed based on empirical knowledge.

Feature engineering: In the classification models, data were up-sampled within the model resampling procedure to account for the imbalanced structure of the response variable []. In the regression models, the response variables were log-transformed prior to the model resampling procedure in order to reduce their overdispersion.

Model training, tuning, selection: Model hyperparameters were optimized using a random 10-combination grid search []. For each set of hyperparameters tested, a leave-village-out cross-validation (LVO-CV) resampling method was used. The resampling method involved training the model using in turn the data from 26 of the 27 sampled villages, validating with the data from the remaining village using a predictive performance metric [for the presence model: the precision–recall area under the curve (PR-AUC); for the abundance model: the mean absolute error (MAE)] and averaging the metric across all hold-out predictions at the end of the procedure. The model retained was the one leading to the highest overall PR-AUC (lowest MAE). The retained model was then fit to all the observations and further used for the interpretation phase.

Model evaluation: The predictive power of each model was assessed by LVO-CV. We hence evaluated the ability of the models to predict the presence or abundance of vectors on unseen nights of HLC, whilst excluding from the training sets all the observations belonging to the village of the evaluated observation. Doing so enables us to limit overfitting and over-optimistic performance metrics due to spatial autocorrelation []. For the presence models, precision–recall plots were then generated from the observed and predicted values, and the PR-AUC was calculated and compared to the baseline of PR curve (i.e. the PR-AUC of a random-guess classifier for the dataset). The PR-AUC is a measure of predictive accuracy of a binary classification model particularly suitable for imbalanced classification problems []. It makes sense when compared to the baseline PR-AUC, which is the rate of “presence” observations in the dataset. For example, a model with a baseline of 0.01 and a PR-AUC of 0.2 performs 0.2/0.01 = 20 times better than a random-guess, or no-skill, classifier. We also calculated sensitivity and specificity at the optimal probability threshold (i.e. the one maximizing the AUC). For the abundance models, a visual evaluation (i.e. graphical comparison between observed and predicted values) was preferred to a numerical one because performance metrics were expected to be low given the overdispersion of the response data and the type of model used []. Evaluation plots for the abundance models included (i) the distribution of MAEs and (ii) observed versus predicted values for each out-of-sample village.

To interpret the models, we further generated permutation-based variable importance plots (VIPs) [] and partial dependence plots (PDPs) [] including standard deviation bands (that can be interpreted as confidence intervals). These plots, part of the interpretable machine-learning toolbox, enable us to study the effects of one predictor on the response variable while accounting for the effect of the other predictors in the model []. Variable importance measures a feature’s importance by calculating the degradation of the predictive accuracy of the model after randomly permuting the values of the feature: the higher a variable’s importance, the more that variable contributes to the prediction. Partial dependence plots, on their side, show the marginal effect that one feature has on the predicted outcome []. PDPs hence help visualize the relationship, learned by a model, between a feature and the response. A PDP is likely to reveal complex (nonlinear, nonmonotonic) effects when a model has learned such relationships. Importantly, the information provided by these tools should be trusted only if the underlying model has good predictive power [].

We finally identified primary and secondary predictors for each model, according to the following criteria. Primary predictors were the top three most important predictors of the VIP. Secondary predictors were variables either presenting marked variations in their PDP (e.g. thresholds, significant slopes) or known to influence the bio-ecology of the vector.

Software used

The software packages used in this work were all free and open-source. The R programming language [] and the RStudio environment [] were used as the main programming tools. An R package was developed [] to extract the NASA meteorological data (MODIS and GPM). The ***land*** cover layer was generated using the following R packages: “RSAGA” [], “rgrass7” [], “raster” [], “sf” [], “rgdal” [] and “randomForest” []. The “spatstat” [] package was used to compute the Clark and Evans aggregation index. The QGIS software [] was used to create the map of the study area. The “landscapemetrics” package [] was used to calculate the percentage of landscape occupied by each ***land*** cover class in the buffer areas. The “correlation” [] package was used for the correlation analysis. The “caret” [] and “ranger” [] packages were used to fit the random ***forest*** models in the statistical analysis. The “CAST” [] package was used to create the temporal folds for cross-validation. The “MLmetrics” [] package was used to calculate the model evaluation metrics. The “iml” [] and “pdp” [] packages were used to generate the partial dependence plots. The “patchwork” [] package was used to create various plot compositions. The “ggmap” [] package was used to generate the map of the vector biting rates. The “precrec” [] package was used to generate the precision–recall plots for the presence models. The “tidyverse” meta-package [] was used throughout the entire analysis.

Results

Entomological data

A total of 1512 nights of HLC were conducted among the 27 villages during the seven entomological surveys. Altogether 3056 vectors belonging to the Anopheles genus were collected: 1322 An. coluzzii, 708 An. funestus, 616 An. gambiae s.s. and 410 from other species. An. funestus was present in 12% of the nights of HLC (182 times), while both An. coluzzii and An. gambiae s.s. appeared on 20% of the nights of HLC (respectively 297 and 302 times). The distribution of the biting rates in the positive sessions (i.e. sessions with at least one bite) was highly left-skewed (for An. funestus: median = 2, SD = 4.7, max. = 36; for An. gambiae s.s.: median = 2, SD = 1.5, max. = 10; for An. coluzzii.: median = 2, SD = 6.8, max. = 50).

Figure  shows the distribution of the biting rates of the three main vector species by village and survey. Overall, the map reveals heterogeneous spatiotemporal patterns of biting rates for the three main species. An. funestus was found in a few villages only, mainly at the end of the rainy season (November) and in the dry-cold season (December, January) (see Additional file : Summary of the meteorological conditions around the sampling point). It almost disappeared during the dry-hot season (March) and the beginning of the rainy season (May). An. gambiae s.s. and An. coluzzii were found in almost all the villages at the beginning and the end of the rainy season (May, November). They were also found year-round in some villages, in particular, those located close to dams or to the Bougouriba River. An. coluzzii was particularly abundant at the beginning of the rainy season (May), while An. gambiae s.s. was found in similar abundance at the beginning and the end of the rainy season (May, November).

Map of the biting rates of the three main vector species for each village and entomological survey. Unit: average number of bites/human/night. Blue dots indicate absence of bites in the village for the considered survey. Background layer: OpenStreetMapers

***Land*** cover map

Eleven ***land*** cover classes were discriminated: ligneous savanna (52% of the total surface), crop (25%), grassland (7%), marsh (5%), riparian ***forest*** (4%), woodland (3%), rice (1%), settlements (0.5%), bare soil (0.5%), main roads (0.3%) and permanent water bodies (0.3%). In the buffer areas considered for the modeling study (250 m, 500 m, 1 km, 2 km radii), similar trends were observed regarding the percentage of area occupied by each ***land*** cover class (see Additional file : Summary of the landscape conditions around the sampling points). Ligneous savanna included shrub savanna, tree savanna and wooded savanna. Grassland included herbaceous savanna and Sahelian short grass savanna. Permanent water bodies included dams and the Bougouriba River. Marshlands included wetland–floodplain and ***agriculture*** in shallows and recessions. The overall accuracy of the classification was 0.84. The resulting ***land*** cover map of the study area, including the geographical position of the study villages, is presented in Fig. . Pictures representative of the main ***land*** cover classes are provided in Additional file : Pictures representative of the main ***land*** cover classes in the Diébougou area.

Map of the study area. The map includes the villages of the study, the ***land*** cover derived from geographic object-based image analysis of a SPOT-6 satellite image acquired on 2017-10-11, and the theoretical stream network derived from the SRTM DEM

Bivariate analysis

Figure  shows the landscape variables that were significantly correlated [multilevel Spearman’s correlation coefficient (cc) > 0.1 and p-value < 0.2] with the presence or abundance of each of the studied vector species. The presence or abundance of An. funestus was correlated to two to six landscape variables depending to the buffer radius considered, one to five variables for An. gambiae s.s. and two to five for An. coluzzii. Overall, among the three species, the highest correlation coefficients with the landscape variables were observed for An. funestus.

Multilevel Spearman’s correlation between the vectors’ biting rates and the landscape variables. Biting rates were separated into presence/absence of bites (left) and abundance of bites (i.e. positive counts only) (right). Unit of biting rates: number of ***landings*** on human/person/night. Unit of landscape variables: % of landscape occupied by each ***land*** cover class. Landscape variables were extracted in four spatial buffer zones around the sampling locations (250 m radius, 500 m, 1 km, 2 km) for each main vector species. Only correlations with coefficient > 0.1 and p-values < 0.2 are displayed. Stars indicate the range of the p-value: \*\*\* p-value ∈ [0, 0.001]; \*\* p-value ∈ [0.001, 0.01]; \* p-value ∈ [0.01, 0.05]; absence of stars: p-value ∈ [0.05, 0.2]

Both the presence and the abundance of An. funestus were positively correlated with the % of surface occupied by permanent water bodies in the 2-km radius buffer zone. They were also positively correlated with the % of surface occupied by marshlands in all buffer zones with radius ≥ 500 m, with increasing correlation coefficients as the buffer zone radii increased. The presence and the abundance of An. funestus were also positively correlated with the % of surface occupied by grasslands, and negatively correlated with the % of surface occupied by ligneous savannas, for all buffer radii. The correlation between the abundance and the % of surface occupied by grasslands and ligneous savannas increased (both in absolute value and significance) with smaller buffer radii. The presence of An. funestus was positively correlated with the % of surface occupied by crops in all buffer zones except for the 1-km radius. The abundance of An. funestus was positively correlated with the length of streams in the 250-m and the 2-km radii buffer zones.

Both the presence and the abundance of An. gambiae s.s. were positively correlated with the % of surface occupied by permanent water bodies in the 2-km radius buffer zone. Its presence was also positively correlated with the % of surface occupied by marshlands in all buffer zones with radius ≥ 500 m. The presence and abundance of An. gambiae s.s. were also positively correlated with the % of surface occupied by grasslands (in all buffer zones for the presence, and in the buffer zones with radius ≥ 1 km for the abundance), and negatively correlated with the % of surface occupied by ligneous savannas (in all buffer zones for the presence, and in the 2-km radius buffer zone for the abundance). The presence and abundance of An. gambiae s.s. were also positively correlated with the % of surface occupied by riparian ***forests***, only in the 500-m radius buffer zone for the presence, and in buffer zones with radius ≤ 500 m for the abundance.

The presence of An. coluzzii was positively correlated with the % of surface occupied by permanent water bodies in the 2-km radius buffer zone. The presence and the abundance of that species were positively correlated with the % of surface occupied by marshlands in all buffer zones with radius ≥ 1 km for the presence, and in all buffer zones with radius ≥ 500 m for the abundance. Presence and abundance of An. coluzzii were also positively correlated with the % of surface occupied by grasslands, and negatively correlated with the % of surface occupied by ligneous savannas, in all the buffer zones (except in the 250-m radius buffer zone for the abundance). The correlation between the abundance of An. coluzzii and the % of surface occupied by ligneous savannas increased (in both absolute value and significance) with smaller buffer zones.

Figure  shows the meteorological variables that were significantly correlated [multilevel Spearman correlation coefficient (cc) > 0.1 and p-value < 0.2] with the presence or abundance of bites for each of the studied vector species (in the form of cross-correlation maps). Overall, among the three species, the highest correlation coefficients with the meteorological variables were observed for An. coluzzii, closely followed by An. gambiae s.s.

Multilevel Spearman’s correlation between the vectors’ biting rates and the meteorological variables (as cross-correlation maps). Biting rates were separated into presence/absence of bites (left) and abundance of bites (i.e. positive counts only) (right). Unit of biting rates: number of ***landings*** on human/person/night. Unit of meteorological variables: °C for ***land*** surface temperatures (LST), cumulative millimeters for rainfall. Meteorological variables were extracted on a weekly scale up to 6 weeks before the dates of collection for each main vector species. In each CCM, time lags are expressed in week(s) before the date of collection. The red-bordered square indicates the time lag interval that showed the highest correlation coefficient (absolute value) with the meteorological variable (the associated time lag interval and correlation coefficient are reported on the top-left corner of the CCM). The black-bordered squares indicate correlations close to the highest observed correlation (i.e. less than 10% of difference). Gray-filled squares indicate correlations with p-value > 0.2 or coefficient > 0.1

The presence and abundance of An. funestus showed quite weak correlations with the meteorological variables (Spearman’s correlation coefficient always < 0.25, with all the meteorological variables at all time frames) when compared to An. gambiae s.s. or An. coluzzii. Correlations between both response variables (presence and abundance) and the three meteorological variables (cumulative rainfall, diurnal LST, nocturnal LST), when significant, were negative. The maximum correlation coefficients between each meteorological variable and both the presence and abundance were found for the following: cumulative rainfall recorded b/w 1–2 and 3 weeks before the date of collection, diurnal temperatures recorded b/w 3–4 and 6 weeks before the date of collection, and nocturnal temperatures recorded b/w 0–1 and 3 weeks before the date of collection.

The presence and abundance of An. gambiae s.s. were positively correlated with cumulative rainfall, at all time lags. The maximum correlation coefficients for both presence and abundance were found for cumulative rainfall recorded b/w 2 and 6 weeks before the date of collection. The presence and abundance of An. gambiae s.s. were also positively correlated with nocturnal temperatures at all time lags, and the maximum correlation coefficients with both response variables were found for temperatures recorded b/w 3–4 and 6 weeks before the date of collection. The presence and the abundance of An. gambiae s.s. were negatively correlated with diurnal temperatures preceding the date of collection at almost all time lags. The maximum correlation coefficient with both response variables was found for temperatures recorded b/w 0 and 2 weeks before the date of collection.

The correlations between meteorological variables and both the presence and abundance of An. coluzzii exhibited similar trends as An. gambiae s.s., with few notable differences. The presence and abundance of An. coluzzii were positively correlated with cumulative rainfall preceding the date of collection at all time lags. The maximum correlation coefficient with cumulative rainfall was found b/w 1 and 3 weeks before the date of collection for presence, and b/w 0 and 1 week before the date of collection for abundance (the correlation coefficient b/w 1 and 3 weeks was also among the highest for the abundance). The presence and abundance of An. coluzzii were positively correlated with nocturnal temperatures at all time lags with maximum correlation coefficients found b/w 1–3 and 6 weeks before the date of collection for both response variables. The presence and abundance of An. coluzzii were, overall, negatively correlated with diurnal temperatures preceding the date of collection. The maximum correlation coefficient between diurnal temperatures and both response variables was found b/w 0 and 1–2 weeks before the date of collection.

Multivariate analysis

The PR-AUC of the presence models were 0.56 (baseline = 0.12), 0.46 (baseline = 0.20) and 0.60 (baseline = 0.20) for An. funestus, An. gambiae s.s. and An. coluzzii, respectively. The specificity and sensitivity of the models at the optimal probability thresholds were respectively 80% and 73% for An. funestus, 75% and 76% for An. gambiae s.s., and 79% and 75% for An. coluzzii. Overall, these results indicate good predictive accuracy of the presence models. The abundance models reflected the trends well for the three species, although they often underestimated high counts. The model evaluation plots are available in Additional file : Model evaluation plots for the presence models and Additional file : Model evaluation plots for the abundance models (for the presence models: precision–recall plots and observed versus predicted values for each out-of-sample village; for the abundance models: distribution of MAE and observed versus predicted values for each out-of-sample village). Figures , and show the model interpretation plots (variable importance plot and partial dependence plots) for An. funestus, An. gambiae s.s. and An. coluzzii, respectively.

Interpretation plots of the random ***forest*** models for An. funestus. Biting rates were separated into presence/absence of bites and abundance of bites (i.e. positive counts only), and two models were therefore generated [presence (top) and abundance (bottom)]. For each model, the top-left corner plot is the variable importance plot. The other plots are partial dependence plots (PDPs) for each variable included in the models (1 plot/variable). The y-axis in the PDPs represents: in the presence models, the probability of at least one individual biting a human during a night; in the abundance models, the log-transformed number of bites received by one human in one night conditional on their presence. The dashed lines represent the partial dependence function ± one standard deviation (i.e. variability estimates). The range of values in the x-axis represents the range of values available in the data for the considered variable. The rugs above the x-axis represent the actual values available in the data for the variable. LST = ***land*** surface temperature, b/w = between

Interpretation plots of the random ***forest*** models for An. gambiae s.s. Biting rates were separated into presence/absence of bites and abundance of bites (i.e. positive counts only), and two models were therefore generated [presence (top) and abundance (bottom)]. For each model, the top-left corner plot is the variable importance plot. The other plots are partial dependence plots (PDPs) for each variable included in the models (1 plot/variable). The y-axis in the PDPs represents: in the presence models, the probability of at least one individual biting a human during a night; in the abundance models, the log-transformed number of bites received by one human in one night conditional on their presence. The dashed lines represent the partial dependence function ± one standard deviation (i.e. variability estimates). The range of values in the x-axis represents the range of values available in the data for the considered variable. The rugs above the x-axis represent the actual values available in the data for the variable. LST = ***land*** surface temperature, b/w = between

Interpretation plots of the random ***forest*** models for An. coluzzii. Biting rates were separated into presence/absence of bites and abundance of bites (i.e. positive counts only), and two models were therefore generated [presence (top) and abundance (bottom)]. For each model, the top-left corner plot is the variable importance plot. The other plots are partial dependence plots (PDPs) for each variable included in the models (1 plot/variable). The y-axis in the PDPs represents: in the presence models, the probability of at least one individual biting a human during a night; in the abundance models, the log-transformed number of bites received by one human in one night conditional on their presence. The dashed lines represent the partial dependence function ± one standard deviation (i.e. variability estimates). The range of values in the x-axis represents the range of values available in the data for the considered variable. The rugs above the x-axis represent the actual values available in the data for the variable. LST = ***land*** surface temperature, b/w = between

The most important predictors of the presence and abundance of An. funestus were landscape-based, including % of surface occupied by marshlands (in the 2–km radius buffer zone), grasslands (in the buffer zone radii ≤ 500 m) and ligneous savannas (in the 500-m radius buffer zone). The probability of the presence of An. funestus increased linearly with surface occupied by marshlands in the range available in the data (0–10%), while the abundance was constant in the range of 0–3%, increased approximately linearly from 3 to 6%, and finally stabilized in the range of 6–10%. Both the probability of presence and the abundance increased linearly with surface occupied by grasslands in the range of 0–20%, and stabilized above that threshold. Conversely, they decreased linearly with surface occupied by ligneous savannas in the range of 0–50%, and above that threshold stabilized for abundance and tended to diminish (with a lower trend though) for presence.

Secondary predictors of the presence and abundance of An. funestus were as follows: % of surface occupied by permanent water bodies in the 2-km radius buffer zone (increase in the range 0–0.1%, stable in the range 0.1–1%), diurnal LST b/w 3 to 4 weeks and 6 weeks before the date of collection (negative, approximately linear, association), and nocturnal LST b/w 0 to 1 and 3 weeks before the date of collection (stable in the range 14–19 °C, decrease in the range 19–25 °C).

The most important predictors of the presence of An. gambiae s.s. were meteorological variables, namely nocturnal LST (b/w 4 and 6 weeks, i.e. 28 and 42 days, before the date of collection), rainfall (b/w 2 and 6 weeks before the date of collection), and diurnal LST (b/w 0 and 2 weeks before the date of collection). The probability of presence of An. gambiae s.s. increased slowly for nocturnal LSTs in the range of 14–20 °C and more rapidly above that threshold. It increased linearly with the cumulative rainfall in the range of 0–10 mm, and was stable above that threshold. It decreased for diurnal LSTs in the range of 35–41 °C, and stabilized above that threshold. Secondary predictors of the presence of An. gambiae s.s. were as follows: % of surface occupied by grasslands in the 2-km radius buffer zone (increase in the range 0–15%, stable above), % of surface occupied by ligneous savannas in the 500-m radius buffer zone (negative linear association), and % of surface occupied by marshlands in the 2-km radius buffer zone (positive linear association).

When An. gambiae s.s. was present, cumulative rainfall (b/w 2 and 6 weeks before the date of collection) was, by far, the most important predictor of its abundance. Other primary predictors were diurnal temperatures (b/w 0 and 2 weeks before the date of collection) and % of surface occupied by marshlands (in the 2-km radius buffer zone). The abundance of An. gambiae s.s. increased linearly in the range of 0–50 mm cumulative rainfall and stabilized above that threshold (range 50–80 mm). It slowly increased with the % of surface occupied by marshlands. Secondary predictors of the abundance of An. gambiae s.s. included the following: % of surface occupied by ligneous savannas in the 2-km radius buffer zone (negative linear association), % of surface occupied by permanent water bodies in the 2-km radius buffer zone (increase in the range 0–0.1%, stable in the range 0.1–1%), % of surface occupied by riparian ***forests*** in the 250-m radius buffer zone (positive linear association), and % of surface occupied by grasslands in the 1-km radius buffer zone (positive linear association).

The most important predictors of the presence of An. coluzzii were as follows: cumulative rainfall (b/w 1 and 3 weeks before the date of collection), nocturnal LST (b/w 1 and 6 weeks before the date of collection), and % of surface occupied by marshlands (in the 2-km radius buffer zone). A total of approximately 40 mm of rainfall b/w 1 and 3 weeks before the date of collection was enough to double the probability of presence of An. coluzzii (from an average 0.25 without rainfall to 0.55). Beyond that amount of rainfall, the probability of presence tended to diminish (range 50–65 mm). The probability of presence of An. coluzzii increased linearly with nocturnal LSTs and % of surface occupied by marshlands. Secondary predictors of the presence of An. coluzzii included the following: diurnal LST b/w 0 and 1 week before the date of collection (decrease in the range 34 °C–40%, stable in the range 40–50 °C), % of surface occupied by ligneous savannas in the 500-m radius buffer zone (decrease in the range 0–40%, stable above), % of surface occupied by grasslands in the 250-m radius buffer zone (increase in the range 0–30%, stable above), and % of surface occupied by permanent water bodies in the 2-km radius buffer zone (increase in the range 0–0.1%, stable in the range 0.1–1%).

When An. coluzzii was present, primary predictors of its abundance were nocturnal LST (b/w 3 and 6 weeks before the date of collection), cumulative rainfall (b/w 0 and 1 week before the date of collection), and % of surface occupied by grasslands (in the 1-km radius buffer zone). The abundance of An. coluzzii was constant for nocturnal LSTs under 22 °C and strongly increased above, until 23 °C. The association between abundance and cumulative rainfall was quite weak, but overall positive. The abundance increased linearly with the surface of grasslands in the range of 0–20%, and stabilized above that threshold. Secondary predictors of the abundance of An. coluzzii were as follows: % of surface occupied by marshlands in the 2-km radius buffer zone (positive linear association), % of surface occupied by riparian ***forests*** in the 500-m radius buffer zone (positive linear association), % of surface occupied by ligneous savannas in the 250-m radius buffer zone (decrease in the range 0–40%, stable above), and distance to the closest stream (decrease in the range 0–100 m, stable above).

Notably, the confidence intervals of the partial dependence functions were overall high for all species and variables and, with a few exceptions, no variable emerged as much more predictive than others (in the VIPs) nor had signals outstandingly strong (in the PDPs).

Discussion

In this modeling study, we linked the biting rates of three major malaria vector species with environmental conditions at vicinities of places and periods of time of biting events to better understand their bio-ecology at fine spatiotemporal scales and identify important factors leading to increased biting risk. First, we correlated the biting rates of the vector species with (i) each meteorological variable at various time lags before the mosquito collection (using cross-correlation maps) and (ii) each landscape variable in various buffer zones around the HLC locations. Then, for selected time lags or spatial radii (the ones with the highest correlation coefficients), we generated multivariate models to study (i) the contribution of each environmental variable in predicting the biting rates and (ii) the nature of the relationship between each environmental variable and the biting rates (all other environmental conditions considered).

In this section, we first discuss the relationships between the biting rates of the malaria vectors and the meteorological and landscape conditions in the Diébougou area, and link them to the bio-ecology of the species. We then discuss how the results of our study could concretely support the conceptualization and deployment of locally tailored VC interventions. Next, we briefly summarize some of the advantages of the modeling method used for knowledge generation in the field of landscape entomology. We conclude the discussion with some limitations of this study and directions for future research.

Effects of meteorological variables

The cross-correlation maps enable us to study how meteorological conditions affect the various stages of the mosquito life cycle []. Here, we found that weather conditions (rainfall, nocturnal LST and diurnal LST) were significantly correlated with, and almost always primary predictors of, the presence and abundance of the species of the Anopheles gambiae complex. Stronger effects of these meteorological variables were found at various time lags in the studied range (from 0 to 6 weeks before collections). As discussed by Lebl and colleagues [], weather-dependent life expectancy and development rates make it difficult to link time lags (of weather recordings) influencing mosquito abundance to different development stages. Given the mean life span and larval development duration of the Anopheles species collected in our area [, , ], weather during the first week (i.e. b/w 0 and 1 week) before collection was expected to influence the adult lifetime of collected mosquitoes, and weather during weeks 1–3 (i.e. b/w 1 and 2–3) before collection was expected to influence the larval lifetime of collected mosquitoes. Weather during preceding weeks (i.e. beyond 3 weeks before the date of collection) might affect observed densities by influencing the survival and development rates of (i) parent generations through mechanical effects on the population dynamic [], (ii) the current/sampled generation through maternal/paternal effects [, ], or (iii) the current generation by preparing different biotic and abiotic conditions (for instance, by filling suitable larval development sites with water or by enabling the development of food sources, competitors or predators of Anopheles larvae).

In the spatiotemporal frame of our study, nocturnal LST ranged from 14 to 24 °C, and diurnal LST from 33 to 50 °C. Both nocturnal and diurnal LST were important predictors of the presence and abundance of An. gambiae s.s. and An. coluzzii, often with marked thresholds. Indeed, for An. gambiae s.s. we were able to identify a threshold of minimal LST over which the probability started to increase (20 °C), and for both species we also identified a threshold of maximum LST over which the probability reached a minimum (40 °C). For both species, diurnal temperature had the strongest effect during the 2 weeks preceding the dates of collection. This indicates that increasing diurnal temperatures probably reduced adult survival and larval development rates of the sampled generation of mosquitoes, leading to lower observed abundance. Indeed, high temperatures are known to inhibit development of anopheline larvae [] and to reduce adult survival []. Regarding nocturnal temperatures, the time period with the strongest effect on the presence and abundance of both An. gambiae s.s. and An. coluzzii was between 3 and 6 weeks before collection. This indicates that nocturnal (i.e. minimal) temperatures had their strongest impact by either affecting previous generations (low temperatures are known to reduce adult survival and inhibit larval development [, ]) or modifying habitats (with a delay) for the collected generation (for instance, low temperatures may inhibit the development of algae [], whose biomass has been found to be associated with larval densities [, ]).

The high correlation coefficients between cumulative rainfall and both the presence and abundance of An. gambiae s.s. and An. coluzzii, and the fact that rainfall was systematically an important predictor of these species, might indicate that in our area An. gambiae s.s. and An. coluzzii are preferably attached to rainfall-dependent breeding sites, confirming the results of other studies [, , ] and explaining their seasonality. The time period with the strongest effects of rainfall on the presence and abundance of An. gambiae s.s. was between 2 and 6 weeks before collection, suggesting an effect on parental generations (as observed by Lebl and colleagues [] for other mosquito species) or by modifying habitats (abiotic and/or biotic conditions) for the collected generation of these species. Conversely, rainfall had one of its highest correlation coefficients with the presence and abundance of An. coluzzii during weeks 1–3 before the dates of collection, indicating that rainfall might have had the greatest influence on the larval stages of the sampled generation of mosquitoes.

Different amounts of rainfall were needed for An. coluzzii and An. gambiae s.s. to be present or abundant, suggesting different breeding habitat preferences. Minimal rainfall was needed for An. gambiae s.s. to increase its probability of being present; additionally, rainfall was by far the most important predictor of its abundance (with a strong positive and approximately linear association). This could indicate that An. gambiae s.s. was more attached to breeding sites that quickly appear (presence) and abound (abundance) when limited rain falls and disappear after it stops, i.e. temporary breeding sites like puddles. An. coluzzii needed more rainfall to be present, suggesting preferences for breeding sites that require more water to be flooded, i.e. semipermanent surface water collections like marshlands or streams, which are usually filled in by rainfall throughout the rainy season and shortly after. Indeed, the % of surface occupied by marshlands was significantly correlated with, and the fourth most important predictor of, the abundance of An. coluzzii. Overall, these hypotheses about the preferred breeding habitats of An. gambiae s.s. and An. coluzzii confirm the literature reports [–].

Effects of landscape variables

The biting rates of the three species were significantly correlated with several landscape variables, at varying distances from the collection points, and with fluctuating correlation coefficients. In addition, primary predictors of the presence and abundance of An. funestus were systematically landscape-based, and some were also primary predictors of the abundance of An. gambiae s.s. and An. coluzzii. Overall, this indicates that local landscape conditions are important drivers of the bio-ecology of the malaria vectors in rural areas, confirming the literature [, , ].

The mere presence of permanent water bodies (irrespective of the surface that they occupied) was sufficient to increase (even moderately) the probability of presence and the abundance of the three species. Permanent water bodies, where available, are likely to form breeding habitats for the Anopheles species [, , –], and explain why the few study villages located close to the dams and the main river are exposed to year-round bites of high densities of the three species []. The % of surface occupied by marshlands at the vicinities of the biting sites was the most important predictor of the presence and abundance models of An. funestus. In our study area, marshlands, a semipermanent aquatic environment, hence seemed to be one of the preferred breeding habitats of An. funestus, as it has been observed in other places [, ]. Notably, the correlation coefficients between the presence/abundance of bites and the % of surface occupied by breeding habitat ***land*** cover types (marshlands and permanent water bodies) increased as buffer sizes increased. This might indicate that mosquitoes are able to fly over quite large distances to reach their biting site from these breeding habitats (≥ 2 km), as observed elsewhere in similar landscapes [, ]. Proximity to the streams (< 100 m) and % of landscape occupied by the riparian ***forests*** (≤ 500 m) were secondary predictors of the presence and/or abundance of An. gambiae s.s. and An. coluzzii. Streams and riparian ***forests*** (which are spatially interrelated, i.e. streams flow under riparian ***forests***) might hence form secondary, semipermanent breeding sites for the species of the Anopheles gambiae complex in the Diébougou area.

Grasslands—a very “open” landscape—and ligneous savannas—the most “closed” landscape in our study area—were alone or together significantly correlated with, and important predictors of, the presence and/or the abundance of the three malaria vectors studied. Increasing surfaces of grassland areas were associated with increasing probabilities of presence or abundance, while increasing surfaces of savannas were associated with decreasing probabilities of presence or abundance. With some rare exceptions, these landscape indicators were most highly correlated in small-radii (≤ 500 m) buffer areas around the collection sites. Although grassland may provide suitable breeding sites for, at least, An. gambiae s.s. and An. coluzzii [], these results seem to indicate that the degree of openness of the landscape some hectometers around villages had a great impact on malaria mosquito biting rates. Our observations are supported by the hypothesis of the lower dispersal of Anopheles mosquitoes in closed landscape (in comparison to open landscape) [] leading to shorter gonotrophic cycle durations and therefore increased biting frequencies and higher biting rates []. A similar observation was previously made with An. coluzzii in Benin []. In the Diebougou area, ligneous savannas seemed to act as natural protective barriers against the malaria vectors and, conversely, grasslands as an aggravating biting risk factor. In a country which is increasingly replacing its closed landscapes (savannas) with opened ones [], this observation is worrying for malaria transmission. ***Removal*** of savannas may significantly increase biting densities. This concern may however be mitigated for our study area, as savannas are usually mainly replaced by crops [], which themselves did not seem to be an aggravating risk factor (i.e. crops did not emerge as an important variable in our models).

Back to the field: how can these models and knowledge concretely support the fight against malaria transmission at the local scale?

An important question is how these results can ultimately help build locally tailored VC interventions (i.e. deploy the right VC tool at the right time and the right place) to support prevention and reduction of malaria transmission. The knowledge and models generated in this study could support at least three actions: (i) conceptualization of tailored vector control intervention plans, (ii) decisions regarding the places and times where recurrent (long-term) interventions should be deployed, in the form of seasonal maps of predicted biting rates, and (iii) decisions regarding the places and times where occasional (short-term) interventions should be deployed, in the form of an early warning system.

Support conceptualization of tailored vector control intervention plans

The scientific knowledge confirmed, clarified, or gained through the interpretation of the models could help conceptualize tailored (i.e. species-, time- and place-specific) VC intervention plans. For example, management of temporary breeding sites (through e.g. larval control, or information education, and communication) during the rainy season is likely to be impactful, given the biting densities of An. coluzzii and An. gambiae s.s. in these seasons and their preferred breeding habitats. Similarly, larval source management in semi-temporary breeding sites (marshlands) would be an interesting option to reduce the presence and abundance of An. funestus during the dry-cold season, and if done, should cover quite large buffer zones (at least 2 km) around the households. Beyond these few examples, efficacious and cost-effective VC action plans could be designed on the basis of our characterization of the vectors’ local bio-ecology. Importantly, however, several important traits of the vectors (e.g. physiological resistance, behavioral resistance) remain to be characterized in order to design highly efficient action plans.

Support decisions regarding the places and times where recurrent interventions should be deployed through seasonal maps of predicted distribution of biting rates

Once VC interventions have been conceptualized, one must choose the places and times they should be deployed. Here, the multivariate models could be used to generate maps of the predicted distribution of biting rates for each species over the whole study area, at fine spatial resolutions (village or household), and spanning the typical meteorological conditions in the area (for instance, three maps could be generated for each species: one for the dry-cold, one for the dry-hot, and one for the rainy season). These maps could help ***target*** and possibly prioritize the places and times for the deployment of recurrent, long-term VC interventions [, , ].

Support decisions regarding the places and times where occasional interventions should be deployed through an early warning system

A limitation of these maps is that they would only consider “typical,” i.e. average, meteorological conditions within a given season. However, different-than-expected events, such as rainfall episodes in the dry season or longer/shorter rainy season, could possibly lead to higher-than-expected biting rates and consequently peaks of infectiousness and transmission of malaria. Our study has shown that meteorological conditions several weeks prior to the mosquito collections can accurately predict future biting rates. To help identify these potential “hot spots” of transmission in a timely manner, an early warning system (EWS) based on these predictive models could be built. Such an EWS, in the form of an automated algorithm, would routinely extract the up-to-date meteorological data and use the models to generate high-resolution maps of short-term forecasts (1 week ahead, 2 weeks ahead, etc.) of the biting rates. The potential hot spots of malaria transmission identified in the maps could then benefit from special interventions that remain to be conceptualized (e.g. increased vector control, special prevention or curation actions).

Methodological bonus: on the use of algorithmic models and interpretable machine learning in landscape entomology

In our study, we have shown how complex statistical models and IML can be used to enhance the fundamental knowledge and understanding of the complex links between the environment and the malaria vectors. Advantages of this modeling workflow over more traditional modeling methods (e.g. linear of logistic regressions) include the ability to (i) inherently capture and unveil complex patterns such as nonlinear or nonmonotonic relationships (e.g. effect of temperature and rainfall) and interactions and (ii) easily include more variables [] and hence capture small—yet relevant—effects (e.g. effects from riparian ***forests*** or distance to streams). Necessary conditions to perform causal interpretation from “black-box” models are to (i) generate a good predictive model and (ii) have some prior domain knowledge about the causal structure of the system under study []. Both conditions were met in our work.

Using machine-learning black-box models for scientific discovery, i.e. to generate new knowledge from data, is an emerging trend in many disciplines [, ] that has been made possible by the recent development of both IML tools [] and the know-how to interpret these complex models [–, , ]. ML models enable us to integrate knowledge from existing theory in a less formal way than “data” models, and as such can be useful for theory development, provided that a careful linkage to existing knowledge is made [, ]. New theoretical insights generated from data and models may then in turn lead to unforeseen experimental research questions. We believe that the fields of landscape epidemiology and entomology still need to fully embrace the potential offered by these methods, in support not only of prediction or forecasting, but also explanation, i.e. to improve our understanding of the complex processes leading to malaria transmission.

Limitations and directions for future research

An important limitation of our work is linked to the spatiotemporal sampling distribution of mosquito collection. First, no collection was conducted during the high rainy season (July to October) at the known mosquito abundance and malaria transmission peaks. Second, all the collection points were less than 800 m away from the theoretical hydrographic network (which is spatially interrelated with many breeding habitats such as marshlands, streams, riparian ***forests***), meaning that our study could not identify potential differences in the drivers of vector abundance for households further than this distance. Year-round longitudinal collections, including sites further away from permanent or semipermanent breeding habitats, may enable a better understanding of the overall malaria mosquito spatiotemporal dynamics in the area. Meanwhile, these limitations must be accounted for if our models are used to generate predictive maps of the spatiotemporal distribution of vector abundance in the study area.

Similarly, predicting vector abundance outside the study area using the models generated in this study would be of high interest, to extend the operational tools previously mentioned (maps, EWS) to other areas than the Diebougou health district. However, careful attention should be given because of well-known problems linked to predicting beyond the model sampling locations or range of values (e.g. overfitting) [, ]. The scalability of our models to places with similar landscape and weather dynamics as the Diebougou area could be tested by collecting similar entomological data in another health district and comparing these ground-truth data with predictions generated by the models. In any case, these models should not be used to predict in remote ecoregions or urban settings, or at higher/lower spatial resolution.

Another limitation is the nature and diversity of the variables introduced in the models. Very fine-scale potential important drivers of mosquito abundance, such as the presence of alternative sources of blood meal (e.g. cattle), of domestic breeding sites, market gardening, or the micro-climatic conditions on the night of collection, have not been investigated. These variables were significant drivers elsewhere in West African rural settings [, , ]. Yet, the good predictive accuracy of the models suggest that, most probably, the most important drivers of vector abundance in our study area have been identified.

The absence of a strong signal from single variables in the models and the large confidence intervals in the PDPs suggest that the models might have learned important interactions between variables. IML tools such as the H-statistic [] might help reveal such interactions, and others like the two-variable PDP [] might help explore their effect on malaria vectors abundance. Other tools can be used to analyze individual, or a ***target*** set of, predictions made by the models (these tools are called local interpretation methods, e.g. LIME [] or Shapley values []). Local interpretation could be useful, for example, to precisely determine the environmental drivers of vector presence/abundance for a village of interest, or to better identify the drivers of the spatial heterogeneity of biting rates within a season of interest. Altogether, these IML tools might enable us to dig deeper into the models and, hence, the complexity of the ecological niche of malaria vectors.

This work has revealed how landscape can influence the biting rates of vectors, either directly (by impacting vector dispersal) or indirectly (by providing suitable breeding sites and hence increasing vector densities and consequently biting rates). Further investigations on the role played by the level of openness of the landscape are needed to confirm the various hypotheses that we have previously enumerated. A finer-grained ***land*** cover classification (e.g. discriminating shrub, tree and wooded savanna) could help test some of our hypotheses: for instance, is there a correlation between the gradient of closedness of the savannas and the abundance of vectors in our study area? Moreover, additional fieldwork could help identify the potential cause–effect relationship between surface of grasslands and malaria vector presence/abundance (i.e. breeding habitat or open landscape favoring dispersal).

Lastly, as stated previously, the scientific knowledge confirmed or acquired in this study and the good predictive accuracy of our models lay the ground for the development of operational tools to support vector control and improve forecasting of epidemic outbreaks at the local scale (e.g. locally tailored VC intervention plans, seasonal maps of the spatiotemporal distribution of vector abundance, EWS).

Conclusion

In this study, several aspects of the bio-ecology of the main malaria vectors in the Diébougou area were explored using field mosquito collections and high-resolution EO data (reflecting both meteorological and landscape local conditions) in a state-of-the-art statistical modeling framework. Overall, the spatiotemporal distributions of biting rates of An. coluzzii and An. gambiae s.s. were closely associated with meteorological conditions (temperature, precipitation), while those of An. funestus were more closely linked to landscape conditions. Meteorological conditions (temperatures, rainfall) putatively affected all developmental stages of the mosquitoes (larval, adult) at varying levels according to the species and the meteorological variable. Weather occasionally had an even greater impact on time periods preceding the life span of the sampled generation. Primary and possible secondary breeding habitats of each vector species were proposed: An. funestus, An. coluzzii and An. gambiae s.s. seemed to be distributed along a gradient of persistence of the breeding sites, from permanent to temporary, confirming the literature reports. The rate of openness of the landscape seemed to play a major role in the biting rates, which could represent a major concern in a context of progressive shrinkage of the savanna and ***forest*** surfaces in Burkina Faso. This work lays the foundation for the development of operational tools to enhance and optimize the fight against malaria transmission at the local scale, such as vector control action plans, seasonal maps of predicted distribution of biting rates or early warning systems for the detection of malaria outbreaks.

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**Notes**

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[***Senate Committee Hansard: BILLS - Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:622M-2XN1-JDG9-Y3M1-00000-00&context=1516831)

Impact News Service

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**Body**

Canberra: Parliament of Australia has issued the following senate Hansard:

I rise this morning to speak in favour of the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021. This is an important piece of legislation which this chamber needs to consider, because for far too long the plight of Australia's iconic furry friend the koala has been ignored. Last summer's bushfires ripped through parts of the Australian bushland in a way that we'd never seen before. Sixty-one thousand koalas were killed and much of their habitat was destroyed. This piece of legislation seeks to stop the further destruction of the limited amount of koala habitat that is left. For far too long, precious koala habitat has been allowed to be destroyed due to mining, big property development, logging and other types destruction. Couple that with the destruction of last summer's bushfires, fuelled by the climate crisis, and Australian koalas now face extinction. It is just unthinkable that, on the east coast of New South Wales, Australia's koala could be extinct within the next 30 years. It is just unthinkable that this iconic creature, which right around the world is considered so emblematic of Australia's wildlife, bushland and environment, could be gone, to exist only in zoos as a reminder of what used to be. We need to act now and we need to act fast. The biggest threat to Australia's koalas is the destruction of their homes, their habitat. As less and less habitat is available we see the koalas moving closer and closer into urban areas. This puts them at further risk of harm and injury. When the bushfires ripped through the Australian ***forest***, bushland and scrub this time last year, the images of burnt koalas, dead koalas and injured wildlife went around the world and shocked people right across the globe, because it was just such a fundamental destruction of what Australia is known for.

Under the 22-year-old environment laws currently in place in this country, under the EPBC Act, koalas have lost almost one million hectares of critical habitat. Overall at least 7.7 million hectares of critical habitat have been destroyed, specifically for mining and development, over the last two decades—enough is enough. There is not much home left for the koala. We need to protect that which exists. Of course, this is an important issue not just for the koala; this is important for the rest of Australia's wildlife and native species too, because if we are to protect koala habitat it protects the homes of many other animals as well. For far too long we have simply let rip, let log, let dig, let destroy Australia's precious places and our environment. If you destroy the bushland, if you log ***forests***, you're taking away the very homes of these animals.

At present, despite how at risk these animals are, the government refuses to guarantee that not one more hectare of critical koala habitat will be lost, and that is shocking. When everybody knows—in the government, in the minister's office, in the department, amongst the experts and those who work carefully and considerably and hard every day to protect our wildlife—that koalas are facing extinction, how can the government continue to allow the destruction of habitat? This will fast-track the extinction of this iconic species.

Indeed, the government has done the exact opposite. Despite 61,000 koalas being killed last year, the environment minister has continued to sign off on, give approval to and give a green light to the destruction of even more koala habitat going forward—doing the exact opposite to what needs to be done. It is not good enough to want to stand and have a photo with the cute koala at Australia Zoo or at Taronga or a number of the other wildlife sanctuaries and then to turn around and to sign the death warrant of these creatures by allowing the destruction of their homes from big mining companies and developers.

The environment minister's job is to protect the environment, to make sure there is a check and a balance on those who just wish to just cut, dig and destroy senselessly. These koalas need the protection of this environment minister, and currently the environment minister has failed. The Threatened Species Commissioner, the expert and the key adviser to the minister herself, told this Senate in November last year that the biggest threat to koalas was habitat loss and the degradation and fragmentation of their homes.

The environment minister knows what she needs to do. The environment minister knows what needs to be done to save these koalas from extinction. The environment minister needs to stop approving the destruction of their habitat through mining, development and logging projects. The ongoing destruction of koala habitat through ***land*** clearing for ***agriculture***, development, mining and forestry is currently unchecked and has been going on like this for decades and decades. And now we have a situation where, unless we act today, there will be no koalas in 30 years time. Perhaps there will be a few in zoos, perhaps there will still be an opportunity for a politician to have their photo shoot with a cute and cuddly koala, but there won't be any living in the wild and there won't be any in our Australian bushland.

The New South Wales parliament last year was so exercised by this issue that they conducted their own inquiry. They found evidence, time and time again, that, unless koala habitat was protected, these animals will become extinct. It just beggars belief that no-one in this place, no-one in the government, is seizing the opportunity to do the right thing. Saving Australia's koalas is not just important for protecting our wildlife. It is important in our further challenge in tackling climate change—because, as more and more koala habitat is destroyed, less and less ***forest*** and bushland is protected, thus making climate change even worse.

Last summer's 'climate fires' were a wake-up call to the Australian community. They were a wake-up call for all of us. We were pretending climate change is something out there in the distant future, but it was right here on our doorstep. Canberra itself was engulfed in hazardous smoke for weeks and weeks on end. Sydney, Australia's biggest city, was engulfed in toxic smoke for weeks and weeks on end. Towns and communities throughout the eastern seaboard, southern Victoria, the Gippsland region and my home state of South Australia were devastated by the fury of the flames. And while we might be able to rebuild, reconstruct our homes and put our communities back together—although that takes time—our native animals are gone forever. The three billion native animals destroyed in this fury of fire destruction are gone forever.

There is very little Australian koala habitat left. All this bill is seeking to do is put in place a moratorium to stop the minister from being able to approve any more destruction of it. There should be no more bulldozing of the trees that koalas live in, no more logging of the trees and the bushland that koalas and their fellow species rely on, no more destruction of koala habitat for the sake of a quick buck for the mining industry and big property developers. For far too long, these big corporations have brushed away the long-term impact of destroying these important pockets of bushland. 'Oh, koalas can go and live somewhere else,' they say. As the minister signs on the dotted line, she says: 'Yes, you beauty, you can log there; you can mine there; you can bulldoze there,' expecting that the koalas will simply be able to pack up their bags and move next door. We need this country to get serious about protecting our environment and what is left of it.

We lead the world, shamefully, when it comes to our list of threatened species and those that are already on the extinct list. That's not a league table I want Australia on and neither do most Australians. The Australian people ask us to debate a lot of complex issues in this place. This isn't one of them; this is not a complex issue. This makes perfect sense. There's very little habitat left. If we want to save Australia's koalas from extinction, we need to protect their homes. We need to stop the chainsaws and stop the bulldozers. We need to protect our iconic species not just for their sake but for the sake of every other species that relies on native bushland, native scrub and protection from destruction. I commend the bill to the Senate.

I too rise to speak on the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021, introduced by Senator Hanson-Young. I wish to acknowledge up-front her passion and deep interest in these issues. Having travelled as part of the Senate Environment and Communications References Committee to Kangaroo Island in the aftermath of the bushfires, I have seen her deep interest in this and her passion for addressing these issues.

When it comes to the legislation, though, I come back to the maiden speech I made in this place—that good intentions and passion alone don't necessarily make for good legislation. I do have some concerns with the amendments that have been proposed in this bill, which I will speak to now. As Senator Hanson-Young has said, the bill aims to introduce a moratorium on the clearing of koala habitat, and, if you go back to the EPBC Act and look at what critical habitat for vulnerable species, the koala in particular, is defined as, it's defined as any habitation that contains a food tree or a food source for koalas, so it's a fairly broad definition of what koala habitat is. The bill would prevent the minister from approving an action under the EPBC Act where that action consists of or involves the clearing of koala habitat. It also goes on to ***remove*** an exemption for regional ***forest*** agreements, which I'll come to a little later on. Specifically, section 18B refers to the concept of a significant impact on koalas as set out in the new section 527G and it applies this concept to section 18A of the EPBC Act. The effect then of section 18B in conjunction with 18A and 527G is that taking an action that has, will have or is likely to have a significant impact on koalas is prohibited. At the end of section 139 the bill goes on to insert a new subsection that has the effect of preventing the minister from approving an action consisting of or involving the clearing of koala habitat. As you'll recall, the definition of 'habitat' for vulnerable species, the koala in particular, is essentially any ***forest*** or other growth that has either emergent trees or trees that constitute a food source for koalas.

The concern in part for me comes back to my own state of South Australia. An exemplar is Kangaroo Island, to which, in the 1920s, a number of koalas, given that they are not native to Kangaroo Island, were introduced from Victoria. I think fewer than 20 were released on the island. They have bred extensively on Kangaroo Island. Before the fires of last year there were an estimated 50,000 koalas on Kangaroo Island, roughly half in native vegetation and roughly half in blue gum plantations. This immediately raises an issue with the prohibition in that, if the koalas have chosen to live in blue gum plantations because they provide a food source, then here we have a situation where what is essentially an introduced species to this island has chosen to live in and use as a food source a plantation timber, for which the natural expectation of somebody who's planted trees as a plantation is that they will be able to harvest those trees. But this prohibition would actually prevent a normal commercial activity of planting timbers for the purpose of harvesting because koalas have chosen to live in that area. So, fundamentally, there is a problem with the nature of the bill because it will interrupt not the logging of native ***forests*** or clearing of native areas but actually commercial operations that have seen a massive increase, through the presence of those trees, of a koala population.

Kangaroo Island was an interesting case even before the fires that went through last year and that were devastating to many landholders, property owners and wildlife because the koala population does not respond to environmental stress like kangaroos do. Scientists have studied them and made it clear that kangaroos, in the face of environmental stress, can actually regulate their population growth to adapt to those changing circumstances. What they've found with koalas is that koalas are not capable of that self-regulation, which means that over time they have created unsustainable pressures on the food sources on the island. This means they are literally eating themselves to starvation. There has been a long program, a long debate and discussion, in South Australia about how you deal with this burgeoning population. Culling is not an option. There has been some attempt at translocation back to the area where these koalas originally came from. Given that they are disease free—and certainly the only ones in South Australia and potentially nationwide that are disease free—it's a very good breeding stock to try to translocate. There have also been attempts at sterilisation. But importantly, as Senator Hanson-Young has indicated, the habitat that koalas use is also the habitat for other species. One of the great environmental concerns on Kangaroo Island is the overpopulation of koalas, which eat trees not just to the point where there is no more food for them to eat. If the trees are devoid of all leaves, they die, which means that the habitat for other native animals is actually being reduced. That has been a significant environmental concern in South Australia. Kangaroo Island is an exemplar of a case where there are reasons why this prohibition on the clearing of habitat has a commercial imperative. But there are also reasons why various controls may be required.

You can also go to other parts of South Australia. In the Adelaide Hills, for example, in the Mount Lofty Ranges, there is a population that is measured to be around 150,000 which is thriving. There are large contiguous ***forested*** areas and natural bushland, even down into the suburbs. In fact, the creek out the back of my own house has koalas that populate that and keep us awake at night with various territorial growling. But it indicates that there is a healthy population there, and this prohibition could prevent quite reasonable development of properties across a large swathe of area or pockets within that area that would have no material impact on koalas. So there are some fundamental concerns about the black-and-white nature of the prohibition which is placed in this bill.

The extant provisions recognise that there are areas which are complex. The guidelines published by the Department of the Environment, in relation to the EPBC Act, say:

The koala has one of the largest distributions of any terrestrial threatened species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). It occupies a variety of vegetation types … is capable of moving long distances and is variably affected by a range of threats. Determining significant impacts on the koala is therefore complex and varies between cases.

This shows that we do need to take account of the habitat of koalas and their population but a blanket ban is not the best way to manage that. There needs to be a scientific approach that understands the impact on the koala as well as other species, balancing that with developments—whether that be in industry or for housing or transport— and the authorities and minister need to be able to look at these case-by-case rather than being hamstrung by a blanket ban.

As the chamber would be aware, the EPBC Act is due for a reform and there are reforms underway. The Environment and Communications Committee reviewed late last year some of the first tranche of reforms to make it more effective, in terms of how we care for the environment and balance the needs of other parts of our society. It's worth pointing out that, in terms of the extant provisions, habitat protections and matters of ***land*** clearing are predominantly the responsibility of state governments. But, when it comes to threatened species, the EPBC Act does provide protection for threatened species and the koala is listed as one of those, particularly the combined populations of Queensland, New South Wales and the ACT, which are regarded as matters of national environmental significance.

So under that federal act, any action that's likely to have a significant impact on a matter of national environment significance, such as the koala, must receive approval from the government before it can proceed. In order to obtain approval, proposed developments are subject to an rigorous and transparent environmental assessment process under the EPBC Act. We heard a lot of evidence last year about the processes in that act and the fact that there are opportunities for improvement, and I would welcome those as we go forward. But at the heart of that act and those processes is the assumption and the principle that you treat the koala population, particularly on that east coast area, as a population of concern but you deal with each case according to its merits. I will come to the issue of the forestry agreements now, just in that context.

Between 2015 and 2017 the New South Wales Department of Primary Industries undertook a large-scale study on koala occupancy in north-east ***forests*** of New South Wales, including their response to timber harvesting. What they found was that koala occupancy was not influenced by timber harvesting intensity, time since harvesting, ***land*** tenure or landscape of harvesting or old growth ***forest*** extent. There were other factors sometimes associated with the forestry industry, but often not, that had a greater impact. So to have a blanket ban on exemptions for RFAs ignores what the science has collected, in terms of data.

So I am not denying that, particularly on the east coast, there is cause for concern, there is action that is required, but the substance of this bill and the operative measures which actually prevent—they have a hard prohibition—that don't allow the science for any particular business case to be considered when somebody comes for approval or, worse, in the case of something like Kangaroo Island, where there has been a commercial planting of trees that, by definition, have now become a habitat for koalas because they are a food source for koalas, would be that somebody who's made an investment to plant a plantation couldn't even harvest those trees because of the operation of this bill. So for those reasons, while I respect the good intentions and the depth of passion of Senator Hanson-Young, I cannot support this bill in the Senate.

I'm not sure whether Senator McGrath desperately wants to stop me saying something in this place. I'll have to review my speech and try and work out whether there's something outrageous that I can say.

There is something about the politics of koalas that drives the National Party and the Liberal Party wild. I'm not sure what the hostility is to one of our favourite national creatures, but there's odd behaviour around koalas in this parliament and in the state legislatures. In fact it was just last year that the bloke who careers around New South Wales in a very untidy sort of way, the Deputy Premier and the leader of the Nationals party in New South Wales, threatened to split the coalition government in New South Wales over this very issue. In truth, he overstated the impact of what was a very bland set of changes, performed in regional communities, telling them something terrible was going to happen to their capacity to manage their own ***land***—which was absolutely untrue, in true National Party form—and then, of course, faded from the scene. Another Barilaro effort, where all the noise is made in regional communities—a lion in Gunnedah, Armidale, Coffs Harbour and Lismore but a mouse in Macquarie Street—folded. It does make you ask the question, rhetorically: what has the koala ever done to the Liberal and National parties? How much, indeed, can a koala bear?

The bill proposes an indefinite moratorium on clearing koala habitats. It is a not the approach the Labor Party would take in government. Our approach would be a more ***targeted*** and more temporary moratorium in places where the koala is listed as vulnerable only until the relevant policy instruments that are required are in place—a threatened species recovery plan and a national koala strategy. The Samuel review commenced in October 2019 and reported to parliament in 2020. It made 38 recommendations, including the immediate reduction of legally binding national environmental standards and filling the gaps between state and federal legislation.

While this bill would widen the gap between Commonwealth and state regulation and increase uncertainty, it is I think true that what is proposed here is unlikely to make its way into legislation. It's like some of the notices of motion that we see from time to time. It's an opportunity to put a bill with the word 'koala' in its title to a vote. There will be some social media presentations about this bill going through the parliament, but it won't in fact deal with the crisis that we're seeing in koala populations around Australia. Just like Bob Brown's convoy to Central Queensland this won't actually change the material facts on the ground for koalas. It's a big show for attention and donations, and in my view it undermines the actual effort to protect the environment.

There is a crisis in koala populations. It is estimated that in 1788 there were 10 million koalas on this continent. Since the bushfires, we have estimates that the koala population in New South Wales is down to about 36,000. It has been in dramatic decline since the bushfires. The Pilliga region once had a thriving population of koalas living on public ***land***. The population began to decline in dry conditions, deteriorating foliage quality and a lack of water. By 2014 the population in that region had decreased by 80 per cent. In 2019 no koalas could be found. Across New England the population has declined 75 per cent in a decade. In 2019 there are fewer than 2,000 koalas in the Culgoa, Moree and Gunnedah areas combined—and that was before the bushfires.

In evidence given to the Senate inquiry into the bushfires, which I had the privilege of chairing, we heard that more than a billion animals were killed in the bushfires, including 143 million mammals. The inquiry heard about the destruction on Kangaroo Island in South Australia. Right across the country there's a crisis in koala protection and in the koala population. It's almost a year after the bushfires. The Morrison government, during the election, offered a grab bag of policies. They were announced at a press conference—true to form—about saving koalas. They shared a Liberal branded Facebook ad saying they were protecting the koalas and restoring their habitat. Of course, since then, the koala population has gone down, not up. Since then, the crisis has deepened. There have been no solutions, just a press conference, an announcement and an ad from this government—no action at all.

I propose to conclude my remarks there and seek leave to continue my remarks.

Leave granted; debate adjourned.

**Load-Date:** February 23, 2021

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[***Scottish election manifestos: the Greens, Alba, Lib Dems and All for Unity***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62KG-TSJ1-DY4H-K1S4-00000-00&context=1516831)

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**Section:** NEWS; Version:1

**Length:** 2014 words

**Byline:** Kenny Farquharson

**Body**

ALBA Economy

New power for Scottish National Investment Bank to raise capital for Covid recovery. Create sovereign wealth fund from renewable energy. Massive re-skilling programme to produce skills of tomorrow. More co-ops. More industrial democracy.

Taxes

Introduce ***land*** tax, with exemptions for farming. New wellhead production tax on offshore oil industry.

Welfare

Annual payment of £500 to every low-income household. Double Education maintenance allowance. Revamp fuel and food poverty measures. Set up a Scottish Pensions Commission.

Education

Support for pupils to catch up on work lost to Covid. Bonfire of paperwork for teachers. Free school breakfasts and lunches for all pupils all year round, with Scottish ingredients. Review curriculum for excellence. Prioritise IT literacy. Review teachers' pay.

Health

NHS catch-up programme. Mental health recovery plan. Link health and anti-poverty strategies. National Care Service free at point of need and publicly owned.

Justice

No mention.

Constitution

Immediate negotiations with Westminster on independence. Fight any Westminster refusal in the courts. Use "the mobilisation of the Scottish people through popular and peaceful demonstration and direct action". Commission to work on independence blueprint.

Housing

Set up a Scottish National Housing Company to build as many new homes as possible to highest environmental standards. Use housing industry supply chain to support Scottish companies.

Environment

Take a public share in all licensed renewables projects. Aim to at least double renewables capacity in ten years. Ensure next generation of wind farms embraces public and community ownership, with turbines made in Scotland.

Infrastructure

Create a road map to electrify the transport system. Examine feasibility of a global container transhipment hub. Fund to transition taxi fleets to green power.

Rural affairs

Better ***land*** use including reforesting and rewilding. Protect food producers from regulatory race to the bottom. Support for rural housing.

Transgender

"Alba is calling for a Citizens' Assembly to be established with urgency to develop binding proposals on reform of the Gender Recognition Act."

Other

Protect the right to single-sex sports to ensure fairness and safety at all levels of competition. Create a Citizens' Chamber to advise Holyrood.

ALL FOR UNITY Economy

Create a small business recovery unit to aid post-Covid growth. Harmonise regulations across UK. Stronger Scottish presence in UK trade missions. Scrap the Scottish National Investment Bank. Support freeports.

Taxes

Higher income tax in Scotland is "impediment" to attracting employees. Independent commission to come up with optimal tax rates. Tax breaks for domiciled arts and culture industries.

Welfare

No mention.

Education

Restore literacy and numeracy to the heart of the learning process. Close attainment gap. Tutoring and mentoring to allow pupils to catch up. More autonomy for schools. Overhaul the curriculum for excellence with shift back to knowledge-based learning.

Health

Emergency funding for post-Covid NHS recovery. Increase number of medical students from Scotland. More investment in mental health provision and drug treatment.

Justice

Repeal the Hate Crime Bill. New legislation to entrench the separation of powers. Reform role of lord advocate. Limit verdicts to "proven" and "not proven". Judge-led inquiry into Alex Salmond trial. Local chief constables for local areas.

Constitution

No to a second referendum. New tests: pro-referendum parties need majority of electorate to trigger new vote; Scots elsewhere in UK able to vote; question is leave/remain, not yes/no; independence requires majority of electorate, not majority of votes.

Housing

More low-cost starter homes. Encourage New Zealand-style retirement villages. Repurpose high streets for housing. End homelessness by turning empty shops into hostels.

Environment

Move to zero-carbon economy without making same mistakes as de-industrialisation. Press pause on ***forestation*** and protect heather moorland. Careful rewilding to encourage biodiversity.

Infrastructure

Support for road link between Scotland and Northern Ireland. Rethink cycle lanes in urban areas. Review of disused rail lines. Cancel non-essential spending such as road signs in Gaelic.

Rural affairs

Maintain subsidies for "less-favoured areas". Cut red tape. End the practice of putting the saltire flag on labels of foodstuffs. Fair deal for farmers in face of corporate capitalism.

Transgender

No mention.

Other

Rename the Scottish government the Scottish executive. Rename the Bank of England the Bank of Britain. Scrap Scottish banknotes.

GREENS Economy

Create more than 100,000 jobs with a £7.5 billion green recovery. Make worker representation mandatory on boards of companies with turnover of £5 million or more. Local community access to Scottish National Investment bank. Support transition to four-day week.

Taxes

Wealth tax on all assets over £1 million. No income tax rises during Covid recovery, but more progressive system afterwards. Windfall tax on pandemic profit. Scrap council tax and move to system based on actual property value.

Welfare

Double child payment to £20. Increase Best Start and school clothing grants by £100. Index-link devolved benefits. Scrap the benefit cap and fully mitigate its effects. Pilot universal basic income and, in the meantime, Scottish minimum income.

Education

Raise school starting age to seven. Teach the future by telling children about climate change. Teach the past by educating children about empire and slavery. Free school meals all year round for all pupils. Recruit 5,500 more teachers. Reduce class sizes to 20.

Health

Allocate 10 per cent of frontline health spend to mental health by 2026. Introduce the right to an assisted death. Support safe consumption for drug users. ***Remove*** two-doctor rule for abortions.

Justice

More local scrutiny of local policing. Abolish the "not proven" verdict. Legal aid for domestic abuse victims in civil cases. Decriminalise sex work. Create a victims commissioner.

Constitution

An independence referendum during next parliamentary session. Commit to EU membership following independence. Seek associate membership of Nordic Council. Make local government more local.

Housing

Build 84,000 homes for social rent by 2032. Ban winter evictions. Give tenants rights to keep pets and decorate. Introduce rent controls. New social housing options for older people.

Environment

Phase out North Sea oil and gas. Source at least 70 per cent of onshore wind equipment domestically. More cash for tidal energy. Oppose carbon capture, bioenergy and hydrogen produced from fossil fuels. Ban on new fossil fuel boilers from 2025.

Infrastructure

Invest £3.2 billion in public transport, including free ferry travel for children and young people. Progress on first phase of Rail for All, a 20-year, £22 billion transformation in rail travel. Support for cycling, walking to make up 20 per cent of transport budget.

Rural affairs

Create more than 6,000 green rural jobs through a £895 million plan to restore Scotland's natural environment. Ensure 11,000 homes are built in rural areas before 2026. Replace ***agricultural*** grants with ***land*** management contracts.

Transgender

"Deliver long overdue reforms to the Gender Recognition Act, including statutory self-declaration, recognising non-binary identities and all genders, and providing access to health care for trans minors with parental or guardian consent."

Other

Default 20mph speed limit in built-up areas. A lynx reintroduction trial for rewilding the Scottish countryside.

LIBERAL DEMOCRATS Economy

Job guarantee for 16-24-year-olds. New £5,000 bond to change careers. Create 2,000 paid graduate internships. Support a "Made in Scotland" kitemark. Support for community co-ops.

Taxes

No "substantial" change to income tax rates and bands. Scrap council tax and move to ***land*** value system.

Welfare

Double child payment to £20. Develop a system of Universal Basic Income. Guarantee of respite for unpaid carers.

Education

Play-based education until age of seven. Every qualified teacher guaranteed a job. Minimum teaching starting salary of £30,000. Reform SQA and Education Scotland.

Health

National standards and fair pay for social care staff. Treatment not prosecution for drug abusers. More mental health specialists for community centres, hospitals, workplaces and schools.

Justice

More investment in rehabilitation of offenders. More support for victims of crime. More local accountability for policing. Reform of fatal accident inquiry system. Mental health professionals to work alongside police.

Constitution

Work towards a federal UK. A new Contempt of Parliament rule, so minority governments can't ignore Holyrood. Support a power to recall MSPs. Power of general competence for councils.

Housing

Build 60,000 affordable homes. Help To Renovate loans to bring dilapidated properties back onto the market. Support findings of Scottish ***Land*** Commission on use of derelict ***land***.

Environment

Move a million homes to zero-***emission*** heating by 2030. Invest in low-carbon heat networks. Just transition from fossil fuel economy. Double cash to combat fuel poverty. New national parks and woodlands.

Infrastructure

Reopen railway lines. Integrate all forms of public transport. Local control of bus services. Accelerate journey times on key rail connections. Rural broadband champions for left-behind communities.

Rural affairs

Examine moving civil service jobs to rural locations. More money for community ownership. Support growth of rural housing stock. More powers for Scottish ***Land*** Commission. New incentives for sustainable ***agriculture***.

Transgender

"Improve laws on gender recognition in line with international best practice to allow trans people to change the legal gender on their birth certificate with a simple process based on the principle of self-determination, and without intrusive medical diagnosis requirements."

Other

Protect performance, rehearsal and exhibition spaces in the arts. Invest in more Gaelic medium education. Support for ex-football/rugby players with dementia.

**Load-Date:** May 3, 2021

**End of Document**



[***The most innovative UK-led space companies exploring new galaxies of technology in 2020***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61DY-BS71-JCMN-Y089-00000-00&context=1516831)

Newstex Blogs

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**Body**

Dec 02, 2020( UKTN: [*https://www.uktech.news*](https://www.uktech.news) Delivered by Newstex) UK space technologies sector might be at a nascent stage and smaller as compared to its US and Asian counterparts. However, in order to boost this industry, the government has endorsed some ambitious plans in the recent past. The UK space sector eyes to reach a ***target*** of 10% of the global space market share in a decade, which is by 2030. It intends to do the same by bringing together talent in a collaborative way. Talking about the ambitious UK space sector, UKTN spoke to Dr Joanna Hart, Harwell Space Cluster Development Manager.

Globally recognised hub Harwell Space Cluster comprises 105 space organisations including the UK and European space agencies. It also supports the UK space sector to achieve this goal by bringing companies together to share knowledge, identify opportunities for collaboration and highlight UK space sector capabilities to an international audience. On asking if the UK's space industry will be able to meet this ***target*** by 2030, she says, 'This ambitious goal has brought all the players in the UK space sector together. This common alignment of purpose, along with great talent, companies and innovation means that the UK is well placed to deliver on its objective. The UK Government has signalled its ambition in space with the establishment of the National Space Council, indicating that all the levers of Government are ready to be used, as needed, to encourage the UK space sector to deliver on this ***target***.' While there are many space companies and startups in the UK that work towards to stand up against the likes of Google and Elon Musk's SpaceX[1], It remains to be seen how these companies manage to do so. Having said that, here we list some of the ambitious next-generation space companies in the UK in 2020 and beyond.Image credits: Diamond Light Source Diamond Light Source - UK's only synchrotronCEO: Prof Andrew Harrison Founded year: NA London-based personal money app Ziglu smashes through 6M in crowdfunding[2]Funding: NA Diamond Light Source[3] works similar to a giant microscope by harnessing the power of electrons to produce bright light that is used by scientists to study anything from fossils, jet engines, viruses and vaccines. At the synchrotron, scientists can analyse samples of anything using a machine, which is 10,000 more powerful than conventional microscopes. Besides being the only national synchrotron in the UK, Diamond is also one of the most advanced scientific facilities in the world. What's interesting is that Diamond provides the national science infrastructure for free and researchers can access the primary facilities along with electron microscopy at the Harwell Campus via a competitive application process. Over 14,000 researchers from physical and life sciences use Diamond for their experiments.Image credits: Elecnor Deimos Elecnor DeimosCEO: Miguel Belló London-based IoT startup Infogrid raises 11.5M to make all buildings 'smart'[4]Founded year: 2001 Funding: NA Deimos Space UK Ltd. is a subsidiary of Elecnor Deimos[5], a Spanish company with its headquarters in the UK. It is responsible for creating flight systems, launch vehicles and ground systems. The operation centre is located within Harwell Oxford Campus and next to the UK Space Agency. Opened in 2013, this centre handles all kinds of services including systems and applications that are to be used in Space. The areas of expertise of Deimos Space UK include mission and flight engineering, global navigation satellite systems, flight software systems, space situational awareness, ground segment systems, remote sensing applications, and provision of image date. Elecnor Deimos has designed and operated two remote sensing satellites - Deimos-1 and Deimos-2. Deimos Space UK Ltd designed the applications used by these satellites involved in imaging and earth observation. Voi, Swedish micromobility company pulls in huge funding of 142M to cement its position in UK &#38; Europe[6] Image credits: Astroscale AstroscaleFounder/s: Mitsunobu Okada, Nobu Okada Founded year: 2013 Funding: 162.7M On-orbit service and logistics startup Astroscale[7] was founded by Mitsunobu Okada and Nobu Okada in 2013 in Japan. It was started in the UK in 2017 and has been awarded a share of over 1M from the UK government. Astroscale aims to solve the problem of space debris, which is a major threat as more companies create satellites and constellations. This company works with the mission to extend the life of geostationary satellites, which make the orbital operating environment more sustainable. Astroscale's end-of-life orbital debris-***removal*** technology intends to demonstrate its mission with the launch of a Russian Soyuz rocket. It uses two spacecraft that will find and latch on to the ***target*** debris to be de-orbited from the space. As per an agreement that was signed between Astroscale and Israel-based Effective Space Solutions in June this year, the former acquires the latter's intellectual property associated with Space Drone and hires its engineers and executives. Space Drone is the satellite servicing vehicle developed by Effective Space Solutions, which is yet to debut its operation.Image credits: Open Cosmos Open CosmosFounder/s: Rafel Jord Siquier Founded year: 2015 Funding: 5.75M Oxfordshire-based Open Cosmos[8] founded in 2015 by Rafel Jord Siquier delivers satellite-based solutions that are designed to tackle the biggest challenges faced by the Earth. The company offers all that is needed to bring actionable information from space from mission development software to ready-to-launch small satellite platforms. This spacetech company focuses on the development of innovative satellite infrastructure - building and operating complete space missions addressing mission management, manufacturing and launch of nanosatellites. Basically, Open Cosmos intends to make satellites accessible across all industries, businesses and end users. Its services include urban mapping, monitoring of ***land***, environment or infrastructure, early detection or prevention of situations such as leakage of harmful substances and more. Its mission is to work closely with institutions, governments, and companies all over the world and open up space for end users.Image credits: Skyrora SkyroraFounder/s: Volodymyr Levykin Founded year: 2017 Funding: 32.4M Skyrora[9] is a space company based in Edinburgh. It operates with the vision to meet the increasing demand for small satellite launches by combining proven technology from previous launch programmes and modern-day innovation. This way, the company intends to create responsive and cost-effective access to space. Recently, Skyrora returned Black Arrow to the UK from the Australian Outback, where it ***landed***. Notably, Black Arrow is the first ever rocket from Britain to have successfully placed a satellite in orbit. In addition to designing, manufacturing and deploying rockets to clear the way for small satellite manufacturers looking to access space, Skyrora has conducted a series of static test fired of its LEO engine, which includes a test conducted in a vacuum chamber that can replicate the conditions that exist in space. The successful completion of the test shows that the sub-system of its three-stage orbital launcher - Skyrora XL is ready for launch and might be launched in 2023.Image credits: Trade in Space Trade in SpaceFounder/s: Robin Sampson Founded year: 2018 Funding: NA Glasgow-based Trade in Space[10] develops satellite-activated smart contracting solutions. It provides necessary tools that let satellites to act in real-time as an autonomous commercial actuary. The company specialises in creating tradable contracts from remote sensing data. Playing a role in the global fintech sector, Trade in Space creates financial services products using data fetched by satellites. It is customised to improve the ***agricultural*** industry across the world and aims to use data from satellites in a better way to make peer-to-peer trade easier and fairer for financiers, farmers and wholesalers.Image credits: Earth-i Earth-iFounder/s: Richard Blain Founded year: 2015 Funding: 2.9M Earth-i[11] based in Guildford provides a stream of space imagery for any given location on the Earth such as ***forests***, ports, refineries, mines, construction sites, roads, farms, etc. The vision of the company is to provide a consistent flow of Earth Observation data that will drive powerful new insights indicating what's happening on the planet in real-time. The company intends to deploy its own constellation of small and agile Earth Observation satellites.Image credits: Oxford Space Systems Oxford Space SystemsFounder/s: Mike Lawton Founded year: 2013 Funding: 4.2M Oxford Space Systems[12] based in Didcot develops new deployable antennas and structures that are lighter, less complex and not too expensive. Oxford Space Systems is working on contracts and collaborations with satellite builders in Europe and other emerging players in the microsat &#38; nanosat markets in the US, Europe and Asia. Notably, the company intends to set two industry records with the successful deployment of the OSS AstroTube boom in under 30 months.Image credits: Reaction Engines Reaction EnginesFounder/s: Alan Bond, John Scott Scott, Richard Varvill Founded year: 1989 Funding: 116M Abingdon-based Reaction Engines[13] has developed an advanced combined cycle air-breathing rocket engine called SABRE (Synergetic Air-Breathing Rocket Engine). This new class of aerospace engine is designed to enable aircraft to operate from standstill on the runway to hypersonic speeds of over five times the speed of sound in the atmosphere. Reaction Engines' technology has undergone extensive independent technical assessments which have confirmed its viability and potential vehicle applications. The company's leading heat exchange and advanced manufacturing capabilities find numerous applications in aerospace, cleantech, energy and other fields.Image credits: Seradata SeradataFounder/s: Tim Fuller Founded year: 2013 Funding: NA Seradata[14] Ltd (Space Equipment Research &#38; Analysis) is based in Northampton.Seradata's SpaceTrak3 offers the leading launch and satellite database in the space industry. SpaceTrak3's analysts provide comprehensive, consistent, independent and authoritative information that covers each orbital launch and satellite since Sputnik decades back.Challenges to overcomeUndoubtedly, the space sector all over the world has undergone a substantial change in over 10 years. This has resulted in a variety of satellites ranging from large, bus-sized ones to small and compact ones that are replaced frequently. These lower the cost of access to space and increase the rate at which satellites are replaced in space, thereby creating more opportunities and markets. But there are many challenges that are to be faced by these space companies in realising the same. Dr Joanna Hart added, 'The key challenge now is developing efficient supply chains that draw on capabilities and expertise from across the UK to ensure that the UK space sector collectively is a global leader in space. Harwell Space Cluster is a great place to stimulate and develop these supply chains, connecting companies within the Cluster and beyond, particularly through other UK Clusters. For example Lacuna Space and Oxford Space Systems recently collaborated on a mission to enable ground-based sensors to connect to the internet from remote areas.' [ 1]: [*https://www.uktech.news/news/elon-musks-spacex-launch-twitters-profit-news-a-4m-series-a-and-more-in-the-week-in-tech-20180209*](https://www.uktech.news/news/elon-musks-spacex-launch-twitters-profit-news-a-4m-series-a-and-more-in-the-week-in-tech-20180209) [ 2]: [*https://www.uktech.news/news/london-based-personal-money-app-ziglu-smashes-through-6m-in-crowdfunding-20201202*](https://www.uktech.news/news/london-based-personal-money-app-ziglu-smashes-through-6m-in-crowdfunding-20201202) [ 3]: [*https://www.diamond.ac.uk*](https://www.diamond.ac.uk)/ [ 4]: [*https://www.uktech.news/news/london-iot-startup-infogrid-raises-11-5m-to-make-buildings-smart-20201202*](https://www.uktech.news/news/london-iot-startup-infogrid-raises-11-5m-to-make-buildings-smart-20201202) [ 5]: [*http://elecnor-deimos.com*](http://elecnor-deimos.com)/ [ 6]: [*https://www.uktech.news/news/voi-pulls-in-huge-funding-of-142m-to-cement-its-position-in-uk-europe-20201202*](https://www.uktech.news/news/voi-pulls-in-huge-funding-of-142m-to-cement-its-position-in-uk-europe-20201202) [ 7]: [*http://astroscale.com*](http://astroscale.com)/ [ 8]: [*http://open-cosmos.com*](http://open-cosmos.com)/ [ 9]: [*https://www.skyrora.com*](https://www.skyrora.com)/ [ 10]: [*http://tradeinspace.com*](http://tradeinspace.com) [ 11]: http://earthi.space/ [ 12]: http://oxford.space/ [ 13]: [*https://www.reactionengines.co.uk*](https://www.reactionengines.co.uk)/ [ 14]: [*http://www.seradata.com*](http://www.seradata.com)/

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[***Federal Register: Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Yellow Lance Pages 18189 - 18215 [FR DOC #2021-06736]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62D6-R671-F0YC-N2YH-00000-00&context=1516831)

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R4-ES-2018-0094; FF09E21000 FXES11110900000 212]RIN 1018-BD08Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Yellow LanceAGENCY: Fish and Wildlife Service, Interior.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service), designate critical habitat for the yellow lance (Elliptio lanceolata) under the Endangered Species Act of 1973 (Act), as amended. In total, approximately 319 river miles (mi) (514 kilometers (km)) fall within 11 units of critical habitat in Franklin, Granville, Halifax, Johnston, Nash, Vance, Wake, and Warren Counties, North Carolina; Brunswick, Craig, Culpeper, Dinwiddie, Fauquier, Louisa, Lunenburg, Madison, Nottoway, Orange, and Rappahannock Counties, Virginia; and Howard and Montgomery Counties, Maryland. This rule extends the Act's protections to the yellow lance's designated critical habitat.DATES: This rule is effective May 10, 2021.ADDRESSES: This final rule is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov). Comments and materials we received, as well as some supporting documentation we used in preparing this rule, are available for public inspection at [*http://www.regulations.gov*](http://www.regulations.gov). The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at [*http://www.regulations.gov*](http://www.regulations.gov) at Docket No. FWS-R4-ES-2018-0094, or from the Raleigh Ecological Services Field Office ([*https://www.fws.gov/raleigh*](https://www.fws.gov/raleigh)) (see FOR FURTHER INFORMATION CONTACT). Any additional tools or supporting information developed will also be available at the Fish and Wildlife Service website and Field Office identified below and at [*http://www.regulations.gov.FOR*](http://www.regulations.gov.FOR) FURTHER INFORMATION CONTACT: Pete Benjamin, Field Supervisor, U.S Fish and Wildlife Service, Raleigh Ecological Services Field Office, 551F Pylon Drive, Raleigh, NC 27606; telephone 919-856-4520. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.SUPPLEMENTARY INFORMATION: Executive Summary Why we need to publish a rule. Under section 4(a)(3) of the Endangered Species Act of 1973 (Act), as amended, if we determine that a species is an endangered or threatened species, we must designate critical habitat to the maximum extent prudent and determinable. We published a final rule to list the yellow lance as a threatened species on April 3, 2018 (83 FR 14189). Designations of critical habitat can be completed only by issuing a rule. Basis for our action. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat. The critical habitat we are designating in this rule, consisting of 11 units comprising approximately 319 miles (514 kilometers) of streams and rivers, constitutes our current best assessment of the areas that meet the definition of critical habitat for the yellow lance. Economic analysis. In accordance with section 4(b)(2) of the Act, we prepared an economic analysis of the impacts of designating critical habitat for the yellow lance. We published the announcement of, and solicited public comments on, the draft economic analysis (DEA; 85 FR 6856, February 6, 2020). Because we received no comments or new information on the DEA, we adopted the DEA as a final version. Public comments. We considered all comments and information we received from the public during the comment period on the proposed designation of critical habitat for the yellow lance and the associated DEA (85 FR 6856; February 6, 2020).Supporting Documents As part of the process of listing the yellow lance, a species status assessment (SSA) team prepared an SSA report for the species. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. The SSA report underwent independent peer review by scientists with expertise in mussel biology, habitat management, and stressors (factors negatively affecting the species) to the species. Along with other information submitted during the process of listing the species, the SSA report is the primary source of information for this final designation. The SSA report and other materials relating to this rule can be found on the Service's Southeast Region website at [*https://www.fws.gov/southeast*](https://www.fws.gov/southeast)/ and at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2018-0094.Previous Federal Actions On April 20, 2010, we were petitioned to list 404 aquatic species in the southeastern United States, including yellow lance. In response to the petition, we completed a 90-day finding on September 27, 2011 (76 FR 59836), in which we announced our finding that the petition contained substantial information that listing may be warranted for the yellow lance. On April 5, 2017, we published a proposed rule to list the yellow lance as a threatened species (82 FR 16559). On April 3, 2018, we published the final rule to list the species as a threatened species (83 FR 14189). On February 6, 2020, we published a proposed rule to designate critical habitat for the yellow lance (85 FR 6856). Please refer to the April 5, 2017, proposed listing rule for a discussion of earlier Federal actions regarding the yellow lance.Summary of Comments and Recommendations On February 6, 2020, we published in the Federal Register (85 FR 6856) a proposed rule to designate critical habitat for the yellow lance and to make available the associated DEA; the public comment period for that proposed rule was open for 60 days, ending April 6, 2020. During the open comment period, we received 23 public comments on the proposed rule; a majority of the comments supported the designation, none opposed the designation, and[[Page 18190]]some included suggestions on how we could refine or improve the designation. All substantive information provided to us during the comment period has been incorporated directly into this final rule or is addressed below. (1) Comment: Two commenters recommended adding to the critical habitat designation. One commenter suggested that whole watersheds be considered for designation, indicating that protecting entire watersheds would improve genetic diversity and resiliency of yellow lance populations. Another commenter recommended including vegetative buffers in the designation, citing a study on the functions and recommended widths of riparian buffer zones: For erosion and sediment control, a width of 30 to 98 feet is recommended, and in the case of absorbing biocontaminants, nutrients, and pesticides, the width ranges are 30 or more feet, 49 to 164 feet, and 49 to 328 feet, respectively. Our Response: Designation of an entire watershed, which we interpret to mean all streams and waterbodies within a watershed, would include areas that are not occupied by yellow lance, and areas that are not suitable habitat for the yellow lance. The Service has determined that unoccupied habitat is not essential for the conservation of the species. Further, many areas within a watershed are not suitable habitat, and therefore do not contain one or more of the physical or biological features essential to yellow lance conservation. In other words, these areas do not meet the definition of critical habitat. Similarly, while the Service recognizes in the SSA report the important contribution of riparian buffers to yellow lance habitat, these ***land*** areas surrounding streams do not meet the definition of critical habitat in that they are not specific areas occupied by the species that have one or more of the physical and biological features essential to yellow lance conservation. As an obligate aquatic species, freshwater mussels such as the yellow lance cannot survive in terrestrial riparian areas. Therefore, such areas are not considered in the designation of critical habitat. (2) Comment: One commenter recommended that exclusion of human-made structures should be construed as narrowly as possible and should not allow the exclusion of undeveloped ***land*** because that ***land*** may share a parcel with otherwise-excluded pavement or human structures. Our Response: The exclusion of human-made structures from the boundaries of the designated critical habitat was intended to apply only to the structures included in the Geographic Information Systems (GIS) shapefiles of the critical habitat and not to undeveloped ***land***. (3) Comment: One commenter suggested that the Service include in the economic analysis consideration of economic benefits of protecting yellow lance habitat, including ecosystem services, the protection of clean water, the reduced cost of water treatment for drinking water supplies, as well as public health benefits. Our Response: As noted in the DEA, the primary intended benefit of critical habitat is to support the conservation of endangered and threatened species, such as the yellow lance. In order to quantify and monetize direct benefits of the designation, information would be needed to determine (1) the incremental change in the probability of yellow lance conservation expected to result from the critical habitat designation, and (2) the public's willingness to pay for such beneficial changes. The conclusion was that additional project modifications to avoid adverse modification of critical habitat for the yellow lance are not anticipated. Because of the uncertainties associated with monetary quantification of these benefits, we were not able to estimate the economic benefits of ecosystem services, such as clean water via mussel-based biofiltration treatment, or broad benefits of ecosystem services that flow from protected areas to human populations. (4) Comment: One commenter noted that according to the SSA report, the yellow lance is dependent on attaching itself to minnows to successfully reach its adult stage. The commenter further noted that although it is likely true that the yellow lance is mostly being hindered by abiotic factors such as pollution and sedimentation, establishing a critical habitat for this mussel species should also address conditions necessary for the survival of its host species to ensure proper development of the yellow lance. The commenter stated that yellow lance's glochidia stage coincides with the spawning period of minnows--from late spring to mid-summer--and that minnows are obligate hosts for this species and require conservation consideration in order to ensure proper development of the yellow lance. The commenter then asked how this critical habitat can be tailored to also meet the needs of the yellow lance's obligate hosts. Our Response: In this critical habitat designation, we identify the physical or biological features essential to yellow lance conservation, and, of those, we include two physical or biological factors that specifically mention the yellow lance's fish hosts: (1) Adequate flows, or a hydrologic flow regime (which includes the severity, frequency, duration, and seasonality of discharge over time), necessary to maintain benthic habitats where the yellow lance is found and to maintain connectivity of streams with the floodplain, allowing the exchange of nutrients and sediment for maintenance of the mussel's and fish host's habitat, food availability, spawning habitat for native fishes, and the ability for newly transformed juveniles to settle and become established in their habitats; and (2) the presence and abundance of fish hosts necessary for yellow lance recruitment. In addition, we identify another physical or biological feature essential to yellow lance conservation consisting of certain suitable substrates and connected instream habitats ``that support a diversity of freshwater mussels and native fish.'' Therefore, this critical habitat designation does address, in the context of the physical or biological features essential to yellow lance conservation, conditions necessary for the yellow lance's fish hosts. (5) Comment: One commenter noted that compliance with the existing 15 federally enacted best management practices (BMPs) for Clean Water Act section 404(f)(1) exemption for established silviculture activities like crossing a water of the United States, as well as compliance with the North Carolina forestry practice guidelines (FPGs), and with any other applicable State-enacted riparian buffer rules, should be deemed as concurrent protection of critical habitat under the Act (16 U.S.C 1531 et seq.). Our Response: The Federal BMP under consideration states, ``The discharge shall not take, or jeopardize the continued existence of, a threatened or endangered species as defined under the Endangered Species Act, or adversely modify or destroy the critical habitat of such species.'' Therefore, this Federal BMP restates existing requirements of the Act. The North Carolina FPGs are Statewide, ``mandatory narrative rule standards that were developed to assure that forestry activities are conducted in a manner that protects water quality'' (NCFS 2018, p. 1). The Service recognizes that adherence to the FPG performance standards described under title 2 of the North Carolina Administrative Code at chapter 60, subchapter C, are considered by the North Carolina ***Forest*** Service to be compliance with the Federal BMP[[Page 18191]]mentioned above. Thus, compliance with FPGs will also protect critical habitat. (6) Comment: One commenter recommended we provide Federal funds to support cooperative improvements to ***forest*** access infrastructure and other conservation management measures within the designated critical habitat watersheds. The commenter suggested that robust, recurring funding could go towards the following activities: (1) Increase the availability of portable, temporary bridgemats for loggers to use on stream crossings; (2) enhance cost-sharing of prompt and effective reforestation after timber harvests; (3) provide cost-shared assistance for landowners to ***remove***/renovate/replace substandard, existing ***forest*** road stream crossings; (4) develop pre-harvest plans for landowners through technical assistance provided by a ***forester***; (5) compensate landowners in exchange for installing legal protections of critical habitat riparian zones; and (6) provide ***targeted*** in-woods research, study, and/or monitoring. Our Response: The Service is working with forestry partners to consider funding opportunities to advance the ideas suggested by the commenter. (7) Comment: One commenter offered information about the conservation benefits provided to aquatic species on private, working ***forests*** and requested that the Service include several references for our consideration. Our Response: We made several revisions to include new, relevant reference materials in the forestry discussion in the SSA report, where appropriate, in response to this comment. However, several of the references provided by the commenter were not specific to studies of the impacts or benefits of forestry management to freshwater mussels and, therefore, were not included in the SSA report. (8) Comment: One commenter noted that silvicultural practices implemented with BMPs protect aquatic species and, because they are widely implemented, should not be viewed as ``special management''; the commenter recommended the Service instead recognize BMPs as routine practices. They also note that although there are limited data documenting relationships between BMPs and some individual aquatic and riparian species, there is a significant body of research confirming that BMPs contribute to water quality and riparian ***forest*** structure and provided many references to this effect. Our Response: BMPs are ``management practices'' that are used to protect water quality during timber harvests and other ***forest*** management activities (National Association of State Foresters 2020, unpaginated). Because there are a variety of BMPs that may be implemented depending on the project in consideration, and because there can be a forestry management or harvest plan that details which BMPs will be implemented for that particular project, the use of them is considered ``management.'' The Act defines ``critical habitat'' as, in part, the specific areas within the geographical area occupied by the species which may require special management considerations. Forestry best ``management practices'' are considered to be management considerations needed for the habitat occupied by the yellow lance. Whether they are routine or not, there is a management strategy used when implementing BMPs; therefore, they can be considered ``special management considerations'' under the Act. The SSA report (Service 2019, p. 49) and the February 6, 2020, proposed rule (85 FR 6861) recognize that BMPs can protect water quality and habitat for aquatic species. However, as noted by the commenter, there are some species for which there are limited data documenting the relationships with BMPs, and even with the 43 references provided in the comment letter, there are no data presented that consider temporary or long-term effects of sedimentation on long-lived, sedentary freshwater mussel species such as the yellow lance. (9) Comment: One commenter encourages the Service to modify the proposed rule's language to acknowledge that ***removing*** large areas of ***forested*** wetlands and riparian systems is not part of ongoing ***forest*** management, nor is it compatible with BMP guidelines. The commenter states that in making the above statements, the Service appears to rely on older sources of information that do not reflect contemporary ***forest*** management, or possibly sources describing practices in regions other than the eastern United States. Our Response: The section of the proposed rule that the commenter refers to is Special Management Considerations or Protections (85 FR 6856, February 6, 2020, p. 85 FR 6861), which states that the features essential to the conservation of the yellow lance may require special management considerations or protections to reduce threats including ``improper ***forest*** management or silviculture activities that ***remove*** large areas of ***forested*** wetlands and riparian systems.'' The comment implies that the Service improperly characterized this as one of the threats against which the special considerations or protections are needed; therefore, in this rule, we have clarified that language. After reviewing studies within the range of yellow lance in Virginia noted by the commenter (Lakel et al. 2010, p. 541) and frequently asked questions on the North Carolina State ***Forest*** Service's website (NCFS 2020, unpaginated), the Service notes that clearcutting, or entirely ***removing*** all trees in a ***forested*** area (U.S ***Forest*** Service 2020, unpaginated), is a preferred method of harvesting timber. To harvest sites, they are often clearcut, burned, and then replanted (Lakel et al. 2010, p. 541). The threat to yellow lance from this harvest practice is sedimentation from clearcuts near streams. Many of the watersheds occupied by yellow lance do not have mandatory buffer requirements to eliminate sedimentation, and, as noted above, there are no data for the temporary or long-term effects of residual sedimentation post-BMP implementation on freshwater mussels. As stated above, in response to this comment, we have revised relevant language in this rule to clarify that the threat is due to ``improper ***forest*** management or clearcuts within riparian areas.''Summary of Changes From the Proposed Rule This final rule incorporates one minor substantive change to our proposed rule (85 FR 6856; February 6, 2020) based on the comments we received and that are summarized above under Summary of Comments and Recommendations. We revised the language under Special Management Considerations or Protections to clarify that the features essential to the conservation of the yellow lance may require special management considerations or protections to reduce ``improper ***forest*** management or clearcuts within riparian areas.'' We made no other substantive changes from the proposed rule to this final rule.Background Critical habitat is defined in section 3 of the Act as: (1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features; (a) Essential to the conservation of the species, and (b) Which may require special management considerations or protection; and[[Page 18192]] (2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e , range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g , migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect ***land*** ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private ***lands***. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement ``reasonable and prudent alternatives'' to avoid destruction or adverse modification of critical habitat. Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features within an area, we focus on the specific features that support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. When designating critical habitat, the Secretary will first evaluate areas occupied by the species. The Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species. In addition, for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species. Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the Federal Register on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and other information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge. Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available[[Page 18193]]information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.Physical or Biological Features Essential to the Conservation of the Species In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and that may require special management considerations or protection. The regulations at 50 CFR 424.02 define ``physical or biological features essential to the conservation of the species'' as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkali soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species. In considering whether features are essential to the conservation of the species, the Service may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance. The yellow lance is a sand-loving species (Alderman 2003, p. 6) often found buried deep in clean, coarse to medium sand and sometimes migrating with shifting sands (NatureServe 2015, p. 6), although it has also been found in gravel substrates. Yellow lance adults require clear, flowing water with a temperature less than 35 degrees Celsius ([deg]C) (95 degrees Fahrenheit ([deg]F)) and a dissolved oxygen greater than 3 milligrams per liter (mg/L). Juveniles require very specific interstitial chemistry to complete that life stage: Low salinity (similar to 0.9 parts per thousand (ppt)), low ammonia (similar to 0.7 mg/L), low levels of copper and other contaminants, and dissolved oxygen greater than 1.3 mg/L. Most freshwater mussels, including the yellow lance, are found in aggregations (mussel beds) that vary in size and are often separated by stream reaches in which mussels are absent or rare (Vaughn 2012, p. 983). Genetic exchange occurs between and among mussel beds via sperm drift, host fish movement, and movement of mussels during high flow events. The yellow lance is an omnivore that primarily filter feeds on a wide variety of microscopic particulate matter suspended in the water column, including phytoplankton, zooplankton, bacteria, detritus, and dissolved organic matter, and these food resources are closely tied to riparian area inputs to the stream (Haag 2012, p. 26). Like most freshwater mussels, they have a unique life cycle that relies on fish hosts for successful reproduction. Yellow lance larvae (glochidia) are obligate parasites of the gills, heads, or fins of fish; primary host species are members of the Cyprinidae family, including the white shiner (Luxilus albeolus) and pinewoods shiner (Lythrurus matutinus). A thorough review of the life history and ecology of yellow lance is presented in the SSA report (Service 2019, entire), available on [*http://www.regulations.gov*](http://www.regulations.gov) at Docket No. FWS-R4-ES-2018-0094.Summary of Essential Physical or Biological Features We derive the specific physical or biological features essential to yellow lance conservation from studies of the species' habitat, ecology, and life history as described above, and in the SSA report. We have determined that the following physical or biological features are essential to yellow lance conservation: (1) Suitable substrates and connected instream habitats, characterized by geomorphically stable stream channels and banks (i.e , channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) with habitats that support a diversity of freshwater mussels and native fish (such as stable riffle-run-pool habitats that provide flow refuges consisting of silt-free gravel and coarse sand substrates). (2) Adequate flows, or a hydrologic flow regime (which includes the severity, frequency, duration, and seasonality of discharge over time), necessary to maintain benthic habitats where the species is found and to maintain connectivity of streams with the floodplain, allowing the exchange of nutrients and sediment for maintenance of the mussel's and fish host's habitat, food availability, spawning habitat for native fishes, and the ability of newly transformed juveniles to settle and become established in their habitats. (3) Water and sediment quality (including, but not limited to, conductivity, hardness, turbidity, temperature, pH, ammonia, heavy metals, and chemical constituents) necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages. (4) The presence and abundance of fish hosts necessary for yellow lance recruitment.Special Management Considerations or Protection When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features that are essential to the conservation of the species and which may require special management considerations or protection. Activities on the surrounding landscape and in riparian areas are closely tied to instream habitat, therefore special management considerations can be linked to activities on ***land*** that influence the stream and instream habitat. The features essential to yellow lance conservation may require special management considerations or protections to reduce the following threats: (1) Reduction in water quality, quantity, and resulting sedimentation as[[Page 18194]]a result of urbanization of the landscape, including (but not limited to) ***land*** conversion for urban and commercial use, infrastructure (roads, bridges, utilities), and urban water uses (water supply reservoirs, wastewater treatment, etc.); (2) nutrient pollution from ***agricultural*** activities that impact water quantity and quality; (3) significant alteration of water quality; (4) sedimentation from incompatible ***forest*** management or clearcuts in riparian areas; (5) culvert and pipe installations that create barriers to instream movement; (6) impacts from invasive species; (7) changes and shifts in seasonal precipitation patterns as a result of climate change; and (8) other watershed and floodplain disturbances that release sediments or nutrients into the water. Management activities that could ameliorate these threats include, but are not limited to: Use of BMPs designed to reduce sedimentation, erosion, and bank side destruction; protection of riparian corridors and retention of sufficient canopy cover along banks; moderation of surface and ground water withdrawals to maintain natural flow regimes; increased use of stormwater management and reduction of stormwater flows into the systems; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.Criteria Used To Identify Critical Habitat As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. As discussed in more detail below, we are not designating any areas outside the geographical area occupied by the species at the time of listing because we have not identified any unoccupied areas that are essential for the conservation of the species. The current distribution of the yellow lance is reduced from its historical distribution. We anticipate that recovery will require continued protection of existing populations and habitat, as well as ensuring there are adequate numbers of mussels in stable populations and that these populations occur over a wide geographic area. This strategy will help to ensure that catastrophic events, such as floods, which can cause excessive sedimentation, nutrients, and debris to disrupt stream ecology, cannot simultaneously affect all known populations. Rangewide recovery considerations, such as maintaining existing genetic diversity and striving for representation of all major portions of the species' current range, were considered in formulating this final critical habitat designation. Sources of data for this final critical habitat include multiple databases maintained by universities and State agencies for North Carolina, Virginia, and Maryland, and numerous survey reports on streams throughout the species' range. Other sources of available information on habitat requirements for this species include studies conducted at occupied sites and published in peer-reviewed articles, agency reports, and data collected during monitoring efforts (Service 2019, entire).Areas Occupied at the Time of Listing This critical habitat designation does not include all streams known to have been occupied by the species historically; instead, it focuses on streams and rivers within the historical range that have also retained the necessary physical or biological features that will allow for the maintenance and expansion of existing populations and that were occupied at the time of listing. First, we identified stream channels that currently support yellow lance populations. In the SSA report, we define ``currently support'' as stream channels with observations of the species from 2005 to present. Due to the breadth and intensity of survey effort done for freshwater mussels throughout the known range of the species, it is reasonable to assume that streams with no positive surveys since 2005 should not be considered occupied for the purpose of our analysis. Specific habitat areas were delineated based on Natural Heritage Element Occurrences (EOs) following NatureServe's occurrence delineation protocol for freshwater mussels (NatureServe 2018, unpaginated). These EOs provide habitat for yellow lance subpopulations and are large enough to be self-sustaining over time, despite fluctuations in local conditions. The EOs contain stream reaches with interconnected waters so that host fish containing yellow lance glochidia can move between areas, at least during certain flows or seasons. Based on this information, we consider the following streams in Maryland, Virginia, and North Carolina to have been occupied by the species at the time of listing: Patuxent River, Rappahannock Subbasin (including the Rappahannock River, South Run, Carter Run, Thumb Run, Hungry Run, and Great Run), Rapidan Subbasin (including the Rapidan River, Blue Run, and Marsh Run), South Anna River, Johns Creek, Nottoway Subbasin (including the Nottoway River, Crooked Creek, and Sturgeon Creek), Tar River, Sandy/Swift Creek, Fishing Creek Subbasin (including Fishing Creek, Shocco Creek, and Richneck Creek), Swift Creek, and Little River.Areas Outside the Geographic Area Occupied at the Time of Listing We are not designating any areas outside the geographical area occupied by the species at the time of listing because we did not find any unoccupied areas that are essential for the conservation of the species. The protection of stream segments within the seven currently existing populations (Patuxent, Rappahannock, York, James, Chowan, Tar, and Neuse), which are located across the physiographic representation of the range, would sufficiently reduce the risk of extinction. Improving the resiliency of populations in the currently occupied streams will increase viability to the point that the protections of the Act are no longer necessary.Critical Habitat Maps When determining critical habitat boundaries, we made every effort to avoid including developed areas such as ***lands*** covered by buildings, pavement, and other structures because such ***lands*** lack physical or biological features necessary for yellow lance. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed ***lands***. Any such ***lands*** inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not included for designation as critical habitat. Therefore, a Federal action involving these ***lands*** would not trigger section 7 consultation under the Act with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat. The critical habitat designation is defined by the maps, as modified by any accompanying regulatory text, presented at the end of this document under Regulation Promulgation. We include more detailed information on the boundaries of the critical habitat designation in the discussion of[[Page 18195]]individual units below. We will make the GIS shapefiles on which each map is based available to the public at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2018-0094, at [*http://www.fws.gov/southeast.Final*](http://www.fws.gov/southeast.Final) Critical Habitat Designation We are designating approximately 319 river mi (514 km) in 11 units in North Carolina, Virginia, and Maryland as critical habitat for the yellow lance. All of the units were occupied by the species at the time of listing and contain some or all of the physical and biological features that are essential to support life-history processes of the species. These critical habitat areas, described below, constitute our current best assessment of areas that meet the definition of critical habitat for yellow lance. The table below shows the name, ***land*** ownership of the riparian areas surrounding the units, and approximate river miles of the designated units for yellow lance. Because all streambeds are navigable waters, the actual critical habitat units are all owned by the State where they occur. The riparian ***land*** adjacent to the critical habitat is 83 percent private ***lands***, 11 percent conservation ***lands*** and easements, and 6 percent State ***lands***. Table of Critical Habitat Units for the Yellow Lance------------------------------------------------------------------------ Riparian ownership River miles Critical habitat unit surrounding units (kilometers)------------------------------------------------------------------------1. PR1--Patuxent River......... State; Private......... 10 (16)2. RR1--Rappahannock Subbasin.. Private; Easements..... 44 (71)3. RR2--Rapidan Subbasin....... Private; Easements..... 9 (14)4. YR1--South Anna River....... Private; Easements..... 8 (13)5. JR1--Johns Creek............ Private; George 14 (23) Washington and Jefferson National ***Forest***.6. CR1--Nottoway Subbasin...... Private; Easements..... 41 (66)7. TR1--Tar River.............. Private; Easements..... 91 (146)8. TR2--Sandy/Swift Creek...... Private; State; 31 (50) Easements.9. TR3--Fishing Creek Subbasin. Private; State; 37 (60) Easements.10. NR1--Swift Creek........... Private; Easements..... 24 (39)11. NR2--Little River.......... Private; Easements..... 10 (16) --------------- Total...................... ....................... 319 (514)------------------------------------------------------------------------Note: Area sizes may not sum due to rounding. We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for yellow lance, below.Patuxent PopulationUnit 1: PR1--Patuxent River Unit 1 consists of approximately 10 river mi (16.1 km), including 3 mi (4.8 km) of the Patuxent River and 7 mi (11.3 km) of the Hawlings River, in Montgomery and Howard Counties, Maryland. The riparian ***land*** adjacent to Patuxent River is primarily located in Patuxent River State Park (90 percent), with some parcels privately owned (10 percent); the riparian ***land*** surrounding the Hawlings River is predominantly conservation parcels (97 percent) including State, county, and Maryland National Capital Parks Planning (MD NCPP) park ***land***, and some privately owned parcels (3 percent). Special management considerations or protection may be required to address excess nutrients, sediment, and pollutants that enter the rivers and serve as indicators of other forms of pollution such as bacteria and toxins, all of which reduce water quality for the species. Primary sources of these types of pollution result from urbanization and include wastewater, stormwater runoff, and fertilizers. Portions of the upper Patuxent River watershed were listed in 2011 as impaired for aquatic life and wildlife due to total suspended solids, and in 2014 due to chlorides and sulfates (MDE 2016, unpaginated). There are 146 non-major National Pollutant Discharge Elimination System (NPDES) discharges and three major (including Maryland City Water Reclamation Facility (WRF) and Bowie Wastewater Treatment Plant (WWTP)) NPDES discharges in the management unit. The Patuxent River is also fragmented by two water supply reservoirs, one with dual use as a hydroelectric facility. Given the urban stormwater and nonpoint source pollution identified as contributing to water quality issues in this unit, special management considerations related to developed areas including riparian buffer restoration, reduced surface and groundwater withdrawals, stormwater retrofits, eliminating direct stormwater discharges, increasing open space in the watershed, and implementing highest levels of wastewater treatment practicable will benefit the species' habitat in this unit.Rappahannock PopulationUnit 2: RR1--Rappahannock Subbasin Unit 2 consists of approximately 44 river mi (70.8 km) of Rappahannock Subbasin, including 1.7 mi (2.7 km) in Hungry Run, 7.9 mi (12.7 km) in Thumb Run, 5.9 mi (9.5 km) in South Run/Carter Run, 2.7 mi (4.3 km) in Great Run, and 25.8 mi (41.6 km) in Rappahannock River in Rappahannock, Fauquier, and Culpeper Counties, Virginia. The riparian ***land*** adjacent to this unit is primarily privately owned (72 percent), with some conservation parcels (28 percent). Special management considerations or protection may be required to address excess nutrients, sediment, and pollutants that enter the river and serve as indicators of other forms of pollution such as bacteria and toxins, all of which impact water quality for the species. Sources of these types of pollution include wastewater, ***agricultural*** runoff, stormwater runoff, and septic systems. Approximately 77 miles (123.9 km) of the Rappahannock River watershed are impaired for aquatic life. Impairment is indicated by low benthic-macroinvertebrate bioassessment scores, pH and temperature issues, and Escherichia coli (E. coli); several of these can be attributed to septic systems or nonpoint source runoff into streams. There are 93 non-major NPDES discharges and 11 major NPDES discharges, including several city and package WWTPs, within this unit. Special management considerations for riparian buffer restoration, ***agricultural*** BMPs, stormwater retrofits, maintenance of ***forested*** buffers, and implementing highest levels of wastewater treatment practicable will benefit the habitat for the species in this unit.[[Page 18196]]Unit 3: RR2--Rapidan Subbasin Unit 3 consists of approximately 9 river mi (14.5 km) of Rapidan Subbasin, including 1.2 mi (1.9 km) in Marsh Run, 3.1 mi (5.0 km) in Blue Run, and 4.7 mi (7.6 km) in the Rapidan River in Madison and Orange Counties, Virginia. The riparian ***land*** adjacent to this unit is privately owned (57 percent) and conservation parcels (43 percent). Special management considerations or protection may be required to address excess nutrients, sediment, and pollutants that enter the river and serve as indicators of other forms of pollution such as bacteria and toxins, all of which reduce water quality for the species (see discussion for Unit 2, above). Special management considerations for riparian buffer restoration, ***agricultural*** BMPs, stormwater retrofits, maintenance of ***forested*** buffers, and implementing highest levels of wastewater treatment practicable will benefit the habitat for the species in this unit.York PopulationUnit 4: YR1--South Anna River Unit 4 consists of approximately 8 river mi (12.9 km) of the South Anna River in Louisa County, Virginia. The riparian ***land*** adjacent to this unit is primarily privately owned (92 percent), with some conservation parcels (8 percent). Special management considerations or protection may be required to address excess nutrients, sediment, and pollutants that enter the river and serve as indicators of other forms of pollution such as bacteria and toxins, all of which impact water quality for the species. Sources of these types of pollution include wastewater, ***agricultural*** runoff, stormwater runoff, and septic systems. Based on 2012 data, 13 stream reaches, totaling approximately 44 miles (70.8 km), are impaired for aquatic life in the Po River and South Anna River watersheds. Impairment is indicated by low benthic-macroinvertebrate bioassessment scores, low dissolved oxygen, pH, and E. coli. There are 50 non-major NPDES discharges in the basin, and one major discharge, the Ashland WWTP. Special management considerations for riparian buffer restoration, ***agricultural*** BMPs, stormwater retrofits, maintenance of ***forested*** buffers, and implementing highest levels of wastewater treatment practicable will benefit the habitat for the species in this unit.James PopulationUnit 5: JR1--Johns Creek Unit 5 consists of approximately 14 river mi (22.5 km) of the Johns Creek in Craig County, Virginia. The riparian ***land*** adjacent to this unit is primarily private, with some federally owned ***land*** as part of George Washington and Jefferson National ***Forest***. Special management considerations or protection may be required to address excess nutrients, sediment, and pollutants, which enter the creek and serve as indicators of other forms of pollution such as bacteria and toxins, all of which impact water quality for the species. Sources of these types of pollution are wastewater, ***agricultural*** runoff, and urban stormwater runoff. National ***Forest*** ***lands*** surround most of the Johns Creek watershed; protections and management of these ***lands*** will likely enable habitat conditions (water quality, water quantity/flow, instream substrate, and connectivity) to remain high into the future (Service 2019, entire). ***Targeted*** species restoration in conjunction with current associated-species restoration efforts in Johns, Dicks, and Little Oregon Creeks within the Craig Creek Subbasin will likely improve the yellow lance's resiliency in these areas. Maintenance of ***forested*** buffer conditions is essential to retaining high-quality instream habitat in this unit.Chowan PopulationUnit 6: CR1--Nottoway Subbasin Unit 6 consists of approximately 41 river mi (66 km) of Nottoway Subbasin, including 1.4 mi (2.3 km) in Crooked Creek, 3.3 mi (5.3 km) in Sturgeon Creek, and 36.3 mi (58.4 km) in the Nottoway River in Nottoway, Lunenburg, Brunswick, and Dinwiddie Counties, Virginia. The designation begins upstream of VA49 and ends at its confluence with Sturgeon Creek. The riparian ***land*** adjacent to this unit is primarily privately owned (64 percent), although Fort Pickett Military Reservation, which is exempted from this critical habitat designation, also has frontage on the Nottoway River (33 percent; see Exemptions, below), and there are some conservation parcels (3 percent). Special management considerations or protection may be required within this unit to address a variety of threats. In the past decade, the Nottoway River suffered from several seasonal drought events, which not only caused low dissolved oxygen conditions but also decreased food delivery because of minimal flows. In addition, these conditions led to increased predation rates on potential host fishes that were concentrated into low-flow refugia (e.g , pools). Urban stormwater and nonpoint source pollution have been identified as contributing to water quality issues in this unit. Additional threats to this unit include oil and gas pipeline projects that propose to cross streams at locations where the species occurs, with special management recommendations of alternate routes for oil and gas pipelines, or directional boring for those projects. Special management considerations for riparian buffer restoration, reduced surface and groundwater withdrawals, and stormwater retrofits will benefit the habitat in this unit. Additional special management considerations or protection may be required within this unit to address low water levels as a result of water withdrawals and drought.Tar PopulationUnit 7: TR1--Tar River Unit 7 consists of approximately 91 river mi (146.5 km) of the Tar River, including 4.4 mi (7.1 km) in Ruin Creek, 11.9 mi (19.2 km) in Tabbs Creek, 6.8 mi (10.9 km) in Crooked Creek, and 67.9 mi (109.3 km) in the Tar River in Granville, Vance, Franklin, and Nash Counties, North Carolina. The riparian ***land*** adjacent to this unit is almost all privately owned (98 percent), with a few conservation parcels (2 percent). Special management considerations or protection may be required within this unit to address a variety of threats. Excessive amounts of nitrogen and phosphorus run off the ***land***, or are discharged, into the waters, causing excessive growth of vegetation and leading to extremely low levels of dissolved oxygen. Based on 2014 data, seven stream reaches totaling approximately 38 miles (61.1 km) are impaired in this basin. Indicators of impairment are low dissolved oxygen and low benthic-macroinvertebrate assessment scores, and the entire basin is classified as Nutrient Sensitive Waters (NCDEQ 2016, pp. 115-117). There are 102 non-major NPDES discharges, including several package WWTPs and biosolids facilities, and 3 major NPDES discharges (Oxford WWTP, Louisburg WWTP, and Franklin County WWTP) in this unit; with expansion of these facilities, or addition of new wastewater discharges, an additional threat to habitat exists in this unit. Special management focused on ***agricultural*** BMPs, implementing highest levels of wastewater treatment practicable, maintenance of ***forested*** buffers, and connection of protected riparian corridors will benefit habitat for the species in this unit.[[Page 18197]]Unit 8: TR2--Sandy/Swift Creek Unit 8 consists of approximately 31 river mi (50 km) of Sandy/Swift Creek in Vance, Warren, Halifax, Franklin, and Nash Counties, North Carolina. The riparian ***land*** adjacent to this unit is primarily privately owned (92 percent), with the rest in either conservation easements (2.5 percent) or State Game ***Land*** parcels (4.6 percent). Special management considerations or protection may be required within this unit to address a variety of threats. Excessive amounts of nitrogen and phosphorus run off the ***land***, or are discharged, into the waters, causing excessive growth of vegetation and leading to extremely low levels of dissolved oxygen; one stream reach totaling approximately 5 miles (8 km) is impaired in this unit. Special management focused on ***agricultural*** BMPs, maintenance of ***forested*** buffers, and connection of protected riparian corridors will benefit habitat for the species in this unit.Unit 9: TR3--Fishing Creek Subbasin Unit 9 consists of approximately 37 river mi (59.5 km) of Fishing Creek Subbasin, including 1.6 mi (2.6 km) in Richneck Creek, 8.0 mi (12.9 km) in Shocco Creek, and 27.4 mi (44 km) in Fishing Creek in Vance, Warren, Halifax, Franklin, and Nash Counties, North Carolina. The riparian ***land*** adjacent to this unit is primarily in private ownership (85 percent), with some State Game ***Land*** parcels (12 percent) and conservation easements (3 percent). Special management considerations or protection may be required within this unit to address a variety of threats. Excessive amounts of nitrogen and phosphorus run off the ***land***, or are discharged, into the waters, causing excessive growth of vegetation and leading to extremely low levels of dissolved oxygen. Special management focused on ***agricultural*** BMPs, maintenance of ***forested*** buffers, and connection of protected riparian corridors will benefit habitat for the species in this unit.Neuse PopulationUnit 10: NR1--Swift Creek Unit 10 consists of approximately 24 river mi (38.6 km) of the Swift Creek in Wake and Johnston Counties, North Carolina. The riparian ***land*** adjacent to this unit is almost entirely privately owned (99.5 percent), with one conservation parcel (0.5 percent). Special management considerations or protection may be required within this unit to address a variety of threats. Large quantities of nutrients (especially nitrogen) contributed by fertilizers and animal waste washed from lawns, urban developed areas, and farm fields are impacting aquatic ecosystems in this unit. There are several permitted point source discharges of wastewater. Development is also impacting several areas along Swift Creek. All of Swift Creek is rated ``impaired'' by the North Carolina Division of Water Resources. Many factors contribute to this designation, including low benthic-macroinvertebrate assessment scores, low pH, poor fish community scores, low dissolved oxygen, polychlorinated biphenyls, copper, and zinc. Many non-major and one major (Dempsey Benton Water Treatment Plant) permitted discharges occur in this unit. Special management related to developed areas, including using the best available wastewater treatment technologies, retrofitting stormwater systems, eliminating direct stormwater discharges, increasing open space in the watershed, and maintaining connected riparian corridors, will be important to maintain habitat in this unit.Unit 11: NR2--Little River Unit 11 consists of approximately 10 river mi (16.1 km) of the Little River in Johnston County, North Carolina. The riparian ***land*** adjacent to this unit is almost entirely privately owned (99.5 percent), with one conservation parcel (0.5 percent). Special management considerations or protection may be required within this unit to address a variety of threats. Four stream reaches totaling approximately 17 miles are impaired in the Little River. The designation of impairment is based primarily on low benthic-macroinvertebrate assessment scores, low pH, and low dissolved oxygen. There are 32 non-major and no major NPDES discharges in this unit. Special management considerations in this unit include retrofitting stormwater systems, eliminating direct stormwater discharges, increasing and protecting existing open space, and maintaining connected riparian corridors.Effects of Critical Habitat DesignationSection 7 Consultation Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species listed under the Act or result in the destruction or adverse modification of critical habitat. We published a final regulation with a revised definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private ***lands*** that require a Federal permit (such as a permit from the U.S Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C 1251 et seq.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal agency actions within the species' habitat that may require conference or consultation or both include management and any other landscape-altering activities on Federal ***lands*** administered by the Service, Army National Guard, U.S ***Forest*** Service, and National Park Service; issuance of section 404 Clean Water Act permits by the U.S Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration. Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private ***lands*** that are not federally funded, authorized, or carried out by a Federal agency, do not require section 7 consultation. Compliance with the requirements of section 7(a)(2), is documented through our issuance of: (1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or (2) A biological opinion for Federal actions that may affect, and are likely to[[Page 18198]]adversely affect, listed species or critical habitat. When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define ``reasonable and prudent alternatives'' (at 50 CFR 402.02) as alternative actions identified during consultation that: (1) Can be implemented in a manner consistent with the intended purpose of the action, (2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction, (3) Are economically and technologically feasible, and (4) Would avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable. Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinitiate formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation, we have listed a new species or designated critical habitat that may be affected by the Federal action, or the action has been modified in a manner that affects the species or critical habitat in a way not considered in the previous consultation. In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but the regulations also specify some exceptions to the requirement to reinitiate consultation on specific ***land*** management plans after subsequently listing a new species or designating new critical habitat. See the regulations for a description of those exceptions.Application of the ``Destruction or Adverse Modification'' Standard The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species. Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate 7(a)(2) of the Act by destroying or adversely modifying such designation, or that may be affected by such designation. Activities that the Services may, during a consultation under section 7(a)(2) of the Act, find are likely to destroy or adversely modify critical habitat include, but are not limited to: (1) Actions that would alter the minimum flow or the existing flow regime. Such activities could include, but are not limited to, impoundment, channelization, water diversion, water withdrawal, and hydropower generation. These activities could eliminate or reduce the habitat necessary for the growth and reproduction of yellow lance and/or its fish host by decreasing or altering flows to levels that would adversely affect their ability to complete their life cycles. (2) Actions that would significantly alter water chemistry or temperature. Such activities could include, but are not limited to, release of chemicals (including pharmaceuticals, metals, and salts), biological pollutants, or heated effluents into the surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities could alter water conditions to levels that are beyond the tolerances of yellow lance and/or its fish host and result in direct or cumulative adverse effects to these individuals and their life cycles. (3) Actions that would significantly increase sediment deposition within the stream channel. Such activities could include, but are not limited to, excessive sedimentation from livestock grazing, road construction, channel alteration, timber harvest, off-road vehicle use, and other watershed and floodplain disturbances. These activities could eliminate or reduce the habitat necessary for the growth and reproduction of yellow lance and/or its fish host by increasing the sediment deposition to levels that would adversely affect their ability to complete their life cycles. (4) Actions that would significantly increase the filamentous algal community within the stream channel. Such activities could include, but are not limited to, release of nutrients into the surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities can result in excessive filamentous algae filling streams and reducing habitat for the yellow lance and/or its fish host, degrading water quality during algal decay, and decreasing oxygen levels at night from algal respiration to levels below the tolerances of the mussel and/or its fish host. Algae can also directly compete with mussel offspring by covering the sediment, which prevents the glochidia from settling into the sediment. (5) Actions that would significantly alter channel morphology or geometry. Such activities could include, but are not limited to, channelization, impoundment, road and bridge construction, mining, dredging, oil and gas pipeline crossings, and destruction of riparian vegetation. These activities may lead to changes in water flows and levels that would degrade or eliminate the mussel, its fish host, and/or their habitats. These actions can also lead to increased sedimentation and degradation in water quality to levels that are beyond the tolerances of yellow lance and/or its fish host. (6) Actions that result in the introduction, spread, or augmentation of nonnative aquatic species in occupied stream segments, or in stream segments that are hydrologically connected to occupied stream segments, even if those segments are occasionally intermittent, or introduction of other species that compete with or prey on the yellow lance. Possible actions could include, but are not limited to, stocking of nonnative fishes, stocking of sport fish, or other related actions. These activities can introduce parasites or disease to fish hosts; result in direct predation; or affect the growth, reproduction, and survival of yellow lance.ExemptionsApplication of Section 4(a)(3) of the Act The Sikes Act Improvement Act of 1997 (Sikes Act) (16 U.S.C 670a) required each military installation that includes ***land*** and water suitable for the conservation and management of natural resources to complete an integrated natural resources management plan (INRMP) by November 17, 2001. An INRMP integrates implementation of the[[Page 18199]]military mission of the installation with stewardship of the natural resources found on the base. Each INRMP includes: (1) An assessment of the ecological needs on the installation, including the need to provide for the conservation of listed species; (2) A statement of goals and priorities; (3) A detailed description of management actions to be implemented to provide for these ecological needs; and (4) A monitoring and adaptive management plan. Among other things, each INRMP must, to the extent appropriate and applicable, provide for fish and wildlife management; fish and wildlife habitat enhancement or modification; wetland protection, enhancement, and restoration where necessary to support fish and wildlife; and enforcement of applicable natural resource laws. The National Defense Authorization Act for Fiscal Year 2004 (Pub. L. 108-136) amended the Act to limit areas eligible for designation as critical habitat. Specifically, section 4(a)(3)(B)(i) of the Act (16 U.S.C 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any ***lands*** or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural resources management plan prepared under section 101 of the Sikes Act (16 U.S.C 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. We consult with the military on the development and implementation of INRMPs for installations with listed species. We analyzed INRMPs developed by military installations located within the range of the critical habitat designation for yellow lance to determine if they meet the criteria for exemption from critical habitat under section 4(a)(3) of the Act. We have identified one area within the critical habitat designation that consists of Department of Defense ***lands*** with a completed, Service-approved INRMP. The Army National Guard--Maneuver Training Center Fort Pickett (Fort Pickett) is located on 41,000 acres in three counties in southeastern Virginia: Nottoway, Brunswick, and Dinwiddie. Fort Pickett is on federally owned ***land***, is managed by the Virginia Army National Guard, and is subject to all Federal laws and regulations. The Fort Pickett INRMP covers fiscal years 2017-2021, updated every five years, and serves as the principal management plan governing all natural resource activities on the installation. Among the goals and objectives listed in the INRMP is habitat management for rare, threatened, and endangered species, and the yellow lance is included in this plan. Management actions and elements that will benefit the yellow lance and its habitat include managing soil erosion and sedimentation; maintaining and improving riparian, ***forest***, and stream habitats; enforcing stream and wetland protection zones; improving water quality; and conducting public outreach and education. Fourteen miles (22.5 km) of Unit 6 (CR1--Nottoway Subbasin) are located within the area covered by this INRMP. Based on the above considerations, and in accordance with section 4(a)(3)(B)(i) of the Act, we have determined that the identified streams are subject to the INRMP and that conservation efforts identified in the INRMP will provide a benefit to the yellow lance. Therefore, streams within this installation are exempt from critical habitat designation under section 4(a)(3) of the Act. We are not including approximately 14 river miles (22.5 km) of habitat in this critical habitat designation because of this exemption.Consideration of Impacts Under Section 4(b)(2) of the Act Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. On December 18, 2020, we published a final rule in the Federal Register (85 FR 82376) revising portions of our regulations pertaining to exclusions of critical habitat. These final regulations became effective on January 19, 2021 and apply to critical habitat rules for which a proposed rule was published after January 19, 2021. Consequently, these new regulations do not apply to this final rule. The first sentence in section 4(b)(2) of the Act requires that we take into consideration the economic, national security, or other relevant impacts of designating any particular area as critical habitat. We describe below the process that we undertook for taking into consideration each category of impacts and our analyses of the relevant impacts.Consideration of Economic Impacts Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts of a designation, we prepared an incremental effects memorandum (IEM) and screening analysis which, together with our narrative and interpretation of effects, constitute our final economic analysis (FEA) of the critical habitat designation and related factors (IEc 2018, entire). We made the analysis, dated September 28, 2018, available for public review from February 6, 2020, through April 6, 2020. The DEA addressed probable economic impacts of critical habitat for the yellow lance. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Additional information relevant to the probable incremental economic impacts of critical habitat designation for the yellow lance is summarized below and available in the screening analysis for the yellow lance (IEc 2018, entire), available at [*http://www.regulations.gov*](http://www.regulations.gov). The final critical habitat designation for yellow lance totals approximately 319 river mi (514 km) in 11 units as critical habitat in North Carolina, Virginia, and Maryland, all occupied at the time of listing. In these areas, any actions that may affect critical habitat would also affect the species, and it is unlikely that any additional conservation efforts would be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of yellow lance. Therefore, even though some analysis of the impacts of the action of critical habitat may be necessary, and this additional analysis will require costs in time and resources by both the Federal action agency and the Service, it is believed that, in most circumstances, these costs would predominantly be administrative in nature and would not be significant.[[Page 18200]] The probable incremental economic impacts of the yellow lance critical habitat designation are expected to be limited to additional administrative effort, as well as minor costs of conservation efforts resulting from a small number of future section 7 consultations. This low level of impacts is anticipated because, given that the critical habitat is occupied by the species, actions that may adversely modify the critical habitat would also likely jeopardize the continued existence of the species; as a result, other than administrative costs, incremental economic impacts of critical habitat designation over and above impacts from consulting for jeopardy are unlikely. We do not expect any additional consultations resulting from the designation of critical habitat. The total annual incremental costs of critical habitat designation are anticipated to be the additional resources expended in a maximum of 102 section 7 consultations annually at a cost of less than $240,000 per year. Accordingly, we conclude that this final designation does not reach the threshold of ``significant'' under E.O 12866.Exclusions Based on Economic Impacts As discussed above, we considered the economic impacts of the critical habitat designation, and the Secretary is not exercising their discretion to exclude any areas from this designation of critical habitat for the yellow lance based on economic impacts. A copy of the IEM and screening analysis with supporting documents may be obtained by contacting the Raleigh Ecological Services Field Office (see ADDRESSES) or by downloading from the internet at [*http://www.regulations.gov.Exclusions*](http://www.regulations.gov.Exclusions) Based on Impacts on National Security and Homeland Security Section 4(a)(3)(B)(i) of the Act (see Exemptions, above) may not cover all Department of Defense (DoD) ***lands*** or areas that pose potential national-security concerns (e.g , a DoD installation that is in the process of revising its INRMP for a newly listed species or a species previously not covered). If a particular area is not covered under section 4(a)(3)(B)(i), national-security or homeland-security concerns are not a factor in the process of determining what areas meet the definition of ``critical habitat.'' Nevertheless, when designating critical habitat under section 4(b)(2), the Service must consider impacts on national security, including homeland security, on ***lands*** or areas not covered by section 4(a)(3)(B)(i). Accordingly, we will always consider for exclusion from the designation areas for which DoD, Department of Homeland Security (DHS), or another Federal agency has requested exclusion based on an assertion of national-security or homeland-security concerns. We have determined that, other than the ***land*** exempted under section 4(a)(3)(B)(i) of the Act based upon the existence of an approved INRMP (see Exemptions, above), the ***lands*** within the designation of critical habitat for yellow lance are not owned or managed by DoD or DHS, and, therefore, we anticipate no impact on national security. Consequently, we did not exclude any areas from the final designation based on impacts on national security.Exclusions Based on Other Relevant Impacts Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether there are permitted conservation plans covering the species in the area such as habitat conservation plans (HCPs), safe harbor agreements, or candidate conservation agreements with assurances, or whether there are nonpermitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at the existence of Tribal conservation plans and partnerships, and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation. In preparing this final rule, we determined that there are currently no permitted conservation plans or other nonpermitted conservation agreements or partnerships for the yellow lance, and the final critical habitat designation does not include any Tribal ***lands*** or trust resources. We anticipate no impact on Tribal ***lands***, partnerships, or permitted or nonpermitted plans or agreements from this critical habitat designation. Accordingly, we did not exclude any areas from the final designation based on other relevant impacts.Required DeterminationsRegulatory Planning and Review (Executive Orders 12866 and 13563) Executive Order 12866 provides that the Office of Information and Regulatory Affairs in the Office of Management and Budget (OMB) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant. Executive Order (E.O ) 13563 reaffirms the principles of E.O 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.Regulatory Flexibility Act (5 U.S.C 601 et seq.) Under the Regulatory Flexibility Act (RFA; 5 U.S.C 601 et seq.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C 801 et seq.), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e , small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities. According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business,[[Page 18201]]special trade contractors doing less than $11.5 million in annual business, and ***agricultural*** businesses with annual sales less than $750,000. To determine whether potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term ``significant economic impact'' is meant to apply to a typical small business firm's business operations. Under the RFA, as amended, and as understood in light of recent court decisions, Federal agencies are only required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself and, therefore, are not required to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, the Service certifies that this critical habitat designation will not have a significant economic impact on a substantial number of small entities and a regulatory flexibility analysis is not required.Energy Supply, Distribution, or Use--Executive Order 13211 Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this E.O that outlines nine outcomes that may constitute ``a significant adverse effect'' when compared to not taking the regulatory action under consideration. The economic analysis finds that none of these criteria is relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with yellow lance conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.Unfunded Mandates Reform Act (2 U.S.C 1501 et seq.) In accordance with the Unfunded Mandates Reform Act (2 U.S.C 1501 et seq.), we make the following findings: (1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both ``Federal intergovernmental mandates'' and ``Federal private sector mandates.'' These terms are defined in 2 U.S.C 658(5)-(7). ``Federal intergovernmental mandate'' includes a regulation that ``would impose an enforceable duty upon State, local, or tribal governments'' with two exceptions. It excludes ``a condition of Federal assistance.'' It also excludes ``a duty arising from participation in a voluntary Federal program,'' unless the regulation ``relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,'' if the provision would ``increase the stringency of conditions of assistance'' or ``place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or Tribal governments ``lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ``Federal private sector mandate'' includes a regulation that ``would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.'' The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments. (2) We do not believe that this rule will significantly or uniquely affect small governments because most of the ***lands*** adjacent to the streams being designated as critical habitat are owned by private landowners. These entities do not fit the definition of ``small governmental jurisdiction.'' The riparian habitat owned by Federal, State, or local governments that we are designating as critical habitat in this rule are either ***lands*** managed for conservation or ***lands*** already developed. Consequently, we do not believe that the critical habitat designation will significantly or uniquely affect small government entities. As such, a Small Government Agency Plan is not required.Takings--Executive Order 12630 In accordance with E.O 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for yellow lance in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private ***lands*** or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect ***land*** ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that[[Page 18202]]would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for yellow lance does not pose significant takings implications for ***lands*** within or affected by the designation.Federalism--Executive Order 13132 In accordance with E.O 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of the critical habitat designation with, the appropriate State resource agencies. We did not receive comments from the States. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the State, or on the relationship between the Federal Government and the State, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist these local governments in long-range planning (because these local governments no longer have to wait for case-by-case section 7 consultations to occur). Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) will be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.Civil Justice Reform--Executive Order 12988 In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this rule identifies the elements of physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.Paperwork Reduction Act of 1995 (44 U.S.C 3501 et seq.) This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C 3501 et seq.) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.National Environmental Policy Act (42 U.S.C 4321 et seq.) It is our position that, outside the jurisdiction of the U.S Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244). This position was upheld by the U.S Court of Appeals for the Ninth Circuit (Douglas County v. Babbitt, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S 1042 (1996)).Government-to-Government Relationship With Tribes In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal ***lands*** are not subject to the same controls as Federal public ***lands***, to remain sensitive to Indian culture, and to make information available to Tribes. We have identified no Tribal interests that will be affected by this rule.References Cited A complete list of references cited in this rule is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) and upon request from the Raleigh Ecological Services Field Office (see FOR FURTHER INFORMATION CONTACT).Authors The primary authors of this rule are the staff members of the U.S Fish and Wildlife Service Species Assessment Team and Raleigh Ecological Services Field Office.List of Subjects in 50 CFR Part 17 Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Regulation Promulgation Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:PART 17--ENDANGERED AND THREATENED WILDLIFE AND PLANTS01. The authority citation for part 17 continues to read as follows: Authority: 16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.02. Amend Sec. 17.11(h) by revising the entry for ``Lance, yellow'' under Clams in the List of Endangered and Threatened Wildlife to read as follows:Sec. 17.11 Endangered and threatened wildlife.\* \* \* \* \* (h) \* \* \*[[Page 18203]]---------------------------------------------------------------------------------------------------------------- Listing citations and Common name Scientific name Where listed Status applicable rules---------------------------------------------------------------------------------------------------------------- \* \* \* \* \* \* \* Clams \* \* \* \* \* \* \*Lance, yellow................... Elliptio Wherever found.... T 83 FR 14189, 4/3/2018; lanceolata. 50 CFR 17.95(f).\CH\ \* \* \* \* \* \* \*----------------------------------------------------------------------------------------------------------------03. Amend Sec. 17.95(f) by adding, immediately following the entry for ``Rabbitsfoot (Quadrula cylindrica cylindrica),'' an entry for ``Yellow Lance (Elliptio lanceolata)'' to read as set forth below:Sec. 17.95 Critical habitat--fish and wildlife.\* \* \* \* \* (f) Clams and Snails.\* \* \* \* \*Yellow Lance (Elliptio lanceolata) (1) Critical habitat units are depicted for Franklin, Granville, Halifax, Johnston, Nash, Vance, Wake, and Warren Counties, North Carolina; Brunswick, Craig, Culpeper, Dinwiddie, Fauquier, Louisa, Lunenburg, Madison, Nottoway, Orange, and Rappahannock Counties, Virginia; and Howard and Montgomery Counties, Maryland, on the maps in this entry. (2) Within these areas, the physical or biological features essential to yellow lance conservation consist of the following components: (i) Suitable substrates and connected instream habitats, characterized by geomorphically stable stream channels and banks (i.e , channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation) with habitats that support a diversity of freshwater mussel and native fish (such as stable riffle-run-pool habitats that provide flow refuges consisting of silt-free gravel and coarse sand substrates). (ii) Adequate flows, or a hydrologic flow regime (which includes the severity, frequency, duration, and seasonality of discharge over time), necessary to maintain benthic habitats where the species is found and to maintain connectivity of streams with the floodplain, allowing the exchange of nutrients and sediment for maintenance of the mussel's and fish host's habitat, food availability, spawning habitat for native fishes, and the ability for newly transformed juveniles to settle and become established in their habitats. (iii) Water and sediment quality (including, but not limited to, conductivity, hardness, turbidity, temperature, pH, ammonia, heavy metals, and chemical constituents) necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages. (iv) The presence and abundance of fish hosts necessary for yellow lance recruitment. (3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the ***land*** on which they are located existing within the legal boundaries on May 10, 2021. (4) Critical habitat map units. Data layers defining map units were created by overlaying Natural Heritage Element Occurrence data and U.S Geological Survey (USGS) hydrologic data for stream reaches. The hydrologic data used in the critical habitat maps were extracted from the USGS 1:1M scale nationwide hydrologic layer ([*https://nationalmap.gov/small\_scale/mld/1nethyd.html*](https://nationalmap.gov/small_scale/mld/1nethyd.html)) with a projection of EPSG:4269-NAD83 Geographic. The North Carolina, Virginia, and Maryland Natural Heritage program species presence data were used to select specific stream segments for inclusion in the critical habitat layer. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2018-0094 and at the Raleigh Ecological Services Field Office. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2 [[Page 18204]] (5) Note: Index map follows:BILLING CODE 4333-15-P[GRAPHIC] [TIFF OMITTED] TR08AP21.000[[Page 18205]] (6) Unit 1: PR1--Patuxent River, Montgomery and Howard Counties, Maryland. (i) This unit consists of approximately 10 river miles (16.1 kilometers (km)) of occupied habitat, including 3 miles (4.8 km) of the Patuxent River and 7 miles (11.3 km) of the Hawlings River. Unit 1 includes stream habitat up to bank full height. (ii) Map of Unit 1 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.001 [[Page 18206]] (7) Unit 2: RR1--Rappahannock Subbasin, Rappahannock, Fauquier, and Culpeper Counties, Virginia. (i) This unit consists of approximately 44 river miles (70.8 km) of occupied habitat in the Rappahannock Subbasin, including 1.7 miles (2.7 km) in Hungry Run, 7.9 miles (12.7 km) in Thumb Run, 5.9 miles (9.5 km) in South Run/Carter Run, 2.7 miles (4.3 km) in Great Run, and 25.8 miles (41.6 km) in Rappahannock River. Unit 2 includes stream habitat up to bank full height. (ii) Map of Unit 2 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.002 [[Page 18207]] (8) Unit 3: RR2--Rapidan Subbasin, Madison and Orange Counties, Virginia. (i) This unit consists of 9 river miles (14.5 km) of occupied habitat in the Rapidan Subbasin, including 1.2 miles (1.9 km) in Marsh Run, 3.1 miles (5.0 km) in Blue Run, and 4.7 miles (7.6 km) in the Rapidan River. Unit 3 includes stream habitat up to bank full height. (ii) Map of Unit 3 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.003 [[Page 18208]] (9) Unit 4: YR1--South Anna River, Louisa County, Virginia. (i) This unit consists of approximately 8 river miles (12.9 km) of occupied habitat in the South Anna River. Unit 4 includes stream habitat up to bank full height. (ii) Map of Unit 4 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.004 [[Page 18209]] (10) Unit 5: JR1--Johns Creek, Craig County, Virginia. (i) This unit consists of approximately 14 river miles (22.5 km) of occupied habitat in the Johns Creek. Unit 5 includes stream habitat up to bank full height. (ii) Map of Unit 5 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.005 [[Page 18210]] (11) Unit 6: CR1--Nottoway Subbasin, Nottoway, Lunenburg, Brunswick, and Dinwiddie Counties, Virginia. (i) This unit consists of approximately 41 river miles (66 km) of occupied habitat in the Nottoway Subbasin, including 1.4 miles (2.3 km) in Crooked Creek, 3.3 miles (5.3 km) in Sturgeon Creek, and 36.3 miles (58.4 km) in the Nottoway River. Unit 6 includes stream habitat up to bank full height. (ii) Map of Unit 6 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.006 [[Page 18211]] (12) Unit 7: TR1--Tar River, Granville, Vance, Franklin, and Nash Counties, North Carolina. (i) This unit consists of approximately 91 river miles (146.5 km) of occupied habitat in the Tar River, including 4.4 miles (7.1 km) in Ruin Creek, 11.9 miles (19.2 km) in Tabbs Creek, 6.8 miles (10.9 km) in Crooked Creek, and 67.9 miles (109.3 km) in the Tar River. Unit 7 includes stream habitat up to bank full height. (ii) Map of Unit 7 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.007 [[Page 18212]] (13) Unit 8: TR2--Sandy/Swift Creek, Vance, Warren, Halifax, Franklin, and Nash Counties, North Carolina. (i) This unit consists of 31 river miles (50 km) of occupied habitat in the Sandy and Swift Creeks. Unit 8 includes stream habitat up to bank full height. (ii) Map of Unit 8 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.008 [[Page 18213]] (14) Unit 9: TR3--Fishing Creek Subbasin, Vance, Warren, Halifax, Franklin, and Nash Counties, North Carolina. (i) This unit consists of approximately 37 river miles (59.5 km) of occupied habitat in the Fishing Creek Subbasin, including 1.6 miles (2.6 km) in Richneck Creek, 8.0 miles (12.9 km) in Shocco Creek, and 27.4 miles (44 km) in Fishing Creek. Unit 9 includes stream habitat up to bank full height. (ii) Map of Unit 9 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.009 [[Page 18214]] (15) Unit 10: NR1--Swift Creek, Wake and Johnston Counties, North Carolina. (i) This unit consists of approximately 24 river miles (38.6 km) of occupied habitat in the Swift Creek. Unit 10 includes stream habitat up to bank full height. (ii) Map of Unit 10 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.010 [[Page 18215]] (16) Unit 11: NR2--Little River, Johnston County, North Carolina. (i) This unit consists of approximately 10 river miles (16.1 km) of occupied habitat in the Little River. Unit 11 includes stream habitat up to bank full height. (ii) Map of Unit 11 follows: [GRAPHIC] [TIFF OMITTED] TR08AP21.011 \* \* \* \* \*Martha Williams,Principal Deputy Director, Exercising the Delegated Authority of the Director, U.S Fish and Wildlife Service.[FR Doc. 2021-06736 Filed 4-7-21; 8:45 am]BILLING CODE 4333-15-C

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[***Blackstone Minerals announces completion of scoping study for development and restart of Ta Khoa Nickel-Cu-PGE Project***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6141-NTT1-DYG0-714D-00000-00&context=1516831)

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**Section:** COMPANY STRATEGY

**Length:** 10363 words

**Highlight:** Blackstone Minerals (BSX) has announced the completion of the Scoping Study for the development and restart of the Ta Khoa Nickel-Cu-PGE Project in Vietnam.

**Body**

The Ta Khoa Projectcomprises an open pit mine at the Ban Phuc Disseminated Sulfide (DSS), upstream processing and downstream processing to produce a Precursor product for Asia's growing Lithium-ion Battery Industry.The Company sees the Scoping Study as an important milestone and an initial platform to build a mine-to-market nickel business over the coming years with multiple upside opportunities to improve on the Scoping Study as presented. Blackstone looks forward to developing the TaKhoa Project andhas immediately commenced the next phase of Pre-Feasibility Studies. Highlights Maiden Ban Phuc DSS indicated resource of 44.3Mt @ 0.52% Ni for 229kt Ni and Inferred Mineral Resource of 14.3Mt @ 0.35% Ni for 50kt Ni;Annual production of ~12.7ktpa Ni over ~8.5-year project lifeGross Revenue of ~US$3.3 billion (US$2.95 billion to US$3.6 billion);Net pre-tax cashflow of ~US$1.2 billion (US$1.03 billion to US$1.37 billion);Pre-production capital cost of ~US$314m including contingency;Pre-tax cashflow of ~US$179mpa (US$155mpa to US$210mpa);Pre-tax NPV8% of ~US$665m (US$550m to US$780m) and ~45% IRR (38% to 50% IRR);·Capital Payback Period of ~2.5 years;Economically robust nickel sulfide project to produce downstream nickel: cobalt: manganese (NCM) Precursor products for the Lithium-ion battery industry;Downstream processing utilises existing well-tested technology;Blackstone's downstream NCM Precursor product significantly improves the payability of nickel, from ~70-80% to ~125-135% of LME metal prices;Upside opportunities include staged Capex, by-product credits (including copper, gold, platinum, palladium and rhodium), King Cobra Discovery Zone (KCZ), Ban Chang, Ta Cuong and 25 untested massive sulfide vein (MSV) ***targets***.Blackstone's Managing Director Scott Williamson commented: "The Scoping Study defines a project path that maximises economics, minimises environmental and social impacts, and offers a lasting legacy to the people in our local community."

"Whilst we are pleased with the outcomes of this study, we will continue to expand our resource and increase our production potential in this exciting, and yet under-explored region of Vietnam and have commenced work on PFS level studies for the project." Conceptual Operational and Financial Outcomes The following table should be read in conjunction with the details in following sections of this release as well as the material assumptions included in Appendix 1. All figures provided below and in this release are estimates or approximates based on Blackstone's operational knowledge, familiarity of the scoping study team with deposits of similar size and complexity, in analogous settings and discussions with suppliers and key consultants, and may be subject to future modification during Pre-Feasibility and Definitive Feasibility stages. Blackstone Minerals Strategy Blackstone's strategy is underpinned by an unwavering focus on developing the Ta Khoa Nickel-Cu-PGE Project in Northern Vietnam. The existing modern mine infrastructure at Ta Khoa offers the Company a foundation to build a fully integrated mine-to-market nickel business over the coming years. We aim to build one of the world's first green nickel processing facilities to produce downstream nickel products for the lithium-ion battery industry. The maiden resource at Ban Phuc gives the Company an initial platform to build on as our exploration team continues to unlock the geology throughout our Ta Khoa nickel sulfide district. Blackstone has the vision to build a world class nickel mining centre at Ta Khoa supported by a downstream processing facility to be developed and operated over the coming years. The Ta Khoa Nickel-Cu-PGE project is currently powered by South East Asia's largest hydro power plant located nearby in the Son La Province. At Blackstone we aim to set an example on how to build a green nickel mining business for the futuredemand coming from the rapid growth in nickel-rich cathode materials required to power the electric vehicle revolution.Project BackgroundThe Ban Phuc nickel mine operated as a modern mechanised underground mine for 3.5 years between 2013 and 2016, producing 20.7kt Ni, 10.1kt Cu and 0.67kt Co, before closing when the defined mineable reserves were depleted. The high-grade Ban Phuc MSV deposit was mined adjacent to the Ban Phuc DSSdeposit and remains underexplored at depths below the base of previous mining. Many other MSV ***targets*** are within potential trucking distance of the existing 450ktpa Ban Phuc processing facility that was built to international standards, commissioned in 2013, and has been on care and maintenance since 2016. Blackstone's Ta Khoa Nickel-Cu-PGE project has a combination of large, disseminated nickel sulfidetargets and 25 other prospects, including multiple high grade MSV ***targets*** of the style that were mined from the Ban Phuc underground mine. Blackstone believes that the Ta Khoa project represents a true district scale Nickel-Cu-PGE sulfide opportunity of a calibre rarely controlled by a junior company. The project also has significant infrastructure advantages that include the existing processing facility, abundant low cost hydroelectric power, a skilled low-cost labour force, and is located in a country that has become an Asian hub for electronics and battery manufacturing with a growing demand for downstream nickel products for the lithium-ion battery industry. Project Team The Ta Khoa Nickel-Cu-PGE Project scoping study was compiled in-house with the assistance of the Optimize Group as an independent consultant. The Optimize Group is an experienced project development firm with significant mineral processing experience in the South East Asia region. Blackstone personnel and external consultants who contributed to the study are outlined below. Location The Ta Khoa Nickel-Cu-PGE Project is located approximately 160km west of Hanoi near the Ban Phuc village in Son La Province, north-west Vietnam. The nearest towns are Hat Lot, approximately 30km north-west and Bac Yen, approximately 25km east. The nearest major population centre is the provincial capital Son La, approximately 55km north-west. The site is approximately 3km from the Da River hydroelectric dam reservoir. The elevation across the site ranges from 100m to 500m above sea level. The site is approximately 350km from the port city of Hai Phong. Best access to site is by way of Son Tay, Thanh Son, Phu Yen, Bac Yen and the Ta Khoa Bridge with a travelling time of six hours from Hanoi on serviceable paved roads. Geology The Ta Khoa Project is a magmatic Ni-Cu-PGE sulfide district associated with the Song Da Rift, a major crustal suture zone, and the Emeishan Large Igneous Province that extends for over 1000 km from north Vietnam into south China and hosts several significant Ni-Cu-PGE sulfide deposits. Two main Ni-Cu-PGE sulfide deposit styles are recognised within the Ta Khoa district: Massive Ni-Cu+PGE sulfide veins associated with narrow ultramafic dykes or locally within sedimentary wall rocks. Zones of disseminated semi massive and stringer sulfides are associated with many massive sulfide veins. The recently operating Ban Phuc nickel mine (2013-2016) exploited one of these massive sulfide veins adjacent to the Ban Phuc ultramafic body. Disseminated sulfide deposits within larger ultramafic intrusions, of which the Ban Phuc ultramafic intrusion is the best known and hosts the Ban Phuc Disseminated Ni-Cu-PGE sulfide deposit subject of this report. The Ban Phuc ultramafic intrusion is approx. 940 m long by 420 m wide and >400 m deep with two main disseminated sulfides zones, an outer and more extensive inclined boat hull-shaped zone and a smaller bean-shaped central zone.All of the Ta Khoa district ultramafic intrusions and associated Ni-Cu-PGE sulfide bodies have been affected by post-magmatic deformation and regional metamorphism. Mineral Resources The mineralisation model used for the Blackstone's maiden Mineral Resource estimate is based on an interpretation generated by BMGS in conjunction with geologists from Blackstone Minerals. A wireframe interpretation was created by combining sections into individual three-dimensional solids representing mineralised domains. Ordinary Kriging (OK) was used to interpolate Ni, Cu, Co, Pd and Pt grades to a block model constrained with the interpreted sulfide mineralisation wireframes and Indicated and Inferred Resources at a 0.3% Ni lower cut off are reported. Key Financial Metrics The Ta Khoa Project base case financial metrics include the following highlights: NCM Precursor currently trades at a ~35% premium to London Metal Exchange (LME) prices;~12.7ktpa of Nickel units produced per annum over an ~8.5-year project life;Net Pre-tax cashflow of ~US$1.2 billion (US$1.03 billion to US$1.37 billion);Pre-tax NPV of ~US$665m (US$550m to US$780m) and IRR of 45% (38% to 50% IRR);Capital Payback period of ~2.5 years.Project Funding The estimated pre-production capital requirement for the project is US$314 million for the base case. Blackstone's cash and working capital is currently in the order of A$28 million (including SPP and recent placement). The Company is in regular communication with partner EcoPro with an aim to discuss a joint venture partnership agreement over the coming months to jointly build the downstream processingfacility in northern Vietnam. EcoPro has been a very supportive shareholder since investing A$6.8m in April 2020 and Mr Hoirim Jung joined Blackstone's board of directors as an EcoPro representative.The upstream processing facility will most likely be funded through conventional debt and equity and the ultimate funding strategy will be based on the conditions of the equity capital markets and relative debt financing opportunities at the time of the final investment decision, which is expected in early 2022. Blackstone has a very supportive shareholder base, with EcoPro as the largest shareholder at 13%, Deutsche Balaton at 13%, Fidelity International at 6% plus several large institutional investors below the 5% disclosure threshold.Further to the above, there is potential for Blackstone to defer the construction and associated Capex of the 4-6Mtpa plant by initially restarting the existing concentrator to treat high grade MSV ore. Doing so would improve the overall project NPV, as the initial Capex requirement will be significantly reduced and may be funded through future cash flow. In addition, given part of the future Capex will be funded through cash flow under this scenario, there could also be less dilution to existing shareholders during project funding. The staged Capex scenario has not been factored into this Scoping Study.In addition, the Company entered a Non-Binding Memorandum of Understanding (MOU) with Eventus Partners Co. Ltd (Eventus) to assist Blackstone with funding solutions for the Ta Khoa Nickel Downstream Processing Facility. Eventus is a Seoul based financial institution with existing relationships with Korean Investors including pension funds, credit unions, banks and insurance companies. Eventus has experience in debt and equity funding for projects in Asia and North America, including projects in the Materials, Energy and Renewable Energy sectors.  Open Pit Mining Geotechnical Parameters The open pit slope design parameters are based on a best estimate for a Scoping Level Study. The assessment has been undertaken based on consideration of the geotechnical model and relevant failure mechanisms. The design sectors adopted are based on degree of oxidation, i.e. completely oxidised, partially oxidised, and fresh rock. The slope design parameters apply to the following: Completely oxidised - all slopes above the base of complete oxidation;Partially oxidised - all slopes between the base of complete oxidation and the base of partial oxidation;Fresh - all slopes below the base of partial oxidation.Conceptual Open Pit Mine The Ban Phuc deposit is a large, near-surface disseminated nickel sulfide orebody amenable to bulk open pit mining with a pre-strip requirement of approximately 25Mt and life of mine (LOM) strip ratio of 6.1:1. Processing rates of 2Mtpa, 4Mtpa and 6Mtpa have been thoroughly examined and optimised rates of 4Mtpa (base case) and 6Mtpa have been selected. Mining is modelled to be conventional drill, blast, load and haul and is assumed to be contractor operated with mining costs based on similar sized open pit mines within the region. Note the 2Mtpa processing rates were examined as part of this Scoping Study. However, the 2Mtpa case was considered to be sub-optimum in terms of being able to delivery sufficient product to secure superior offtake terms.The open pit mine design has four stages with the first stage including initial drilling from the KCZ. The higher grade, near-surface mineralisation at KCZ will be mined during the first three years of open pit mining.  Pre-strip mining is modelled to commence approximately 18 months before processing to allow sufficient time to establish the initial stages of the open pit mine and the associated civil requirements for the processing facility and tailings storage facility. Upstream Processing The Scoping Study considered a broad range of processing throughput options and product scenarios which include upgrades to the current processing facility and design and construction of an entirely new standalone plant. The process design criteria have been derived from metallurgical test work from which process flowsheets and equipment lists have been prepared to develop the preliminary process plant design. The process plant will produce a nickel concentrate ***targeting*** optimum metal recoveries at the concentrator whilst being suited to processing at the downstream process facility. The flotation circuit consists of a rougher/scavenger circuit followed by a cleaner flotation circuit. The mineral concentrate is transported to a downstream processing facility via road transport to be converted to final product. Crushing Run of Mine (ROM) material from the open pit mine will be trucked to the ROM pad or dumped directly into the crusher dump pocket depending on crusher availability and ore type. The crusher dump pocket is sized to accept multiple truck payloads to provide continuous feed via an apron feeder and vibrating grizzly to the primary jaw crusher.The crusher reduces the ROM ore to P80 of 125mm. The crusher discharges the material onto the crusher discharge conveyor. The crushed material will be conveyed under a belt magnet to ***remove*** tramp metals to the open Coarse Ore stockpile. Crushed ore from the stockpile is metered using two apron feeders discharging onto the semi-autogenous grinding (SAG) mill feed conveyor. Grinding The grinding circuit consists of a single variable speed SAG mill, followed by a single ball mill (or dual ball mill for the 6Mtpa scenario) operating in closed circuit with a cyclone cluster. The product from the grinding circuit (cyclone overflow) has a typical P80 of 75\x{03bc}m. SAG mill discharge flows onto a vibrating screen to ***remove*** +12 mm pebbles. Screen oversize is transported by conveyor to the pebble crusher (cone crusher). Crushed pebbles are recycled back to the SAG mill feed conveyor.The SAG mill feed conveyor discharges ore, along with pebble recycle and grinding media, into the feed chute of the SAG mill together with mill feed dilution water. The SAG mill is fitted with discharge grates to retain grinding media and larger pebbles while allowing smaller particles to discharge from the mill. SAG mill grinding media is also added to the SAG mill feed chute with a 2T kibble with a false bottom. The SAG mill discharge screen undersize gravitates to the primary cyclone feed hopper where it is combined with the discharge from the ball mill(s). The slurry is transported to a single cyclone cluster using two variable-speed cyclone feed pumps (duty and stand-by).Dilution process water is added to the cyclone feed hopper before the slurry is pumped to cyclone cluster for classification. Coarse ground particles report to the cyclone underflow and are directed to the ball mill feed chute via a boil box with a portion being directed to the SAG mill to balance the mill powers. The cyclone overflow stream gravitates to the vibrating trash screen via a cross-stream sampler. A SAG mill feed chute ***removal*** system and a ball mill feed chute ***removal*** system are used to service the mills. Flotation The rougher flotation circuit consists of a conditioning tank, single train of rougher flotation cells, rougher scavenger flotation cells. The rougher/scavenger concentrate slurry is fed through the cleaner circuit which consists of a conditioning tank, cleaner flotation cells and cleaner scavenger flotation cells. The cyclone overflow stream from the trash screen undersize reports to the flotation feed conditioning tank. Reagents added to the conditioning tank are sodium silica (Na2SiO3) and soda ash (NaOH). As the streams enters the rougher flotation cells, collector and frother are added as required. Automated level control is implemented on all flotation cells to control the interface level and confirm froth rates. Additional reagents are added along the rougher flotation circuit to control the frothing rates.Flotation feed reports to single rougher flotation bank consisting of three forced air mechanical rougher flotation tank cells and two forced air mechanical rougher flotation tank cells. The rougher flotation cells produce a concentrate which is transferred to the cleaner circuit. The rougher tailings stream is pumped to the flotation tailings thickener. The tails thickener underflow is pumped to the agitated tailings transfer tank from where they are pumped to the tailing's storage facility. Thickener overflow reports to the process water tank. Flocculant solution is added to the thickener feed to promote settling and increase thickener underflow density.The cleaner scavenger tails are pumped to the rougher scavenger tails to be transferred to the flotation tailings thickener. The cleaner flotation cell concentrate is transferred to final concentrate while the cleaner scavenger concentrate is processed as final concentrate or returned to the cleaner flotation circuit for higher upgrading as required. The final concentrate is transferred to the concentrate thickener. The concentrate thickener underflow is pumped to the agitated filter feed tank from where the stream is pumped to the concentrate filter as per the operating filter cycles. Concentrate The concentrate filter is a plate frame style filter pressure which incorporates filter feed pumps, manifold wash water pumps, pressing water pump systems, air and hydraulic systems. The filtrate is returned to the main process water system for reuse. The filtered concentrate cake is dumped from the filter onto the concentrate stockpile conveyor positioned directly underneath the filter. The concentrate front end loader as required either transfers the material to the concentrate stockpile or loads directly into the concentrate transport truck. The concentrate shed is a fully enclosed engineered building with high concrete kerb walls to maximise the storage volume. The concentrate is loaded into a concentrate truck while on a weigh bridge to maximise truck load movements while maintaining a safe truck loading process. Tailings Disposal The tails thickener underflow is pumped via multi-stage pumps (in duty/standby arrangement) to the tailings storage facility (TSF). The scoping level tailings discharge philosophy is based on sub-aqueous discharged via a floating barge. During Stage 1 the tailings will initially be discharged from the upstream face of the embankment to provide a tailings cover against the upstream slope of the embankment, thereby reducing seepage. Later in Stage 1 and for subsequent stages tailings will be discharged via a floating barge. Decant water will be reclaimed via the floating barge. A tailings delivery pipeline and reclaim water pipeline will be required between the Plant Site and the TSF. Tailings Storage Facility A preliminary assessment and construction cost estimate have been carried out for an additional TSF site located approximately 3km from the existing plant site. An assessment of the storage characteristics and TSF embankment volumes has been made based on tailings production estimates and tailings characterization and deposition test work. Four stages have been assessed: Stage 1 - 3 years: 15.5Mt (12.4Mm3) tailings ·Stage 2 - 6 years: 32.9Mt (22.7Mm3) tailings ·Stage 3 - 9 years: 48.5Mt tailings (33.4Mm3) tailings ·Stage 4 - 18 years: 100 Mt tailings (69.0Mm3) tailings A settled tailings dry density of 1.25t/m3 has been used for Stage 1 and 1.45t/m3 for subsequent stages.Transportation The concentrate will be loaded into and transported by suitably sized tipper trucks. The concentrate is tipped into the concentrate receival building for stockpiling and/or feed to the downstream processing facility.Downstream ProcessingDownstream benefitsBlackstone is looking to develop an integrated downstream processing facility to supply Precursor products to the emerging Lithium-ion battery market. The technology associated with the production of NCM precursor from MHP is well-tested.There are many benefits through delivering a downstream solution, including: Significantly improve payability of the product, from ~70-80% to ~125-135% of LME metal prices;Eliminate or substantially reduce export tariffs on the product;Maximise product margin by reducing transport and rehandling costs, as well as by taking advantage of competitive hydro-power and labour rates;Provide increased employment in Son La, particularly amongst minority groups;Allow the product to be delivered directly to the battery supply chain in an environmentally friendly manner.Process Evaluation The Scoping Study considered seven possible nickel concentrate processing flowsheets consisting of four different downstream products and three different processing technologies. The Scoping Study considered the following downstream processing technologies: Pressure Oxidation (POX), Glyleach and the Albion Process; and considered the following downstream products: Mixed Hydroxide Precipitate (MHP), Mixed Sulfide Precipitate (MSP), Nickel Sulfate and NCM precursor. Scoping level engineering flow sheet designs were developed for each of the seven options includingprocess design information, operating and capital cost estimates. The extensive study work and batch test work program completed by Simulus Engineers facilitated the selection of the preferred option for ongoing project development. The Study found that the premium associated with NCM precursor products significantly improved overall project economics and the preferred option is for Blackstone to produce NCM precursor as the final product via MHP using the POX processing technology. Process Description The flowsheet consists of a concentrate POX leach with the rejection of most impurities via partial neutralisation and solid liquid separation by pressure filtration. The pregnant liquor solution (PLS) from the POX leach then undergoes a second neutralisation stage followed by two stages of mixed hydroxide precipitation using magnesia and lime. Stage 1 MHP contains the bulk of the nickel and cobalt and undergoes an atmospheric releach with sulfuric acid to give a liquor with ~100g/L nickel. This liquor then undergoes impurity ***removal*** using recycled nickel hydroxide dosing to increase the pH and with sulfur dioxide and air addition to precipitate manganese followed by solid liquid separation to reject the solid impurities. The filtrate is processed in cobalt solvent extraction (CoSX) to separate the cobalt (and any copper and zinc present) from the nickel solution. The CoSX strip liquor is crystallised to produce battery grade cobalt sulfate heptahydrate. The raffinate from CoSX primarily contains nickel but also some magnesium. This raffinate is fed to a magnesium solvent extraction (MgSX) circuit to ***remove*** the magnesium from the nickel sulfate liquor. The raffinate from MgSX proceeds to NCM precursor refining to generate the main refinery product, Precursor NCM. Pressure Oxidation Concentrate generated from composites of Ta Khoa disseminated have been successfully leached via POX, with consistent nickel extractions exceeding 95% and up to 98.5% achieved at moderate acid consumption of 130 kg/t. Blackstone will complete further optimisation work in the next stage of the project to increase the project economics.The POX process route is based around a typical sulfide oxidation autoclave, as commonly used on refractory gold and base metal sulfide concentrates. The purpose of the area is to leach the maximum amount of nickel and cobalt possible from the nickel concentrate feed, which requires an oxidant and pressure vessel to prevent boiling of the aqueous leach liquor. The current program is based on a nickel concentrate feed containing approximately 8% sulfur and 8% nickel. Ongoing test work is focusing on optimising the processing interface between upstream concentrator and downstream refinery in order to maximize overall project economics. The gangue composition, particularly the ratio of magnesium to pentlandite will drive the acid consumption, i.e. higher magnesium requires more acid. A minor amount of acid is also required during the process for leaching metal hydroxides recycled in the process.The POX autoclave will be a horizontal, five-compartment type fabricated from duplex stainless steel designed to operate at 160°C and with a residence time of 1.5 hours. Oxygen gas will be supplied to the autoclave with 10 bar(g) overpressure, making the total operating pressure approximately 16 bar(g). The oxidative leaching of nickel sulfide concentrate is exothermic so the autoclave temperature can be maintained by the heat of reaction. The autoclave discharges to a single-stage atmospheric flash vessel. A barometric condenser ensures that entrained acidic mist is scrubbed from the vent gas prior to environmental release. The water vapour is also condensed, which avoids the potential formation of a large steam plume in cooler weather, which may be confused for smoke or pollution by surrounding stakeholders. The flashed leached slurry is pumped to the slurry neutralisation area.Limestone is added to the leach pulp in four reactors in series to neutralise free acid and precipitate most of the iron (III), aluminum, and chromium as hydroxides. Carbon dioxide gas is evolved by the neutralisation and precipitation reactions. The pH increases to ~2.5-3.2, but no higher, to limit the co-precipitation of nickel and cobalt. Limestone will be crushed and milled on site prior to dosing as a slurry from a ringmain. The slurry is pumped to a smaller filtration feed tank where it is filtered. The filter cake is repulped in washate from subsequent stages, then filtered again. Water is used for repulping in the third and final stage to achieve a counter-current repulp washing configuration. The filtrate from the first filtration stage is pregnant liquor solution (PLS).Secondary NeutralisationThe PLS still has minor levels of acid present. Prior to MHP precipitation the bulk of this acid is neutralised by the addition of a limestone slurry. The PLS is fed to six agitated, cascading tanks in series with an overall retention time of six hours. The temperature is maintained at 80°C and the pH is controlled to approximately 4.5 by varying the limestone addition rate.Mixed hydroxide precipitation A mixed hydroxide precipitate (MHP) product is proposed as an intermediate product which provides an internal process buffer point and consolidation of feed materials and blending to achieve process quality for the end product constituents. The PLS from secondary neutralisation is pumped to the mixed hydroxide precipitation area. Nickel and cobalt are precipitated using electrofused magnesia powder in a series of three precipitation reactors. The MHP is primarily composed of nickel hydroxide and nickel hydroxy-sulfate hydrate, but some of the gangue metals will co-precipitate meaning low levels of aluminium, iron, manganese and magnesium will be present. The tanks are sized for a total retention time of three hours.The MHP is thickened with the addition of flocculant then filtered and washed in a proposed vertical plate and frame pressure filter to produce the base metal hydroxide product. Neutralisation and MHP test work conducted on POX discharge liquor generated an intermediate product that could be readily re-leached in an atmospheric leach. Magnesia was overdosed marginally in this program during MHP precipitation, leading to a higher than normal magnesium grade in the precipitate and subsequently higher than normal acid requirement in the atmospheric leach. However, the MHP produced was of good quality containing 37.7% nickel and was produced with a nickel recovery of 100%. Work on further optimisation of this process will be undertaken in the next stage of the project. MHP leach The MHP leach consists of an atmospheric sulfuric acid leach circuit to dissolve the cobalt and nickel hydroxides. The circuit consists of six leach tanks in series with a total retention time of 3 hours. Sulfuric acid is dosed to the four tanks to control the pH. The bulk of cobalt and nickel leach along with magnesium and manganese and other minor impurities such as aluminium, copper, iron, and zinc. The MHP leach PLS is pumped to the nickel refinery. Nickel refining - Mn impurity ***removal*** The MHP leach liquor is an acidic, concentrated nickel sulfate stream containing approximately 100 g/L nickel. The liquor contains nickel and cobalt but also has appreciable levels of manganese and magnesium and other impurities. The PLS is fed to the first of six tanks in series. A mixture of air and sulfur dioxide gas is sparged into the tanks. This oxidises manganese from (II) which is soluble, to (IV) which is highly insoluble and precipitates as MnO2. The pH is maintained at approximately 4.0 by adjusting the dose of recycled nickel hydroxide. The impurity ***removal*** discharge is clarified with a portion of the clarifier underflow recycled to the first impurity ***removal*** tank and the remainder pumped back to the primary neutralisation area. The clarified PLS is then pumped to the CoSX circuit.Nickel refining - CoSXThe PLS enters the first of four cobalt extraction mixer settlers in series. The organic consists of the extractant Cyanex® 272 in a low aromatic diluent such as Shellsol D70®. The scrubbed loaded organic is stripped sequentially, first in dilute sulfuric acid to strip almost all the cobalt at pH at approximately Any extracted zinc and iron remain on the organic at this pH, which prevents contamination of the cobalt sulphate downstream. Low levels of manganese will be present in the cobalt loaded strip liquor and are removed using an impregnated resin, such as Lewatit VP OC 1026 prior to crystallization or NCM precursor precipitation. Nickel refining - MgSXThe magnesium concentration in the CoSX raffinate is too high to achieve battery grade nickel sulfate crystals without further treatment. A second Cyanex 272 solvent extraction circuit is used to ***remove*** the magnesium. The magnesium loaded organic is scrubbed to recover nickel using magnesium strip liquor. The scrubbed organic is then stripped with dilute sulfuric acid at a pH approximately 4. The scrub liquor returns to the MgSX extraction feed. The raffinate proceeds to nickel sulfate crystallisation and the magnesium loaded strip liquor is sent to nickel hydroxide precipitation.Nickel refining - NCM precursorThe raffinate from cobalt and magnesium SX contains concentrated nickel sulfate. It is mixed with the cobalt loaded strip liquor, plus solutions of manganese sulfate and additional cobalt sulfate. The determined or prescribed stoichiometry was selected in consultation with the end product requirements and the availability of market price data for this Scoping Study. The mixed metal sulfate solution is dosed with citric acid solution as complexing agent and allowed to stabilise in three agitated tanks in series. The citrate complexes with the manganese (II) ions which prevent oxidation and precipitation as MnO2 and other undesirable phases. Citrate complexation ensures that the manganese precipitates as the manganese (II) hydroxide, in uniform stoichiometry with the coprecipitating nickel and cobalt hydroxides. Dilute sodium hydroxide solution is added over three precipitation tanks, to increase the pH to approximately 12.0 and the precipitated slurry is aged in three agitated reactors over 24-hours. The mixed NCM hydroxide precursor slurry is thickened in a conventional thickener, with the option for seed circulation depending on particle size requirements. The thickener overflow is filtered in a pressure candle filter, to capture any entrained solids. The thickened slurry is filtered in a vertical, recessed, membrane plate pressure filter. The NCM hydroxide filter cake is dried in a steam-heated fluid bed dryer. Solids are conveyed to three storage bins, then packed into lined shipping containers using a telescopic container loading conveyor. Acidic liquor neutralisation The acidic liquor neutralisation (ALN) system consists of two stages of neutralisation, the first with limestone slurry addition to pH of approximately 4 - 4.5 followed by lime addition to pH of approximately 8 10 depending on the water balance, effluent discharge requirements and degree of manganese and magnesium ***removal*** required. Infrastructure Nickel refining - NCM precursor plant location The Son La Peoples Committee and Son La Industrial Zone Management Authority has proposed the Mai Son Industrial Park as a potential site for the Ta Khoa Project downstream processing facility. The 50-hectare lot is located 42km from the mine site and processing facility and 26km from the provincial capitalof Son La. The site has necessary power and water supply infrastructure in place and is zoned for industrial application. Discussions have commenced with the province regarding investment incentives associated with the site which will be considered, along with alternate sites, in the next stage of study. Water Supply Raw water will be sourced from the current TSF. Raw water will be used to provide makeup water for the process plant and to meet clean water requirements for the concentrator. Clean water will be used for the following areas: Pump gland seals Reagent preparation (flocculant, collector, modifier and dispersant) Firewater Raw water (dust suppression, filter plant, screens and hose down) Power Supply Power for the processing plant and refinery sites is primarily sourced from the 2400MW Son La Hydropower plant The Son La Provincial Government Power Department has indicated additional power can be provided to accommodate the upgrade in processing requirements, though approval has not been provided and there is no guarantee of an adequate power supply if the upgrade is not made. Options currently being considered include: Upgrade of the Gia Phu 110 kV/35 kV substation located 16km to the northeast of the Ban Phuc mine site; Construction of a new 110 kV/35 kV substation within the Muong Khoa commune boundary. Transport During historical operations, several routes have been identified for road transport of goods to site with the size of the loads being the main determining factor as to which route is taken. Incoming freight will consist of equipment, spares, reagents, consumables, and general merchandise. Some inbound goods will be in break bulk but others will be in 20 foot sea containers. Road transport of diesel fuel will be in conventional tanker trucks. Import equipment will be shipped via Hai Phong port. The road route passes Hanoi via the Hanoi-Hai Phong Expressway and then via Highway 6 from Hanoi to Son La and finally the intersection of Highway 6 with Highway 37 and then on Highway 37 to site. Environmental, Social & Governance Environmental The Ta Khoa project was implemented on the foundation of expanding and upgrading the existing Ban Phuc nickel mine that was successfully operated as a mechanised underground nickel mine from 2013 to 2016. Baseline environmental studies in the area have been carried out since 2014 including an assessment of flora and vegetation, landforms, subterranean fauna, terrestrial environmental quality (including both mineralised and non-mineralised waste), terrestrial fauna, inland waters, air quality, heritage, archaeology, social surrounds and human health.Since the baseline studies a program of monitoring environment, vegetation, and implementation of minimizing environment impact has been maintained ongoingly and the project's Environmental Impact Assessment Report was approved by the Government of Vietnam.Previous environmental assessment studies showed that waste rock in mining has no potential to create acid, therefore it can be reused in the process of upgrading the construction of the internal mine road. In addition, an area of 16ha has been planned for the waste rock dump. The waste rock dump will be designed according to international standards to meet the environmental standards set by the Vietnamese government.The recycle and reused water system of the existing processing plant supplies enough water for production activities. Further to this, the baseline survey study shows that the project is adjacent to the Da River so additional water demand for production will be supplied from the Da River and suitable forproduction conditions.The tailing storage facility was built according to international standards with a permanent spillway ensuring production wastewater is treated by deposition before being discharged into the environment. The Company has been granted a licence to discharge waste into water source. TSF Closure At closure of the TSF the decant barge, discharge spigots, tailings pipelines and return water pipelines will be removed from the TSF area and between the TSF and the process plant. Based on the geochemistry analysis results available to date the disseminated tailings are not potentially acid forming. The Scoping Study TSF closure philosophy however assumes that tailings from future MSV orebodies may be deposited in the facility. At closure a water cover allowance of 2m has been applied over the tailings. This water cover will be maintained during operations so at closure no additional work is required. In addition, a 100mm layer of inert tailings is to be placed over the tailings immediately prior to closure. This inert tailings layer plus the water cover will minimise acid generation from the tailings storage in the long term. An expansion of the project will require an additional environmental impact assessment. Additional environmental survey, community consultation and environmental impact assessment program areexpected to be finalised in April 2021 and the Environment Impact Assessment Report will be submitted to the Vietnamese Ministry of Natural Resources and Environment for approval before the project construction. Social and Community The project values the community in which it works and takes seriously its community and environmental obligations to ensure the community benefits from all stages of the project's activities. We have a history of operating responsibility and have the endorsement of the local community to operate. Our social and community values are demonstrated in the relationships we share with the local community, the economic and employment opportunities we provide, and engagement we have on environmental activities. The project is located in the Muong Khoa Commune, Bac Yen District, Son La Province, a culturally rich but economically poor district in the Northern mountainous province of Vietnam. The population of the area is almost 5,000 people, who are mainly engaged in subsistence ***agriculture*** and forestry. The population mostly consists of ethnic minorities with low levels of educational attainment, with the area serviced by a local primary school and a secondary school further away. The average income per capita in 2019 wasUS$1,400pa. The information on socioeconomic status was collected through the use of district government censuses, statistical yearbooks of the Son La Province and Bac Yen District, and relevant archives from the Muong Khoa Commune. Both the upstream and downstream slopes of the TSF have an external rock rip-rap cover 1m thick which is erosion resistant. As a result, no additional work will be required on the external surface of the TSF embankment.The project has obtained a ***land*** use licence for the existing mine site. The time and permitted area of ***land*** use licence will be extended and expanded to match the permitted area in mining licence and exploitation licence. The company notes that additional licences and extensions will need to be applied for and no guarantee these will be granted (refer to Key Project Risks). For the ***forest*** area that was given to the Company to be converted into ***land*** use for the purpose of mining, the Company will pay a replacement afforestation fee and develop a plan for environmental reclamation and rehabilitation for mining closure. The environmental reclamation and rehabilitation program to be approved by the Ministry of Natural Resources and Environment in accordance with the provisions of the Law on Environmental Protection in Vietnam. The Company will be obliged to make the escrow for the environmental rehabilitation. This is to ensure the Company's obligations on environmental rehabilitation after mining. Over the past years, the project has supported several key community development projects and at the request of the Bac Yen District. Community consultation has been an important factor in determining the priorities of the projects, and have included: building and upgrading roads, supporting the construction of a new inter-village bridge and implementing vocational training programs as the project has supported the community businesses, the building of schools and community houses for local people. Within the current exploration program, the Ta Khoa Project employs more than seventy local workers with an average salary above the average annual income of those employed in other industries in the region. Once the project becomes fully operational, it is expected to provide employment for a larger number of local people. Additionally, we will develop local people into their roles and have a track record of supporting personnel to study at Mine College in Quang Ninh. Further to this, local businesses and suppliers from the region will continue to be engaged to ensure economic opportunities in the project contribute to the local community. According to Vietnamese Government regulations, public consultation on project impacts will be carried out simultaneously during the environmental impact assessment process. Community consultation carried out in 2014 showed that the project received active support from the local community as well as the authorities at all levels. Further environmental consultation on the project's expansion is scheduled for March 2021. A compensation and assistance policy for affected households to expand the mining project will be implemented will need to be approved by local authorities in accordance with the provisions of Vietnam's ***land*** law. The Company will appoint a representative to join the compensation and site clearance council established by the Bac Yen District People's Committee. The project's organisation will include an environmental and corporate social responsibility departmentto: manage the impacts of the project; ensure the community benefits from activity within the region; and commit to continued engagement and reporting with local and government stakeholders. Accordingly, the project will allocate an annual budget for environmental rehabilitation and community development activities.Licensing and Permitting Approval for the Ta Khoa project will be at government central level. Government Engagement A dedicated government engagement strategy has been developed and is underway. The key objectives of this strategy include: Working with the Ministry of Industry and Trade in mineral planning to ensure that the Ta Khoa project and its products are supported by and within the national mineral development orientation that is expected to be built in 2021 and issued in 2022; Currently, the Ministry of Natural Resources and Environment of Vietnam is conducting a national mineral exploration planning and investigation. Therefore, Blackstone will continue to align the potential exploration areas the Company is aiming to add with the direction of the National orientation; Submit the application for the downstream processing project to Son La Provincial People's Committee and the Ministry of Planning and Investment to consider and apply preferential tariff policy for single-product Lithium-ion battery materials with new production technology; Report to Son La Provincial People's Committee (PPC) on the ***land*** use plan for the PPC to allocate ***land*** funding for the project; Report to Son La Provincial People's Committee on project scale to adjust investment licence to increase equity and investment capital for project implementation; Research & Development Blackstone Minerals is a key participant in The Future Battery Industries Cooperative Research Centre (FBICRC) project. The program is jointly funded by the Federal Government, industry participants and research organizations to support Australian industries in battery technology development.Present and ongoing work has included the development of alternate leach technology's for nickel and cobalt.Bench scale test work conducted in 2020 has yielded encouraging results from Ban Phuc disseminated ores and concentrates in the selective leaching of nickel and cobalt via alkaline glycine leaching. While glycine leaching is not the primary focus of the projects refining flowsheet Blackstone will continue to support ongoing test work and assessment of the process to investigate the potential for commercialization of this process. Risks Resource Risks Blackstone continues to drill the Ban Phuc DSS orebody and the associated KCZ to improve confidence in the resource block model. The Maiden Resource for the Ban Phuc DSS comprises 82% of the nickel tonnes within the indicated confidence category which is typically a high level of confidence for a Scoping Study. Ongoing drilling at Ban Phuc will most likely improve confidence in the orebody which may result in anincrease some of the indicated material to the measured category and remaining inferred mineralisation may result in being upgraded to indicated for the next stage of the project. Mining Risks Mining of the Ban Phuc DSS orebody will be via conventional drill, blast, load and haul open pit mining and is assumed to be contractor operated with mining costs based on similar sized open pit mines within the region. The mine schedule is based on typical mining rates for similar sized operations located in similar elevation scenarios. Further optimisation of haulage profiles and waste dump locations will be carried out during the next stage of the project to minimise risks associated with open pit mining of the Ban Phuc DSS orebody. Processing Risks Processing of the Ban Phuc DSS orebody will be via conventional froth flotation to concentrate followed by pressure oxidation of the concentrate to produce downstream nickel products. Although the flowsheet is based on conventional technology it is a relatively new concept to process nickel concentrate directly via a hydrometallurgical process. Blackstone believes that the growing demand for downstream nickel chemical products from the Lithium-ion battery industry will see the hydrometallurgical processing of nickel concentrate ores become more common place over the coming years. The Company believes the technical risks associated with the downstream processing can be managed by the next stages of test work, piloting and studies. Commodity Price Risks Commodity price volatility is typical of all mining projects and nickel has been particularly volatile in recent times. The nickel price used for the Scoping Study is based on the long-term average consensus forecast pricing which continues to be significantly less than the incentive price required for increased investment in nickel projects. Blackstone believes a nickel price in the order of US$20,000/t is required to incentivise funding of new nickel projects to meet the imminent demand coming from the Lithium-ion battery industry. The disconnect between supply and demand and the significant lag associated with the time required to develop large projects suggests that volatility in the nickel price will continue to be a significant risk in the future. A hedging strategy may be considered at a time closer to the final investment decision to minimise the risk associated with the commodity price. Permitting Risks Delays in the permitting and approvals process are a risk to all mining projects regardless of the jurisdiction. The Ta Khoa Nickel-Cu-PGE project has an existing mining licence and the approval process has commenced to amend the mining licence to include the development outlined in this Scoping Study. Vietnam has an established mining industry with a structured permitting process similar to the Australian mining industry. The Ta Khoa project has a long and successful history of permitting, development and operations. The Ta Khoa project was highlighted as a project of national significance in the Vietnam National Mining Master Plan. This national recognition combined with the government's continued focus on incentivising downstream processing will be beneficial to the permitting process over the coming months.Upside OpportunitiesBlackstone Minerals has identified a number of additional enhancement opportunities which will generate significant additional value to the project. The Scoping Study represents just the starting point for the future of its nickel operations at Ta Khoa. The Company has a number of opportunities to increase mine life, nickel production and revenue through a combination of exploration, further studies and resource extension programs which are either already in progress or planned for the coming months.Staged Capex The Scoping Study considered the immediate construction of a 4-6Mtpa treatment facility to process ore mined at the large tonnage, Ban Phuc DSS orebody. In addition to the Ban Phuc orebody, the project also features an established and well-maintained 450ktpa concentrator and multiple known high grade MSV prospects. Whilst more exploration is required to ascertain the qualities of MSV material, there is potential for Blackstone to defer the construction and associated Capex of the 4-6Mtpa plant by initially restarting the existing concentrator to treat high grade MSV ore. Doing so would improve the overall project NPV, as the initial Capex requirement will be significantly reduced and may be funded through future cash flow. In addition, given part of the future Capex will be funded through cash flow under this scenario, there could also be less dilution to existing shareholders during project funding. The staged Capex scenario has not been factored into this Scoping Study. By-product Credits The Ta Khoa Project Scoping Study is focused on nickel and cobalt revenues only and has not considered the by-product credits that potentially exist within the Ban Phuc DSS orebody. Initial metallurgical testwork conducted by Blackstone suggests the by-product minerals (including copper, gold, platinum, palladium and rhodium) that exist within the Ban Phuc DSS orebody can be recovered through flotation and processed within the downstream refinery. Further analysis, test work and engineering are required to understand the full potential of the by-products to add value to the overall economics of the project. Blackstone believes there is significant potential for upside to the value of the project and is consideringadditional processing infrastructure to allow the downstream processing to produce secondary saleable products to generate by-product credits. King Cobra Discovery Zone The Ta Khoa Project Scoping Study includes some initial drilling of the KCZ but does not include the most recent drilling. The KCZ remains open at depth towards the northeast of the Ban Phuc DSS with massive sulfide vein and breccia styles of sulfide mineralisation generally not seen elsewhere within the Ban Phuc DSS orebody. The KCZ has potential to add shallow, high grade tonnes to the Ban Phuc DSS maiden resource estimate and hence significant upside to the value of the project. Any KCZ drill holes announced after the ASX announcement dated 27 July 2020 (subsequent to drill hole BP20-23) are not included in the current Ban Phuc DSS Mineral Resource Estimate and Scoping Study. Ban Chang The Ban Chang prospect is located 2.5km south-east of the Ban Phuc deposit and processing facility, adjacent to the Chim Van - Co Muong fault system. The Ban Chang Prospect is the first of 25 MSV prospects to be drill tested and the initial results indicate potential for Ban Chang to add significant value to the project. Three drill rigs are currently operating at Ban Chang where the Company has intersected high grade MSV in the majority of maiden drillholes. The following highlights are from the maiden four drillholes at Ban Chang, all of the subsequent holes have delivered similar results: BC20-015.2m @ 0.66% Ni, 0.73% Cu, 0.04% Co & 0.79g/t PGE from 58.0m 1.5m @ 2.20% Ni, 2.12% Cu, 0.13% Co & 2.66g/t PGE from 58.5m Incl.1.05m @ 2.98% Ni, 1.22% Cu, 0.18% Co & 3.43g/t PGE from 58.5m BC20-024.1m @ 0.92% Ni, 0.69% Cu, 0.05% Co & 0.26g/t PGE from 85.9m 2.3m @ 1.6% Ni, 1.09% Cu, 0.09% Co & 0.43g/t PGE from 85.9m Incl.1.8m @ 2.01% Ni, 1.27% Cu, 0.12% Co & 0.53g/t PGE from 86.4m BC20-039.8m @ 1.45% Ni, 0.9% Cu, 0.08% Co & 0.70g/t PGE from 57.05m 5.7m @ 2.07% Ni, 1.08% Cu, 0.12% Co & 0.95g/t PGE from 60.0m Incl.1.85m @ 3.59% Ni, 1.18% Cu, 0.20% Co & 1.97g/t PGE from 63.35m BC20-0421.5m @ 0.69% Ni, 0.66% Cu, 0.03% Co & 0.81g/t PGE from 71m 13.4m @ 1.01% Ni, 0.96% Cu, 0.05% Co & 1.14g/t PGEfrom 76m Incl.2.1m @ 2.53% Ni, 1.36% Cu, 0.11% Co & 0.76g/t PGE from 77.6m. Viper Discovery Zone (VDZ) The VDZ is a blind discovery located east of the Ban Chang prospect, with no surface exposures of nickel sulfide or ultramafic, which bodes well for further blind discoveries of massive sulfide nickel using Blackstone's in-house geophysics crews to unlock the extensive potential throughout the Ta Khoa Nickel-Cu-PGE district. The Viper Discovery happened soon after the Company recently moved to an aggressive drill-out phase at Ban Chang to supplement the ongoing studies focused on producing nickel sulfate for the lithium-ion battery industry.Ta CuongTa Cuong is the Company's second MSV prospect at the Ta Khoa Nickel-Cu-PGE Project in Vietnam. Ta Cuong is located 6km along strike from Ban Chang and proximal to a major regional structure that is also close to the Ban Phuc and Ban Chang prospects. The Company recently commenced drilling at Ta Cuong ***targeting*** new EM plates generated by Blackstone's in-house geophysics team. The drilling at Ta Cuong sees Blackstone continue its aggressive exploration program with multiple rigs ***targeting*** MSV prospects analogous to the recently discovered Ban Chang prospect and the flagship Ban Phuc orebody. The Ta Cuong prospect has potential to add significant value to the Ta Khoa Nickel-Cu-PGE Project. Geology and Geological Interpretation·The late Permian Ta Khoa nickel-copper-sulfide deposits and prospects are excellent examples of the globally well-known and economically exploited magmatic nickel - copper sulfide deposits. The identified nickel and copper sulfide mineralisation within the project include disseminated, net texture and massive sulfide types. The disseminated and net textured mineralisation occurs within dunite adcumulate intrusions, while the massive sulfide veins typically occur in the adjacent metasedimentary wallrocks and usually associated with narrow ultramafic dykes. Drilling Techniques, Sampling and Assaying The VGS drill core is no longer available, but results were transcribed and tabulated by AMR. All AMR drilling (1996 to 2015) was conducted by a branch of the Vietnamese geological survey and mainly of NQ and HQ diameters. Drill core was not orientated All BSX drilling was of PQ, HQ and NQ diameters conducted by BPNM using GX-1TD and GK-300 diamond coring rigs and independent drilling contractor Intergeo using Longyear 38 and LF70 diamond coring rigs. Diamond core drilling was used to explore and define the Ban Phuc Disseminated Ni-Cu-PGE sulfide deposit (Ban Phuc DSS Deposit). The drilling was conducted in several major campaigns, firstly by the Vietnamese Geological Survey (VGS) 1959-1963, then Asian Mineral Resources (AMR) 1996-2015, and from 2019-2020 by Ban Phuc Nickel Mines (BPNM) initially through an option agreement with andmore recently a subsidiary of Blackstone Minerals Ltd (BSX). BSX drill core was cut and sampled in continuous half or quarter samples and submitted to SGS Hanoi for preparation then forwarded to ALS Geochemistry, Perth assay. Drilling and sampling was supervised by suitably qualified BPNM geologists. AMR drill core was half or quarter core sampled by core saw (fresh) or knife (for soft weathered core). The assay samples were of appropriate size for the style of mineralisation and core diameters. There is no information regarding duplicate sampling. ·BSX drill core was cut lengthwise by diamond core saw and continuous half or quarter core sample bagged for assay in intervals according to lithological criteria determined by BPNM geologists. Sampling intervals ranged from 0.05 m to 8.4 m with a mean of 1.4 m. Continuous remnant core has been retained in the trays for future reference or sampling as necessary. Sample weights for assay ranged from approx. 0.2 to 8 kg each with a mean of 2 kg. Quarter core sampling was considered sufficient for the nature of mineralisation. Duplicate quarter core samples were collected at a rate of c.1 per 25 samples. >90% of the core duplicates have 70% core duplicates having 90% of Pt and Pd standards were within 10% of the reference values. The anomalous Pt and Pd standard results were associated with 2 commercial standards with high Cr. Investigation revealed inconsistent bead structure during fluxing of the high Cr standards. While high Cr and S are not a feature of the Ban Phuc disseminated sulfide mineralisation some 108 pulps were selected for Pt and Pd check assays at Intertek, Perth; >90%of the check assays reported 70% check assays 0.1% S where S assays were available). For Ban Phuc Ni mineralisation without sulfide is not considered likely to be economically viable Metallurgical performance at various ore grades was compared using laboratory scale flotation concentrate grade vs. metal recovery curves. The data was produced from test work conducted on a range of composite and variability samples that broadly represent the deposit.Mining Factors or Assumptions ·The in-situ deposit Mineral Resource Model is the basis for the mining model used for Life of Mine (LOM) planning and assessment reporting. The Mineral Resource Model provided as the basis of the LOM planning assessment is the OK resource model prepared by BMGS. The model has cell dimensions of 10m (east) by 10m (north) by 5m (elevation). Metal grades were supplied with the model as estimated proportional grades using the OK estimation technique. An estimated marginal cut-off grade was established at 0.3% Ni using an assumed long-term nickel price of US$7.50/lb and a comparative final product price of US$6.53/lb for NCM Precursor. ·Royalties were calculated to be 5.3% NSR (net smelter return). Mining costs used for the mine schedule were US$2.0/t mined, confirmed by in-country knowledge and experience. Process plant recoveries were estimated from grade recovery curves developed from bulk and variability flotation test work. For purposes of the baseline mining model, an input process cost for the 4.0Mtpa option was estimated at approximately US$11/t milled. Using the identified marginal Cut-off Grade, the proportion of ore per parcel and nickel grade above the Cut-off Grade were included within the mining model to allow export of the parcelled (ore + waste) blocks to the pit optimiser for open pit optimisation.·Bulk mining (minimal selectivity) was assumed with 100t - 350t excavators feeding 50t - 140t rigid body haul trucks. A minimum mining width of 40m was assumed. Mining dilution and recovery were addressed in the mining block model through SMU analysis. Inferred Mineral Resources have been included for scoping study assessment within the LOM planning. No Ore Reserves are currently declared for the Ban Phuc DSS project. The proportion of Inferred Mineral Resource material accounts for 19% of potential mill feed. Mining Infrastructure requirements were assumed to be provided by the selected mining contractor with the mining performed on an outsourced basis. Grade control will be based on sampling from reverse circulation drilling spaced at approximately 15mE by 10mN with samples taken at 3.0 metre intervals downhole. All Grade Control sampling assays are assumed to be determined by fire assay on the mine site. Standard QAQC protocols will be applied which comprise of 1 in every 10 samples. Grade control drilling will precede ore identification and ore mark-out on a bench basis. Minimal infrastructure is required for the selected mining method.  Metallurgical Factors or Assumptions Metallurgical factors and scoping level process flowsheets have been developed from metallurgical test work programs on master composite samples obtained during the 2019 & 2020 exploration drill programs.

**Load-Date:** October 28, 2020

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Impact News Service

February 22, 2021 Monday

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**Body**

Canberra: Parliament of Australia has issued the following senate Hansard:

I rise this morning to speak in favour of the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021. This is an important piece of legislation which this chamber needs to consider, because for far too long the plight of Australia's iconic furry friend the koala has been ignored. Last summer's bushfires ripped through parts of the Australian bushland in a way that we'd never seen before. Sixty-one thousand koalas were killed and much of their habitat was destroyed. This piece of legislation seeks to stop the further destruction of the limited amount of koala habitat that is left. For far too long, precious koala habitat has been allowed to be destroyed due to mining, big property development, logging and other types destruction. Couple that with the destruction of last summer's bushfires, fuelled by the climate crisis, and Australian koalas now face extinction. It is just unthinkable that, on the east coast of New South Wales, Australia's koala could be extinct within the next 30 years. It is just unthinkable that this iconic creature, which right around the world is considered so emblematic of Australia's wildlife, bushland and environment, could be gone, to exist only in zoos as a reminder of what used to be. We need to act now and we need to act fast. The biggest threat to Australia's koalas is the destruction of their homes, their habitat. As less and less habitat is available we see the koalas moving closer and closer into urban areas. This puts them at further risk of harm and injury. When the bushfires ripped through the Australian ***forest***, bushland and scrub this time last year, the images of burnt koalas, dead koalas and injured wildlife went around the world and shocked people right across the globe, because it was just such a fundamental destruction of what Australia is known for.

Under the 22-year-old environment laws currently in place in this country, under the EPBC Act, koalas have lost almost one million hectares of critical habitat. Overall at least 7.7 million hectares of critical habitat have been destroyed, specifically for mining and development, over the last two decades—enough is enough. There is not much home left for the koala. We need to protect that which exists. Of course, this is an important issue not just for the koala; this is important for the rest of Australia's wildlife and native species too, because if we are to protect koala habitat it protects the homes of many other animals as well. For far too long we have simply let rip, let log, let dig, let destroy Australia's precious places and our environment. If you destroy the bushland, if you log ***forests***, you're taking away the very homes of these animals.

At present, despite how at risk these animals are, the government refuses to guarantee that not one more hectare of critical koala habitat will be lost, and that is shocking. When everybody knows—in the government, in the minister's office, in the department, amongst the experts and those who work carefully and considerably and hard every day to protect our wildlife—that koalas are facing extinction, how can the government continue to allow the destruction of habitat? This will fast-track the extinction of this iconic species.

Indeed, the government has done the exact opposite. Despite 61,000 koalas being killed last year, the environment minister has continued to sign off on, give approval to and give a green light to the destruction of even more koala habitat going forward—doing the exact opposite to what needs to be done. It is not good enough to want to stand and have a photo with the cute koala at Australia Zoo or at Taronga or a number of the other wildlife sanctuaries and then to turn around and to sign the death warrant of these creatures by allowing the destruction of their homes from big mining companies and developers.

The environment minister's job is to protect the environment, to make sure there is a check and a balance on those who just wish to just cut, dig and destroy senselessly. These koalas need the protection of this environment minister, and currently the environment minister has failed. The Threatened Species Commissioner, the expert and the key adviser to the minister herself, told this Senate in November last year that the biggest threat to koalas was habitat loss and the degradation and fragmentation of their homes.

The environment minister knows what she needs to do. The environment minister knows what needs to be done to save these koalas from extinction. The environment minister needs to stop approving the destruction of their habitat through mining, development and logging projects. The ongoing destruction of koala habitat through ***land*** clearing for ***agriculture***, development, mining and forestry is currently unchecked and has been going on like this for decades and decades. And now we have a situation where, unless we act today, there will be no koalas in 30 years time. Perhaps there will be a few in zoos, perhaps there will still be an opportunity for a politician to have their photo shoot with a cute and cuddly koala, but there won't be any living in the wild and there won't be any in our Australian bushland.

The New South Wales parliament last year was so exercised by this issue that they conducted their own inquiry. They found evidence, time and time again, that, unless koala habitat was protected, these animals will become extinct. It just beggars belief that no-one in this place, no-one in the government, is seizing the opportunity to do the right thing. Saving Australia's koalas is not just important for protecting our wildlife. It is important in our further challenge in tackling climate change—because, as more and more koala habitat is destroyed, less and less ***forest*** and bushland is protected, thus making climate change even worse.

Last summer's 'climate fires' were a wake-up call to the Australian community. They were a wake-up call for all of us. We were pretending climate change is something out there in the distant future, but it was right here on our doorstep. Canberra itself was engulfed in hazardous smoke for weeks and weeks on end. Sydney, Australia's biggest city, was engulfed in toxic smoke for weeks and weeks on end. Towns and communities throughout the eastern seaboard, southern Victoria, the Gippsland region and my home state of South Australia were devastated by the fury of the flames. And while we might be able to rebuild, reconstruct our homes and put our communities back together—although that takes time—our native animals are gone forever. The three billion native animals destroyed in this fury of fire destruction are gone forever.

There is very little Australian koala habitat left. All this bill is seeking to do is put in place a moratorium to stop the minister from being able to approve any more destruction of it. There should be no more bulldozing of the trees that koalas live in, no more logging of the trees and the bushland that koalas and their fellow species rely on, no more destruction of koala habitat for the sake of a quick buck for the mining industry and big property developers. For far too long, these big corporations have brushed away the long-term impact of destroying these important pockets of bushland. 'Oh, koalas can go and live somewhere else,' they say. As the minister signs on the dotted line, she says: 'Yes, you beauty, you can log there; you can mine there; you can bulldoze there,' expecting that the koalas will simply be able to pack up their bags and move next door. We need this country to get serious about protecting our environment and what is left of it.

We lead the world, shamefully, when it comes to our list of threatened species and those that are already on the extinct list. That's not a league table I want Australia on and neither do most Australians. The Australian people ask us to debate a lot of complex issues in this place. This isn't one of them; this is not a complex issue. This makes perfect sense. There's very little habitat left. If we want to save Australia's koalas from extinction, we need to protect their homes. We need to stop the chainsaws and stop the bulldozers. We need to protect our iconic species not just for their sake but for the sake of every other species that relies on native bushland, native scrub and protection from destruction. I commend the bill to the Senate.

I too rise to speak on the Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021, introduced by Senator Hanson-Young. I wish to acknowledge up-front her passion and deep interest in these issues. Having travelled as part of the Senate Environment and Communications References Committee to Kangaroo Island in the aftermath of the bushfires, I have seen her deep interest in this and her passion for addressing these issues.

When it comes to the legislation, though, I come back to the maiden speech I made in this place—that good intentions and passion alone don't necessarily make for good legislation. I do have some concerns with the amendments that have been proposed in this bill, which I will speak to now. As Senator Hanson-Young has said, the bill aims to introduce a moratorium on the clearing of koala habitat, and, if you go back to the EPBC Act and look at what critical habitat for vulnerable species, the koala in particular, is defined as, it's defined as any habitation that contains a food tree or a food source for koalas, so it's a fairly broad definition of what koala habitat is. The bill would prevent the minister from approving an action under the EPBC Act where that action consists of or involves the clearing of koala habitat. It also goes on to ***remove*** an exemption for regional ***forest*** agreements, which I'll come to a little later on. Specifically, section 18B refers to the concept of a significant impact on koalas as set out in the new section 527G and it applies this concept to section 18A of the EPBC Act. The effect then of section 18B in conjunction with 18A and 527G is that taking an action that has, will have or is likely to have a significant impact on koalas is prohibited. At the end of section 139 the bill goes on to insert a new subsection that has the effect of preventing the minister from approving an action consisting of or involving the clearing of koala habitat. As you'll recall, the definition of 'habitat' for vulnerable species, the koala in particular, is essentially any ***forest*** or other growth that has either emergent trees or trees that constitute a food source for koalas.

The concern in part for me comes back to my own state of South Australia. An exemplar is Kangaroo Island, to which, in the 1920s, a number of koalas, given that they are not native to Kangaroo Island, were introduced from Victoria. I think fewer than 20 were released on the island. They have bred extensively on Kangaroo Island. Before the fires of last year there were an estimated 50,000 koalas on Kangaroo Island, roughly half in native vegetation and roughly half in blue gum plantations. This immediately raises an issue with the prohibition in that, if the koalas have chosen to live in blue gum plantations because they provide a food source, then here we have a situation where what is essentially an introduced species to this island has chosen to live in and use as a food source a plantation timber, for which the natural expectation of somebody who's planted trees as a plantation is that they will be able to harvest those trees. But this prohibition would actually prevent a normal commercial activity of planting timbers for the purpose of harvesting because koalas have chosen to live in that area. So, fundamentally, there is a problem with the nature of the bill because it will interrupt not the logging of native ***forests*** or clearing of native areas but actually commercial operations that have seen a massive increase, through the presence of those trees, of a koala population.

Kangaroo Island was an interesting case even before the fires that went through last year and that were devastating to many landholders, property owners and wildlife because the koala population does not respond to environmental stress like kangaroos do. Scientists have studied them and made it clear that kangaroos, in the face of environmental stress, can actually regulate their population growth to adapt to those changing circumstances. What they've found with koalas is that koalas are not capable of that self-regulation, which means that over time they have created unsustainable pressures on the food sources on the island. This means they are literally eating themselves to starvation. There has been a long program, a long debate and discussion, in South Australia about how you deal with this burgeoning population. Culling is not an option. There has been some attempt at translocation back to the area where these koalas originally came from. Given that they are disease free—and certainly the only ones in South Australia and potentially nationwide that are disease free—it's a very good breeding stock to try to translocate. There have also been attempts at sterilisation. But importantly, as Senator Hanson-Young has indicated, the habitat that koalas use is also the habitat for other species. One of the great environmental concerns on Kangaroo Island is the overpopulation of koalas, which eat trees not just to the point where there is no more food for them to eat. If the trees are devoid of all leaves, they die, which means that the habitat for other native animals is actually being reduced. That has been a significant environmental concern in South Australia. Kangaroo Island is an exemplar of a case where there are reasons why this prohibition on the clearing of habitat has a commercial imperative. But there are also reasons why various controls may be required.

You can also go to other parts of South Australia. In the Adelaide Hills, for example, in the Mount Lofty Ranges, there is a population that is measured to be around 150,000 which is thriving. There are large contiguous ***forested*** areas and natural bushland, even down into the suburbs. In fact, the creek out the back of my own house has koalas that populate that and keep us awake at night with various territorial growling. But it indicates that there is a healthy population there, and this prohibition could prevent quite reasonable development of properties across a large swathe of area or pockets within that area that would have no material impact on koalas. So there are some fundamental concerns about the black-and-white nature of the prohibition which is placed in this bill.

The extant provisions recognise that there are areas which are complex. The guidelines published by the Department of the Environment, in relation to the EPBC Act, say:

The koala has one of the largest distributions of any terrestrial threatened species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). It occupies a variety of vegetation types … is capable of moving long distances and is variably affected by a range of threats. Determining significant impacts on the koala is therefore complex and varies between cases.

This shows that we do need to take account of the habitat of koalas and their population but a blanket ban is not the best way to manage that. There needs to be a scientific approach that understands the impact on the koala as well as other species, balancing that with developments—whether that be in industry or for housing or transport— and the authorities and minister need to be able to look at these case-by-case rather than being hamstrung by a blanket ban.

As the chamber would be aware, the EPBC Act is due for a reform and there are reforms underway. The Environment and Communications Committee reviewed late last year some of the first tranche of reforms to make it more effective, in terms of how we care for the environment and balance the needs of other parts of our society. It's worth pointing out that, in terms of the extant provisions, habitat protections and matters of ***land*** clearing are predominantly the responsibility of state governments. But, when it comes to threatened species, the EPBC Act does provide protection for threatened species and the koala is listed as one of those, particularly the combined populations of Queensland, New South Wales and the ACT, which are regarded as matters of national environmental significance.

So under that federal act, any action that's likely to have a significant impact on a matter of national environment significance, such as the koala, must receive approval from the government before it can proceed. In order to obtain approval, proposed developments are subject to an rigorous and transparent environmental assessment process under the EPBC Act. We heard a lot of evidence last year about the processes in that act and the fact that there are opportunities for improvement, and I would welcome those as we go forward. But at the heart of that act and those processes is the assumption and the principle that you treat the koala population, particularly on that east coast area, as a population of concern but you deal with each case according to its merits. I will come to the issue of the forestry agreements now, just in that context.

Between 2015 and 2017 the New South Wales Department of Primary Industries undertook a large-scale study on koala occupancy in north-east ***forests*** of New South Wales, including their response to timber harvesting. What they found was that koala occupancy was not influenced by timber harvesting intensity, time since harvesting, ***land*** tenure or landscape of harvesting or old growth ***forest*** extent. There were other factors sometimes associated with the forestry industry, but often not, that had a greater impact. So to have a blanket ban on exemptions for RFAs ignores what the science has collected, in terms of data.

So I am not denying that, particularly on the east coast, there is cause for concern, there is action that is required, but the substance of this bill and the operative measures which actually prevent—they have a hard prohibition—that don't allow the science for any particular business case to be considered when somebody comes for approval or, worse, in the case of something like Kangaroo Island, where there has been a commercial planting of trees that, by definition, have now become a habitat for koalas because they are a food source for koalas, would be that somebody who's made an investment to plant a plantation couldn't even harvest those trees because of the operation of this bill. So for those reasons, while I respect the good intentions and the depth of passion of Senator Hanson-Young, I cannot support this bill in the Senate.

I rise to speak to the bill introduced by Senator Hanson-Young to save the koala and to put a moratorium on clearing of koala habitat. The Environment Protection and Biodiversity Conservation Amendment (Save the Koala) Bill 2021 is an urgently needed bill. Our koalas face extinction by 2050. Make no mistake; it is the Liberals and Nationals sitting opposite us here, and the ones that sat opposite me in New South Wales, who are killing our koalas. It is your hands that have the blood of koalas on them.

I remember the joy of seeing my first koala in natural habitat. We used to frequently see these amazing and unique animals in our front yard in Port Macquarie during the day and hear them loudly grunting at night. But those days, sadly, are long gone. And this is a town which used to be the koala capital of New South Wales, if not Australia. If governments continue to make reckless, irresponsible and greedy decisions that keep pushing koalas to the brink of wipe-out, our future generations will only see them in museums, and that is an absolute tragedy.

Koalas across the state are being driven to extinction not by some natural phenomenon or some evolutionary phenomenon; they are being driven to extinction by rampant ***land*** clearing. They are being driven to extinction by human-made global warming. They are being driven to extinction by ecocide. The terrible reality is that where I see magnificent trees and beautiful bush with glossy black cockatoos, powerful owls, eastern water dragons and koalas, all the Liberals and Nationals and their political donors—big mining, big development and big ***agriculture***—see are dollar signs and a commodity to be ruthlessly used and abused. You are all environmental vandals.

The climate-induced bushfires of 2019 and 2020 destroyed more than 12 million hectares and killed more than a billion animals and devastated communities. The loss of koalas during and after New South Wales bushfires is one of the most significant biodiversity disasters in our history. Now, even when we have lost so much habitat and wildlife, even when swathes of our bushland and millions of animals have been destroyed, ***forests*** are being opened up for logging. This loss is made much worse, because of the disastrous New South Wales ***land*** clearing laws pushed by the Liberals to appease the Nationals that I and many others fought hard against. It's under these laws that 99 per cent of koala habitat can be chopped down. They have already resulted in a massive 13-fold increase in approvals and ***land*** clearing.

We already know that koala habitat is badly fragmented, making it even harder for the species to migrate and survive. New South Wales is leaving no stone unturned in making this even worse. They recently fast tracked the approval of the Brandy Hill quarry expansion, knowing full well that it will affect koalas and other endangered species such as the grey-headed flying fox. We know the Port Stephens koalas are at high risk of local extinction, yet they gave a green light for their destruction.

If you come further south, the Campbelltown local government area in south-western Sydney is unique as it supports a growing and chlamydia-free koala population in the Sydney Basin. But does the Liberal-National government give a damn? Of course they don't. Communities in south-west Sydney who care about these koalas are fighting the Lendlease Mount Gilead development in the Campbelltown LGA, which will destroy the current transit points of koalas between the Georges River and the Nepean River, and make it near impossible for koalas to travel between these river corridors.

The federal government has not lifted a finger to stop the destruction of koala habitat. In fact, you facilitated it. We know that only 10 per cent of the koala habitat cleared in New South Wales and Queensland between 2012 and 2017 was assessed by the federal government, despite national environmental laws requiring the protection of threatened species. Habitat clearing was again and again approved by states, and developers were not referred for assessment to any level of government. Surely these facts point to better and stronger oversight by the federal government, but, in the parallel universe that the Liberals and Nationals live in, they are doing the exact opposite. You want to hand over even more power to states. Your solution to this reckless destruction of the environment is the streamlining environmental approvals bill, which is much better described as the let's-kill-the-koalas-quickly bill. You want a one-stop-shop. You just want to fast track ***land*** clearing. You just want to fast track extinctions. I hope that the opposition and the crossbenchers care about these national treasures enough to support Senator Hanson-Young's bill to stop this major threat of ***land*** clearing and fragmentation facing koalas by putting a moratorium on clearing koala habitat. We will not be giving up our fight to save the planet or for all creatures, big and small, that call it home. I commend the bill to the Senate.

I'm not sure whether Senator McGrath desperately wants to stop me saying something in this place. I'll have to review my speech and try and work out whether there's something outrageous that I can say.

There is something about the politics of koalas that drives the National Party and the Liberal Party wild. I'm not sure what the hostility is to one of our favourite national creatures, but there's odd behaviour around koalas in this parliament and in the state legislatures. In fact it was just last year that the bloke who careers around New South Wales in a very untidy sort of way, the Deputy Premier and the leader of the Nationals party in New South Wales, threatened to split the coalition government in New South Wales over this very issue. In truth, he overstated the impact of what was a very bland set of changes, performed in regional communities, telling them something terrible was going to happen to their capacity to manage their own ***land***—which was absolutely untrue, in true National Party form—and then, of course, faded from the scene. Another Barilaro effort, where all the noise is made in regional communities—a lion in Gunnedah, Armidale, Coffs Harbour and Lismore but a mouse in Macquarie Street—folded. It does make you ask the question, rhetorically: what has the koala ever done to the Liberal and National parties? How much, indeed, can a koala bear?

The bill proposes an indefinite moratorium on clearing koala habitats. It is a not the approach the Labor Party would take in government. Our approach would be a more ***targeted*** and more temporary moratorium in places where the koala is listed as vulnerable only until the relevant policy instruments that are required are in place—a threatened species recovery plan and a national koala strategy. The Samuel review commenced in October 2019 and reported to parliament in 2020. It made 38 recommendations, including the immediate reduction of legally binding national environmental standards and filling the gaps between state and federal legislation.

While this bill would widen the gap between Commonwealth and state regulation and increase uncertainty, it is I think true that what is proposed here is unlikely to make its way into legislation. It's like some of the notices of motion that we see from time to time. It's an opportunity to put a bill with the word 'koala' in its title to a vote. There will be some social media presentations about this bill going through the parliament, but it won't in fact deal with the crisis that we're seeing in koala populations around Australia. Just like Bob Brown's convoy to Central Queensland this won't actually change the material facts on the ground for koalas. It's a big show for attention and donations, and in my view it undermines the actual effort to protect the environment.

There is a crisis in koala populations. It is estimated that in 1788 there were 10 million koalas on this continent. Since the bushfires, we have estimates that the koala population in New South Wales is down to about 36,000. It has been in dramatic decline since the bushfires. The Pilliga region once had a thriving population of koalas living on public ***land***. The population began to decline in dry conditions, deteriorating foliage quality and a lack of water. By 2014 the population in that region had decreased by 80 per cent. In 2019 no koalas could be found. Across New England the population has declined 75 per cent in a decade. In 2019 there are fewer than 2,000 koalas in the Culgoa, Moree and Gunnedah areas combined—and that was before the bushfires.

In evidence given to the Senate inquiry into the bushfires, which I had the privilege of chairing, we heard that more than a billion animals were killed in the bushfires, including 143 million mammals. The inquiry heard about the destruction on Kangaroo Island in South Australia. Right across the country there's a crisis in koala protection and in the koala population. It's almost a year after the bushfires. The Morrison government, during the election, offered a grab bag of policies. They were announced at a press conference—true to form—about saving koalas. They shared a Liberal branded Facebook ad saying they were protecting the koalas and restoring their habitat. Of course, since then, the koala population has gone down, not up. Since then, the crisis has deepened. There have been no solutions, just a press conference, an announcement and an ad from this government—no action at all.

I propose to conclude my remarks there and seek leave to continue my remarks.

Leave granted; debate adjourned.

**Load-Date:** February 23, 2021

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[***How human activity threatens the world’s carbon-rich peatlands***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61PN-C2H1-JDG9-Y1S1-00000-00&context=1516831)

Impact News Service

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**Length:** 1681 words

**Body**

Cologny: World Economic Forum has issued the following press release:

The wetland soils of the world's peatlands are rich in carbon. But they face a variety of threats, from wildfires to ***land***-use changes, that threaten to release this carbon. A new paper explores these risks and potential impacts into the future.

Peatlands are ecosystems unlike any other. Perpetually saturated, their wetland soils are inhospitable to many plants and trees, yet they are rich in carbon.Have you read?

Why the world's peatlands are key to stopping climate change Peatlands are under threat. Here's why we must act now to save them 5 ways to restore Indonesia’s tropical peatlands

But the world’s peatlands are under threat on multiple fronts. From a warming climate and rising sea levels through to ***land***-use change and wildfires, disturbing peatland ecosystems risks releasing their long-held carbon into the atmosphere.

In our recent paper, published in Nature Climate Change, we review the scientific literature and survey experts to explore the biggest risks to global peatlands and their potential impacts during this century and beyond.

Why are peatlands so carbon rich?

The key feature of peatlands soils is their saturation. Water excludes oxygen in the soil and plant roots need oxygen to function. This makes peatlands difficult environments for plants to survive.

As a result, high-latitude peatlands are dominated by sedges and mosses, which are well adapted to these “anoxic” conditions. Trees, meanwhile, find it harder to survive.

In tropical peatlands, though, a full canopy can develop above waterlogged peatland soils where trees have found strategies to cope with anoxia. One of these coping mechanisms is “adventitious roots” – roots that hang from branches before reaching the soil to get oxygen. Plants can often find a way to expand even in the most inhospitable of places.

Meanwhile, below ground, the lack of oxygen in the soil slows down all the processes that see microbes break down organic matter. Decomposition without oxygen produces methane, which is why peatlands are natural methane emitters.

Ultimately, the slowdown means that the carbon inputs to the soil – from plant photosynthesis – exceed the outputs from decomposition and so carbon accumulates in the soil. In other words, peatlands in pristine state are natural carbon “sinks”, because they take up carbon from the atmosphere.

This slow accumulation of carbon year after year in peatland soils over millennia and all over the world has resulted in deep peat deposits – sometimes over 10 metres in depth.

Overall, global peatlands contain around twice the carbon of all the world’s trees put together. And despite only covering 3% of the Earth’s ***land*** surface, peatlands store around 25% of the global soil carbon stock. These estimates vary – between around 400bn and 1,000bn tonnes of carbon in total – but the fact is that peatlands are massive carbon stores.

The ‘Cinderella’ ecosystem

Peatlands have historically been considered unproductive and barren landscapes – even unhealthy and dangerous. This has resulted in a drive to “improve” them – in other words, to drain them and make them into more “productive” landscapes that either provide humans with food or fuel.

Drainage allows oxygen back into the peat soils, leading to fast “aerobic” decomposition. As a result, drained peatlands generally become carbon sources and are also less able to hold water. Approximately 15% of the peatlands worldwide are considered to be in a degraded state – this increases to 80% for UK peatlands.

The draining of peatlands as a management practice neglects to acknowledge all of the ecosystem services they provide. This is not only in terms of carbon sequestration, but also in terms of biodiversity, the provision of water and food, and as culturally important landscapes and records of past environments.

Many people depend on a peatland upstream for their drinking water, for example. It is time to switch our perceptions of peatlands from being desolate, barren spaces to realising they provide multiple benefits for humans and life on Earth.

It is, perhaps, not as easy for humans to appreciate the importance and beauty of peatlands when compared to, say, ***forests***. But most of what goes on in a peatland happens underground and we are unable to see all those processes going on below. This is why the ecosystem has been termed the “Cinderella” ecosystem – as its beauty and benefits hidden for us to discover.

All it may take, however, is to crouch down to more closely inspect a sphagnum moss or a carnivorous plant to fall in love with peatlands.

Global warming and peatlands

There is still a lot of debate about how peatlands will respond to climate change. Fortunately, there is information stored in the peatland record itself, which we can extract to find out how peatlands have responded to climatic changes in the past.

Each year, as new layers of peat are deposited, the soil captures fragments of evidence on the environmental conditions of the time. These can be in the form of pollen, testate amoeba and carbon and oxygen isotopic ratios. Scientists can drill and extract a core through the soil to retrieve a timeline of past peat deposits.

These palaeoclimate studies indicate that high-latitude peatlands will likely increase their sink capacity with warming – that is, they will accumulate carbon more quickly as temperatures increase (assuming they are not degraded).

This would mean they are what we call a “negative feedback” – their response to warming has an effect that reduces further warming.

However, this is possibly only true at high latitudes, where warming will lead to longer growing season lengths and larger carbon inputs from photosynthesis. Microbial decomposition will also increase with warming, but data so far show that plant photosynthesis will increase even more.

This may not be the case in the tropics, although we cannot be sure of this as tropical peatlands are understudied. But our findings suggest that, overall, if peatlands are preserved, they may help us mitigate climate change.

Another issue is how climate will affect peatland distribution. The overall peatland carbon sink will be affected not just by how fast they accumulate carbon, but how expansive these ecosystems are.

Peatland extent will be affected by climate and, more specifically, it will be determined by having sufficient moisture to keep soils saturated. There is uncertainty about how the extent of peatlands will change in the future, but, like many other ecosystems, they are likely to shift their distribution northwards, if enough moisture is available.

Overall, climate change is likely to increase the carbon sink capacity of peatlands, especially at high latitudes, and change peatland distribution in ways we are not able to predict yet, so uncertainty remains.

The future of peatlands

It is not just climate change that will determine the future fate of peatlands. The graphic below shows some of the other agents of change that are also likely to play a role – including ***land*** use change, atmospheric pollution and fire.The main agents of change impacting the global peatland carbon balance globally.Numerous factors influence the world's peatlands.Image: Loisel et al. (2020)

In our recent paper, we gathered the opinion on peatland from experts to examine how the peatland carbon sink has changed during the Holocene (the last ~10,000 years), the Anthropocene (the recent past) and how it is likely to change in the future.

Expert opinions vary, but, overall, they expect that peatlands will shift from an overall carbon sink to a source this century – primarily due to the effect of climate change and human impacts in tropical peatlands.

However, one limiting factor in understanding how peatlands will change is that they are not currently included in the Earth system models (ESMs) that scientists use to make climate change projections.

This is because they generally are not seen as having an important role in the carbon cycle. Partly because peatlands are slow carbon sinks – it takes thousands of years to build up a peatland – but also they have often been considered “inert” carbon stores.

We now know, however, that these large carbon stores are not stable. For example, we have seen large peat fires in southeast Asia, Russia and other boreal areas, such as the UK. We also know that processes such as fire may mobilise peat carbon and release it back to the atmosphere.

We, therefore, need to consider peatlands in ESMs if better predictions of the fate of peatlands and climate change are to be made.

Challenges and opportunities

Recently, there has been growing interest among scientists and practitioners into nature-based climate solutions – ways to ***remove*** CO2 from the atmosphere through conservation, restoration or improved ***land*** management actions.

Research has highlighted the importance of peatlands as a key option. For example, one study estimates that the global greenhouse gas saving potential of peatland restoration – only counting peatlands that are negatively affected by ***land***-use change – is similar to the most optimistic sequestration potential from all ***agricultural*** soils. In other words, avoided ***emissions*** from peatlands may well be one of the most important natural climate solutions available to us.

However, the transfer of peat carbon dynamics into the climate policy and management realm is still at a nascent stage. In addition, contradictory studies have already started to emerge – in particular surrounding recent changes to the carbon accumulation potential of peatlands.

We need a better understanding of the carbon dynamics of peatlands – particularly for tropical peatlands – to ensure sound ***land***-use decisions and anticipate future changes in carbon sequestration of direct relevance to policy.

The take-home message from our paper is that peatlands are essential ecosystems – they provide us with water and hold vast amounts of carbon that we want to keep intact. We, therefore, have a responsibility to find ways of managing them that works for both humans and the planet.

**Load-Date:** January 7, 2021

**End of Document**



[***Endangered and Threatened Species: Reclassification of the Red-Cockaded Woodpecker from Endangered to Threatened with a Section 4(d) Rule***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:611M-K9S1-F0YC-N12V-00000-00&context=1516831)

Impact News Service

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**Body**

Washington, DC: This Proposed Rule document was issued by the Fish and Wildlife Service (FWS)

Action

Proposed rule.Summary

We, the U.S Fish and Wildlife Service (Service), propose to reclassify the red-cockaded woodpecker (Dryobates (= Picoides) borealis) as a threatened species with a rule issued under section 4(d) of the Endangered Species Act of 1973 (Act), as amended. If we finalize this rule as proposed, it would reclassify the red-cockaded woodpecker from endangered to threatened on the List of Endangered and Threatened Wildlife (List). This proposal is based on a thorough review of the best available scientific and commercial data, which indicate that the species' status has improved such that it is not currently in danger of extinction throughout all or a significant portion of its range. We are also proposing a rule under the authority of section 4(d) of the Act that provides measures that are necessary and advisable to provide for the conservation of the red-cockaded woodpecker. In addition, we correct the List to reflect that Picoides is not the current scientifically accepted generic name for this species. We seek information, data, and comments from the public regarding this proposal.Dates

We will accept comments received or postmarked on or before December 7, 2020. Comments submitted electronically using the Federal eRulemaking Portal (see ADDRESSES, below) must be received by 11:59 p.m Eastern Time on the closing date. We must receive requests for public hearings, in writing, at the address shown in FOR FURTHER INFORMATION CONTACT by November 23, 2020.Addresses

You may submit comments by one of the following methods:

(1) Electronically: Go to the Federal eRulemaking Portal: [*http://www.regulations.gov*](http://www.regulations.gov) In the Search box, enter FWS-R4-ES-2019-0018, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rule box to locate this document. You may submit a comment by clicking on “Comment Now!”

(2) By hard copy: Submit by U.S mail or hand-delivery to: Public Comments Processing, Attn: FWS-R4-ES-2019-0018, U.S Fish and Wildlife Service, MS: JAO/1N, 5275 Leesburg Pike, Falls Church, VA 22041-3803.

We request that you send comments only by the methods described above. We will post all comments on [*http://www.regulations.gov*](http://www.regulations.gov) This generally means that we will post any personal information you provide us (see Information Requested, below, for more information).

Availability of supporting materials: This proposed rule and supporting documents (including the species status assessment report and references cited) are available at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018 and at the Southeast Regional Office (see FOR FURTHER INFORMATION CONTACT).For Further Information Contact

Aaron Valenta, Chief, Division of Restoration and Recovery, U.S Fish and Wildlife Service, Southeast Regional Office, 1875 Century Boulevard, Atlanta, GA 30345; telephone 404-679-4144. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.Supplementary InformationExecutive Summary

Why we need to publish a rule. Under the Act, a species may warrant reclassification from endangered to threatened if it no longer meets the definition of an endangered species. The red-cockaded woodpecker is listed as endangered, and we are proposing to reclassify it as threatened because we have determined it is no longer in danger of extinction throughout all or a significant portion of its range. However, we have determined that the species meets the definition of a threatened species, in that it is in danger of extinction in the foreseeable future throughout all of its range. We may only list, reclassify, or delist a species by issuing a rule to do so; therefore, for the red-cockaded woodpecker, we must first publish a proposed rule in the Federal Register to reclassify the species and request public comments on the proposal. Furthermore, take prohibitions of section 9 of the Act can only be applied to threatened species by issuing a section 4(d) rule. Finally, we are changing the scientific name of the red-cockaded woodpecker in the List of Endangered and Threatened Wildlife from Picoides borealis to Dryobates borealis, and such action can only be taken by issuing a rule.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species based on any one or a combination of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. The factors for downlisting a species (changing its status from endangered to threatened) are the same as for listing it. We have determined that the red-cockaded woodpecker is no longer at risk of extinction and, therefore, does not meet the definition of endangered, but it is still affected by the following current and ongoing stressors to the extent that the species meets the definition of a threatened species under the Act:

Lack of suitable roosting, nesting, and foraging habitat due to legacy effects from historical logging, incompatible ***forest*** management, and conversion of ***forests*** to urban and ***agricultural*** uses (Factor A). Fragmentation of habitat, with resulting effects on genetic variation, dispersal, and connectivity to support demographic populations (Factor A). Stochastic events such as hurricanes, ice storms, and wildfires, exacerbated by the environmental effects of climate change (Factor E). Small populations (Factor E).

We are also proposing a section 4(d) rule. When a species is listed as threatened, section 4(d) of the Act allows for the issuance of regulations that are necessary and advisable to provide for the conservation of the species. Accordingly, we are proposing a 4(d) rule for the red-cockaded woodpecker that would, among other things, prohibit incidental take associated with actions that would result in the further loss or degradation of red-cockaded woodpecker habitat, including impacts to cavity trees, actions that would harass red-cockaded woodpeckers during breeding season, and use of insecticides near clusters. The section 4(d) rule would also prohibit incidental take associated with the installation of artificial cavities and inspections of cavity contents, unless covered under a section 10(a)(1)(A) permit. The section 4(d) rule would also, among other things, except from prohibitions incidental take associated with conservation or habitat restoration activities carried out in accordance with a Service- or State-approved management plan providing for red-cockaded woodpecker conservation, incidental take associated with red-cockaded woodpecker management and military training activities on Department of Defense installations with a Service-approved integrated natural resources management plan, certain actions that would harm or harass red-cockaded woodpeckers during breeding season associated with existing infrastructure that are not increases in the existing activities, and activities authorized by a permit under § 17.32

Peer Review. In accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of six appropriate specialists regarding the species status assessment (SSA) report that informed this proposed rule. The purpose of peer review is to ensure that our reclassification determination is based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise in: (1) The life history and population dynamics of the red-cockaded woodpecker; (2) fire ecology and ***forest*** habitat conditions; and (3) conservation management.Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments and information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested party concerning this proposed rule.

We particularly seek comments on:

(1) Information concerning the biology and ecology of the red-cockaded woodpecker.

(2) Relevant data concerning any stressors (or lack thereof) to the red-cockaded woodpecker, particularly the effects of habitat loss, small populations, habitat fragmentation, and hurricanes and other severe natural events.

(3) Current or planned activities within the geographic range of the red-cockaded woodpecker that may negatively impact or benefit the species.

(4) Reasons why we should or should not reclassify the red-cockaded woodpecker from an endangered species to a threatened species under the Act (16 U.S.C 1531 et seq.).

(5) Information about current or proposed ***land*** management plans and conservation plans for the red-cockaded woodpecker, and whether they may negatively impact or benefit the species, including the likelihood of such plans and their associated management activities persisting into the future.

(6) Information on regulations that are necessary and advisable for the conservation and management of the red-cockaded woodpecker and that the Service can consider in developing a 4(d) rule for the species, including whether the measures outlined in the proposed 4(d) rule are necessary and advisable for the conservation of the red-cockaded woodpecker. We particularly seek comments concerning:

(a) The extent to which we should include any of the section 9 prohibitions in the 4(d) rule, including whether there are additional activities or management actions that should be prohibited or excepted from the prohibitions for incidental take of the red-cockaded woodpecker;

(b) Whether it is appropriate to prohibit use of insecticides and herbicides on standing pine trees within 0.50 mile from the center of an active cavity tree cluster, including whether the spatial area covered by this prohibition is appropriate;

(c) Whether it is appropriate to prohibit operations conducted near active cavity trees that render cavity trees unusable to red-cockaded woodpeckers, and what types of operations and actions should be included in this prohibition;

(d) Whether any other forms of take should be excepted from the prohibitions in the 4(d) rule, including activities that should be excepted from the prohibitions for incidental take of the red-cockaded woodpecker once a property is being managed in accordance with a Service- or State-approved management plan, and what factors should be included in a Service- or State-approved management plan;

(e) What additional conditions, if any, should be placed upon State-approved management plans such that they provide adequate protection to red-cockaded woodpeckers, for example, the type and extent of monitoring and reporting to the Service;

(f) Whether an exception should be made for habitat regeneration activities without a Service- or State-approved management plan, and what limiting conditions should be placed on such activities;

(g) Whether it is appropriate to except from the prohibitions red-cockaded woodpecker management and military training activities on Department of Defense installations with a Service-approved integrated natural resources management plan;

(h) Whether the installation of artificial cavities should be excepted from the prohibitions for incidental take of red-cockaded woodpecker for individuals who have completed training and have achieved a certain level of proficiency, and what that training and proficiency should be; and,

(i) Whether there are additional provisions the Service may wish to consider for the 4(d) rule in order to conserve, recover, and manage the red-cockaded woodpecker. Please include sufficient information (such as scientific journal articles, or other credible publications) to allow the Service to verify any scientific or commercial information you include.

(7) Whether the red-cockaded woodpecker warrants delisting.

Please note that submissions merely stating support for or opposition to the listing action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made “solely on the basis of the best scientific and commercial data available.”

You may submit your comments and materials concerning this proposed rule by one of the methods listed in ADDRESSES. We request that you send comments only by the methods described in ADDRESSES.

If you submit information via [*http://www.regulations.gov*](http://www.regulations.gov), your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via hard copy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on [*http://www.regulations.gov*](http://www.regulations.gov)

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on [*http://www.regulations.gov*](http://www.regulations.gov), or by appointment, during normal business hours, at the U.S Fish and Wildlife Service, Southeast Regional Office (see FOR FURTHER INFORMATION CONTACT).Public Hearing

Section 4(b)(5)(E) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in DATES. Such requests must be sent to the address shown in FOR FURTHER INFORMATION CONTACT. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the Federal Register at least 15 days before the hearing.Previous Federal Actions

The red-cockaded woodpecker was listed as endangered on October 13, 1970 (35 FR 16047) under the Endangered Species Conservation Act of 1969, and received Federal protection with the passage of the Endangered Species Act in 1973. The most recent revision to the red-cockaded woodpecker recovery plan was released on January 27, 2003 (USFWS 2003, entire; see 68 FR 13710, March 20, 2003). The latest 5-year review was completed on October 5, 2006 (USFWS 2006 entire); that 5-year review did not recommend changing the classification of the red-cockaded woodpecker. However, since the 5-year review, we have acquired new information and conducted a thorough analysis, documented in an SSA report (USFWS 2020, entire). We also initiated another 5-year review for the species on August 6, 2018 (83 FR 38320); because we have determined the species now meets the definition of a threatened species under the Act, this proposed rule will equate to our 5-year review.Background

A thorough review of the taxonomy, life history, ecology, and overall viability of the red-cockaded woodpecker is presented in the SSA report (USFWS 2020, entire; available at [*https://www.fws.gov/southeast*](https://www.fws.gov/southeast)/ and at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018). Below is a summary of the information presented in the SSA report. For further details, please refer to the SSA report.Species Description and Needs

The red-cockaded woodpecker is a territorial, non-migratory bird species that makes its home in mature pine ***forests*** in the southeastern United States. Once a common bird distributed contiguously across the southeastern United States, the red-cockaded woodpecker's rangewide estimates made around the time of listing in 1970 indicated a decline to fewer than 10,000 individuals (approximately 1,500 to 3,500 active clusters; an aggregate of cavity trees used by a group of woodpeckers for nesting and roosting) in widely scattered, isolated, and declining populations (Jackson 1971, pp. 12-20; Jackson 1978, entire; USFWS 1985, p. 22; Ligon et al. 1986, pp. 849-850).

Due to changes in how red-cockaded woodpecker populations have been defined and surveyed over the years and with more comprehensive surveys over time, it is difficult to make accurate comparisons today with the species' status when it was listed. The species continued to decline even after listing until the early-1990s. However, by 1995, the red-cockaded woodpecker population had increased to about 4,694 active clusters or active territories rangewide (Costa and Walker 1995, p. 86). Today, the Service's conservative estimate is about 7,800 active clusters rangewide (USFWS 2020, pp. 14, 106-108), between 2 and 5 times the number of clusters at the time of listing.

Red-cockaded woodpeckers were once common throughout open, fire-maintained pine ecosystems, particularly longleaf pine that covered approximately 92 million acres before European settlement (Frost 1993, p. 20). The birds inhabited the open pine ***forests*** of the Southeast from New Jersey, Maryland, and Virginia to Florida, and west to Texas and north to portions of Oklahoma, Missouri, Tennessee, and Kentucky (Jackson 1971, entire). Original pine ***forests*** were old and open, and contained a structure dominated by two layers, a canopy and diverse herbaceous ground cover, maintained by frequent low-intensity fire (Brockway et al. 2006, pp. 96-98). Both the longleaf pine and other open pine ecosystems were eliminated from much of their original range because of early (1700s) European settlement, widespread commercial timber harvesting, and the naval stores/turpentine industry (1800s). Early to mid-1900 commercial tree farming, urbanization, and ***agriculture*** contributed to further declines. Much of the remaining habitat is very different from the vast, historical pine ***forests*** in which the red-cockaded woodpecker evolved. The second growth longleaf pine ***forests*** of today, rather than being dominated by centuries-old trees as the original ***forests*** were, are just reaching that age (90-100 years) required to meet all the needs of the red-cockaded woodpecker. Furthermore, in many cases, the absence of fire has caused the original open savannahs to degrade into dense pine/hardwood ***forest***. Much of today's ***forest*** is young and dense, and dominated by loblolly pine, with a substantial hardwood component and little or no herbaceous groundcover (Noel et al. 1998, entire; Frost 2006, pp. 37-38).

Nesting and roosting habitat of red-cockaded woodpeckers varies across the species' range. The largest populations tend to occur in the longleaf pine woodlands and savannahs of the East Gulf Coastal Plain, South Atlantic Coastal Plain, Mid-Atlantic Coastal Plain, and Carolina Sandhills (Carter 1971, p. 98; Hooper et al. 1982, entire; James 1995, entire; Engstrom et al. 1996, p. 334). The shortleaf/loblolly ***forests*** of the Piedmont, Cumberlands, and Ouachita Mountain regions (Mengel 1965, pp. 306-308; Sutton 1967, pp. 319-321; Hopkins and Lynn 1971, p. 146; Steirly 1973, p. 80) are another important habitat type. Red-cockaded woodpeckers also occupy a variety of additional pine habitat types at the edges of their range, including slash (Pinus elliottii), pond (P. serotina), pitch (P. rigida), and Virginia pines (P. virginiana) (Steirly 1957, entire; Lowery 1974, p. 415; Mengel 1965, pp. 206-308; Sutton 1967, pp. 319-321; Jackson 1971, pp. 12-20; Murphy 1982, entire). Where multiple pine species exist, red-cockaded woodpeckers appear to prefer longleaf pine (Lowery 1974, p. 415; Hopkins and Lynn 1971, p. 146; Jackson 1971, p. 15; Bowman and Huh 1995, pp. 415-416).

The red-cockaded woodpecker is a relatively small woodpecker. Adults measure 20 to 23 centimeters (8 to 9 inches) and weigh roughly 40 to 55 grams (1.5 to 1.75 ounces) (Jackson 1994, p. 3; Conner et al. 2001, pp. 53-54). Both male and female adult red-cockaded woodpeckers are black and white with a ladder back and large white cheek patches. These cheek patches distinguish red-cockaded woodpeckers from all other woodpeckers in their range. The red “cockade” of the species' common name is actually a tiny red streak on the upper cheek of males that is very difficult to see in the field.

Red-cockaded woodpeckers were first described as Picus borealis (Vieillot 1807, p. 66). The species' English common name is a reference to the several red feathers on the cheek of males, which are briefly displayed when the male is excited (Wilson 1810, p. 103). The original rule identifying the red-cockaded woodpecker as an endangered species (35 FR 16047; October 13, 1970) listed its scientific name as Dendrocopus borealis, based on the American Ornithological Union (AOU) 1946 22nd supplement to the 4th AOU checklist edition (AOU 1947, p. 449). The AOU 6th edition (AOU 1982, p. 10CC) classified the species as Picoides borealis, the scientific name under which the red-cockaded woodpecker is currently identified in the Federal List of Endangered and Threatened Wildlife (List). The AOU has since merged with the Cooper Ornithological Society and is now known as the American Ornithological Society (AOS). In the recent 59th supplement to the AOS' checklist of North American birds, the AOS Committee on Classification and Nomenclature (Committee) changed the classification of Picoides borealis to Dryobates borealis (Chesser et al. 2018, pp. 798-800). In doing so, the Committee considered, among other data, results of phylogenetic analyses with nuclear and mitochondrial DNA (Weibel and Moore 2002a, entire; Weibel and Moore 2002b, entire; Winkler et al. 2014, entire; Fuchs and Pons 2015, entire; Shakya et al. 2017, entire) indicating that the genus Picoides was not monophyletic (descended from a common evolutionary ancestor or ancestral group). As a result, the genus Picoides was retained for the American three-toed woodpecker (P. dorsalis) and the black-backed woodpecker (P. arcticus), but all other North American woodpeckers formerly in Picoides were transferred to Dryobates. We accept the change of the red-cockaded woodpecker's classification from Picoides borealis to Dryobates borealis, and in this rulemaking, we amend the scientific name to match the currently accepted AOS nomenclature.

Red-cockaded woodpeckers live in groups that share, and jointly defend, territories throughout the year. Group living is a characteristic of their cooperative breeding system. In cooperative breeding systems, some mature adults forego reproduction and instead assist in raising the offspring of the group's breeding male and female (Emlen 1991, entire). In red-cockaded woodpecker groups, these helpers are typically male, and participate in incubation, feeding, and brooding of nestlings and in feeding of fledglings, as well as territory defense, nest defense, and cavity excavation (Lennartz et al. 1987, entire). A potential breeding group may consist of zero to as many as five helpers, but most potential breeding groups consist of only a breeding pair plus one to two helpers. A red-cockaded woodpecker group occupying and defending its territory usually consists of a potential breeding group. A red-cockaded woodpecker group in about 10 percent of cases consists of single-male that defends its territory while awaiting an adult breeding female. Red-cockaded woodpeckers are highly monogamous (Haig et al. 1994b, entire). Group living, however, strongly affects population dynamics. While not actively breeding themselves, helpers provide a pool of replacement breeders and thereby act as a buffer between mortality and productivity. In other words, the number of groups within a red-cockaded woodpecker population is not strongly affected by either productivity or mortality in the previous year. Instead, the number of helpers is affected by these variables, while the number of potential breeding groups remain constant.

Young birds either disperse in their first year or remain on the natal territory and become a helper. First-year dispersal is the dominant strategy for females, but both strategies are common among males (Walters et al. 1988, pp. 287-301; Walters and Garcia 2016, pp. 69-72). Male helpers may become breeders by inheriting breeding status on their natal territory or by dispersing to fill a breeding vacancy at another territory (Walters et al. 1992, p. 625). When helpers move, it is usually to an adjacent or nearby territory; they rarely disperse across more than two territories (Kesler et al. 2010, entire). Female helpers almost never inherit the breeding position on their natal territory, instead relying on dispersal to neighboring territories to become breeders. Although some young birds disperse long distances (more than 100 kilometers (km) in a few cases; Conner et al. 1997c, entire; Ferral et al. 1997, entire; Costa and DeLotelle 2006, pp. 79-83), typical dispersal distance of juvenile females is only two territories from the natal site, with 90 percent dispersing one to four territories from the natal site (Daniels 1997, pp. 59-61; Daniels and Walters 2000a, pp. 486-487; Kesler et al. 2010, entire). Juvenile males are even more sedentary; about 70 percent of males remain on their natal territory or an immediately adjacent territory at age one, mostly as helpers with a few as breeders (Walters 1991, pp. 508-510; Daniels 1997, p. 66; Kesler et al. 2010, pp. 1339-1340; Conner et al. 2001 p. 143).

Red-cockaded woodpeckers are unique among North American woodpeckers in that they nest and roost in cavities they excavate in living pines (Steirly 1957, p. 282; Jackson 1977, entire). Cavities are an essential resource for red-cockaded woodpeckers throughout the year, because the birds use them for roosting year-round, as well as nesting seasonally. Each individual in a group has its own roost cavity, and the group usually nests in the breeding male's cavity. The aggregation of active and inactive cavity trees within the area defended by a single group is termed the cavity tree cluster (Conner et al. 2001, p. 106). This aggregation of cavity trees is dynamic, changing in shape as new cavity trees are added through excavation and existing cavity trees are lost to death or a neighboring group. Excavation of cavities in live pines is an extremely difficult task, making a cluster of cavity trees an extremely valuable resource. Expansion into new territories, therefore, happens more frequently through “budding,” or the splitting of an existing territory with cavity trees into two, rather than “pioneering,” or the construction of a new cavity tree cluster.

The development of techniques to construct artificial cavities (Copeyon 1990, entire; Allen 1991, entire) offset the lack of natural cavities and provided managers a new tool to greatly increase cavity availability, especially after storms. Red-cockaded woodpeckers readily adopt these artificial cavities. Thousands of artificial cavities have been installed since the early 1990s, and most populations are currently dependent on the installation and maintenance of artificial cavities for their viability.

Red-cockaded woodpeckers require open pine woodlands and savannahs with large, old pines for nesting and roosting. Old pines are required as cavity trees because cavity chambers must be completely within the heartwood to prevent pine resin in the sapwood from entering the chamber (Conner et al. 2001, pp. 79-155); a tree must be old and large enough to have sufficient heartwood to contain a cavity. In addition, old pines have a higher incidence of the heartwood decay that greatly facilitates cavity excavation. Cavity trees must be in open stands with little or no hardwood midstory and few or no overstory hardwoods. Hardwood encroachment on cavity trees resulting from fire suppression is a well-known cause of cluster abandonment.

Fire suppression also affects foraging. Over 75 percent of the red-cockaded woodpecker's diet consists of arthropods. Individuals generally capture arthropods on and under the outer bark of live pines and in dead branches of live pines. A large proportion of the arthropods on pine trees crawl up into the trees from the ground, which implies the condition of the ground cover is an important factor influencing abundance of prey for red-cockaded woodpecker (Hanula and Franzreb 1998, entire). The density of pines has a negative relationship with arthropod abundance and biomass, likely due at least in part to the negative effect of pine density on ground cover, from which some of the prey comes (Hanula et al. 2000, entire). Arthropod abundance and biomass also increase with the age and size of pines (Hooper 1996, entire; Hanula et al. 2000, entire), which is another reason older pines are so critical to this species. Accordingly, suitable foraging habitat generally consists of mature pines with an open canopy, low densities of small pines, a sparse hardwood or pine midstory, few or no overstory hardwoods, and abundant native bunchgrass and forb groundcovers. Frequent fire likely increases foraging habitat quality by reducing hardwoods and by increasing the abundance and perhaps nutrient value of prey (James et al. 1997, entire; Hanula et al. 2000, entire; Provencher et al. 2002, entire). Thus, frequent growing season fire may be critical in providing red-cockaded woodpeckers with abundant prey.

Home ranges of red-cockaded woodpeckers vary from 40.5 to 161.9 hectares (ha) (100 to 400 acres (ac)) per group, depending on the quality of foraging habitat. Red-cockaded woodpecker groups in high-quality habitat, particularly old growth or restored, fire-maintained habitat, exhibit much smaller home range and territory sizes than groups in fire-suppressed habitat (Nesbitt et al. 1983, entire; Engstrom and Sanders 1997, entire). The fitness of red-cockaded woodpecker groups also increases where foraging areas are burned regularly, resulting in sparse hardwood midstory and an abundant grass and forb groundcover. Given the historical loss of significant portions of its native habitat, and generations of fire suppression degrading remaining old growth and new second-growth habitat, aggressive management of habitat through prescribed burning and other vegetation manipulation is key to the conservation strategy of red-cockaded woodpeckers. In addition, the small amount of old growth habitat that remains still has potential to attract woodpeckers if prescribed burning and other tools are deployed to reduce the midstory; therefore, these habitats should also be aggressively managed.

Currently, red-cockaded woodpeckers are distributed largely as discrete populations, with large gaps of unoccupied ***land*** between. An improvement from the species' status at the time of listing, these gains are due to intensive management implemented beginning in the 1990s. Except in rare instances, these populations remain dependent on conservation actions, such as prescribed fire, ***forest*** management with compatible silviculture, placement and maintenance of artificial cavities within existing clusters, creation of new recruitment clusters using artificial cavities and translocation, and monitoring of population and habitat conditions.Summary of Stressors and Conservation Measures Affecting the Species

Section 4(a)(1) of the Act directs us to determine whether any species is an endangered species or a threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. The factors for downlisting a species (changing its status from endangered to threatened) are the same as for listing it.

In the SSA report, we review the factors (i.e , threats, stressors) that could be affecting the red-cockaded woodpecker now or in the future. However, in this proposed rule, we will focus our discussion on those factors that could meaningfully impact the status of the species. Below is a summary of those factors. The results of the SSA report are discussed later in this proposed rule. For further information, see the SSA report (USFWS 2020, entire).

The primary risk factor (i.e , stressor) affecting the status of the red-cockaded woodpecker remains the lack of suitable habitat (Factor A). Wildfire, pine beetles, ice storms, tornadoes, hurricanes, and other naturally occurring disturbances that destroy pines used for cavities and foraging are stressors for the red-cockaded woodpecker (Factor E), especially given the high number of very small woodpecker populations (Factor E) (USFWS 2020, pp. 38-39, 81-83, 103, 119-127). Increases in number and severity of major hurricanes (Bender et al. 2010, entire; Knutson et al. 2010, entire; Walsh et al. 2014, pp. 41-42), is expected to increase in response to global climate change, and this could also disproportionately affect the smaller, less resilient woodpecker populations (Factor E). With rare exception, the vast majority of red-cockaded woodpecker populations remain dependent on artificial cavities due to the absence of sufficient old pines for natural cavity excavation and habitat treatments to establish and maintain the open, pine-savannah conditions favored by the species (Factor E). These populations will decline without active and continuous management to provide artificial cavities and to sustain and restore ***forest*** conditions to provide suitable habitat for natural cavities and foraging similar to the historical conditions (Conner et al. 2001, pp 220-239, 270-299; Rudolph et al. 2004, entire).Habitat Loss and Degradation

The primary remaining threats to the red-cockaded woodpecker's viability have the same fundamental cause: Lack of suitable habitat. Historically, the significant impacts to red-cockaded woodpecker habitat occurred as a result of clearcutting, incompatible ***forest*** management, and conversion to urban and ***agricultural*** ***lands*** uses. These impacts have been significantly curtailed and replaced by beneficial conservation management that sustains and increases populations; however, stressors caused by adverse historical practices still linger, including insufficient numbers of cavities, low numbers of suitable old pines, habitat fragmentation, degraded foraging habitat, and small populations. These lingering impacts can negatively affect the ability of populations to grow, even when populations are actively managed for growth, as the carrying capacity of suitable ***forest*** areas across much of the range can be quite low. However, restoration activities such as prescribed fire and strategic placement of recruitment clusters can reduce gaps between populations and increase habitat and population size toward current carrying capacity. These activities are occurring across the range of the red-cockaded woodpecker on properties actively managed for red-cockaded woodpecker conservation.

Currently, stressors to the species resulting from exposure to habitat modification or destruction are minimal, especially when compared to historical levels. Periodically, military training on Department of Defense installations requires clearing of red-cockaded woodpecker habitat for construction of ranges, expansion of cantonments, and related infrastructure, but these installations have management plans to sustain and increase red-cockaded woodpecker populations. In addition, silvicultural management on Federal, State, and private ***lands*** also occasionally results in temporary impacts to habitat; for example, red-cockaded woodpecker habitat may be unavoidably, but temporarily, adversely affected in old, even-aged loblolly pine stands that require regeneration prior to stand senescence to sustain a matrix of future suitable habitat for a net long-term benefit. Similarly, red-cockaded woodpecker habitat may be temporarily destroyed in areas where offsite loblolly, slash, or other pines are removed and replaced by the more fire-tolerant native longleaf pine. However, the net result of these activities is a long-term benefit, as the goal is to restore these areas to habitat preferred by woodpeckers.Natural Disturbances

Wildfire, pine beetles, ice storms, tornadoes, and hurricanes are naturally occurring disturbances that destroy pines used for cavities, with subsequent reductions to population size unless management actions are taken to reduce or ameliorate adverse impacts by providing artificial cavities, reducing hazardous fuels, and restoring ***forests*** to suitable habitat following these events. These disturbances can also destroy or degrade foraging habitat and cause direct mortality of woodpeckers. Small populations are the most vulnerable to these disturbances. See the SSA report for more information about these natural disturbances (USFWS 2020, pp. 119-127).

Habitat destruction caused by hurricanes is the most acute and potentially catastrophic disturbance because hurricanes can impact entire populations. According to the SSA report, of the 124 current demographic populations, about 63 populations in the East Gulf Coastal Plain, West Gulf Coastal Plain, the lower portion of the Upper West Gulf Coastal Plain, and Florida Peninsula ecoregions are vulnerable to potential catastrophic impacts of hurricanes, particularly major hurricanes. Most (56 populations; 89 percent) of these 63 populations are identified as low or very low resiliency in the SSA report (see Summary of the SSA Report, below), which means they face a significant risk from hurricanes. In addition, the frequency and intensity of Atlantic basin hurricanes, particularly major Category 4 and 5 storms, are expected to increase in response to global climate change during the 21st century (Bender et al. 2010, entire; Knutson et al. 2010, entire; Walsh et al. 2014, pp. 41-42), although the location and frequency of future storms affected by climate change relative to particular red-cockaded woodpecker populations cannot be precisely predicted. While larger populations (greater than 400 active clusters) are the most likely to withstand a strike by a major hurricane without extirpation (e.g , Hooper et al. 1990, entire; Hooper and McAdie 1995, entire; Watson et al. 1995, entire), smaller populations are more vulnerable to individual hurricanes, as well as to the effects of recurring storms depleting cavity trees and foraging habitat with reductions in population size. However, these populations may be able to withstand and persist after hurricanes if biologists and ***land*** managers implement prompt, effective post-storm recovery actions, such as installing artificial cavities, reducing hazardous fuels, and restoring ***forests*** to suitable habitat. Such actions have been occurring after storm events for managed populations, such as the quick response after Hurricane Michael in October 2018.Conservation Management

The reliance on artificial cavities and active habitat management is not just restricted to post-hurricane recovery efforts. With the potential exception of several ecologically unique populations in pond pine and related habitat on organic soils in northeast North Carolina, none of the current or estimated future populations is capable of naturally persisting without ongoing management, for reasons discussed previously. Fortunately, most sites have active management, such as prescribed fire, artificial cavity installation, and habitat restoration to maintain these populations across the range of the species.

Other proactive management that must be maintained for the species to continue to persist and expand includes translocations into small populations. Most (108) of the current 124 demographic populations are small (fewer than 99 active clusters) with inherently very low or low resiliency. These are the most vulnerable to future extirpation due to stochastic demographic and environmental factors and inbreeding depression. Inbreeding depression in small, fragmented populations of up to 50 to 100 active clusters without adequate immigration can further increase the probability of decline and future extirpation; for these populations, red-cockaded woodpecker translocation programs reduce risks of adverse inbreeding impacts. In addition, as noted in the SSA report (see Summary of the SSA Report, below), while resiliency is moderate for 10 of the current populations with 100 to 249 active clusters and 6 populations exhibit high or very high resiliency, potential adaptive genetic variation is still expected to decline in all red-cockaded woodpecker populations (Bruggeman 2010, p. 22, appendix B pp. 39-42; Bruggeman et al. 2010, entire; Bruggeman and Jones 2014, pp. 29-33). This is because genetically effective (N e) populations of 1,000 or more individuals are needed to avert the loss of genetic variation in a species (e.g , Lande 1995, entire; Allendorf and Ryman 2002, p. 73-76). These large population sizes do not exist in red-cockaded woodpecker populations because not all birds in an active cluster may be breeders (Reed et al. 1988, entire, 1993, entire). Possible exceptions may be the two largest current red-cockaded woodpecker populations at Apalachicola National ***Forest***/St. Marks National Wildlife Refuge/Tate's Hell State ***Forest*** (858 active clusters, ~764 potential breeding groups (PBG)) and North Carolina Sandhills (781 active clusters, ~695 PBGs). A PBG is a concept introduced in the 2003 recovery plan (see Recovery Plan and Recovery Implementation, below), to describe a cluster with a potentially breeding adult male and female, with or without adult helpers or successfully fledging young. An active cluster can be either a PBG or a single territorial bird. So, for example, a red-cockaded woodpecker population of 310-390 PBGs probably represents a genetically effective population of only 500 (Reed et al. 1993, p. 307). Effective management programs to sustain even the smallest populations are critical to reduce the risks of inbreeding, establish genetic connectivity among fragmented populations, and maintain ecological diversity and life-history demographic variation as patterns of representation within and across broad ecoregions. Because of the outstanding work of our conservation partners, and their ongoing commitment to continue implementing proactive management to benefit the red-cockaded woodpeckers, we expect many of these activities, as articulated in individual management plans, to continue.Conservation Measures That Benefit the Species

As noted above, the red-cockaded woodpecker is a conservation-reliant species and responds well to active management. The vast majority of properties on public ***lands*** harboring red-cockaded woodpeckers have implemented management programs to sustain or increase populations consistent with population size objectives in the recovery plan or other plans. Plans are specific to each property or management unit, but generally contain the same core features. The most comprehensive plans call for intensive cavity management with the installation of artificial cavities to offset cavity loss in existing territories, maintenance of sufficient suitable cavities to avoid loss of active territories, and creation of new territories with recruitment clusters and artificial cavities in restored or suitable habitat to increase population size. These cavity management activities are necessary until mature ***forests*** are restored with abundant old pines 65 and more years of age for natural cavity excavation. Managers are also reducing fragmentation by restoring and increasing habitat with strategic placement of recruitment clusters to reduce gaps within and between populations. Furthermore, red-cockaded woodpecker subadults from large or stable donor populations are translocated to augment growth of small, vulnerable populations. Additionally, managers are implementing silviculturally compatible methods to sustain, restore, and increase habitat with an increased use of effectively prescribed fire. Finally, managers are implementing monitoring programs looking at both habitat and populations to provide feedback for effective management. The future persistence of the species will require these management actions to continue.

In the SSA, we identified 124 current demographic populations with a total of 7,794 active clusters. Seventy-one of the 124 currently delineated red-cockaded woodpecker populations occur on ***lands*** solely owned and managed by Federal agencies with 4,033 current active clusters. Seven additional populations with 2,026 active clusters occur on ***lands*** that are under mixed Federal and State ownership but are predominately managed by Federal agencies. Thirty-one populations are on ***lands*** managed solely by State agencies with 557 active clusters. Thus, 88 percent of delineated populations with 6,059 active clusters (78 percent of all 7,794 active clusters in 124 populations) are on ***lands*** managed entirely by Federal and State agencies with statutes to require management plans addressing the conservation of natural resources. Two populations occur in a matrix of public and private ***lands***, mostly Federal and State properties, with 816 active clusters. One population with 20 active clusters is managed by a State agency and private landowner. Twelve populations with 342 active clusters reside entirely on private ***lands***, of which 10 populations with 295 active clusters are managed by landowners enrolled in the safe harbor program. Also, most of the private landowners are enrolled in the safe harbor program in the two previously described populations with a matrix of mostly public ***lands*** with some private ***lands***. Landowners with safe harbor agreements (SHA) manage about 375 active clusters in all or parts of 12 populations. There are additional active clusters of red-cockaded woodpeckers on nongovernmental ***lands***, enrolled in SHAs, but, as noted above, we did not have adequate data to spatially delineate all of these demographic populations on these ***lands***. Of the 933 active clusters managed by safe harbor landowners in eight states (Alabama, Florida, Georgia, Louisiana, North Carolina, South Carolina, Texas and Virginia), demographic populations with respective population sizes have not been delineated for about 558 active clusters.

Below is a summary of the types of management plans that include elements directed at red-cockaded woodpecker management and conservation. Note that the numbers of populations below do not necessarily add up to the 124 current demographic populations identified in the SSA report, because some populations cross property boundaries and are managed by more than one landowner.Department of Defense

Within the range of the red-cockaded woodpecker, the Department of Defense (DOD) manages habitat for 14 populations, of which 5 are in the moderate to very high resiliency categories, and 9 low to very low resiliency. The Sikes Act (16 U.S.C 670 et seq.) requires DOD installations to conserve and protect the natural resources within their boundaries. Integrated natural resources management plans (INRMPs) are planning documents that outline how each military installation with significant natural resources will manage those resources, while ensuring no net loss in the capability of an installation to support its military testing and training mission. Within the range of the red-cockaded woodpecker, all DOD installations have current INRMPs that address protection and recovery of the species, both through broader landscape-scale ecosystem stewardship and more specific management activities ***targeted*** directly at red-cockaded woodpecker conservation. These activities include providing artificial cavities to sustain active clusters, installing recruitment clusters to increase population size, sustaining and increasing habitat through compatible ***forest*** management and prescribed fire, and increasing the number and distribution of old pines for natural cavity excavation. Each installation has a red-cockaded woodpecker property or population size objective with provisions for monitoring. For most installations, a schedule is available for reducing certain military training restrictions in active clusters in response to increasing populations and attaining population size thresholds.U.S ***Forest*** Service

The U.S ***Forest*** Service manages habitat for 49 red-cockaded woodpecker populations on 17 National ***Forests*** and the Savannah River Site Unit (owned by the Department of Energy but managed by the U.S ***Forest*** Service). Of these populations, 10 have moderate to very high resiliency and 39 identified as having low or very low resiliency. Under the National ***Forest*** Management Act of 1976 (16 U.S.C 1600 et seq.), National ***Forests*** are required to develop plans that provide for multiple use and sustained yield of ***forest*** products and services, which includes timber, outdoor recreation, range, watershed, fish and wildlife, and wilderness resources. These plans, called “***land*** and resource management plans” (LRMPs) and their amendments, have been developed for every National ***Forest*** in the current range of the red-cockaded woodpecker. However, LRMPs are not always up to date. The LRMPs for National ***Forests*** in three States (Louisiana, North Carolina, and Texas) predate the Service's 2003 recovery plan. Nevertheless, all National ***Forests*** (even those with outdated LRMPs) have implemented management strategies to protect and manage red-cockaded woodpecker habitat and increase populations. Current LRMPs approved prior to the 2003 recovery plan were developed in coordination with the ***Forest*** Service's 1995 regional plan for managing the red-cockaded woodpecker on southern National ***Forests*** (U.S ***Forest*** Service 1995, entire). The 1995 regional plan includes most of the new and integrated management methods (Rudolph et al. 2004, entire) to sustain and increase populations as incorporated in the recovery plan. These include installing artificial cavities, increasing population size with recruitment clusters, and restoring suitable habitat with ***forest*** management treatments and prescribed fire. Some of the more recent LRMPs, such as for National ***Forests*** in Mississippi, are more broadly programmatic, but incorporate the 2003 recovery plan by reference for appropriate conservation methods and objectives.U.S Fish and Wildlife Service

The National Wildlife Refuge System manages 10 National Wildlife Refuges with red-cockaded woodpeckers, which includes all or part of 19 populations. We considered three of these populations to be moderate to very high resiliency in the SSA report, while 16 have low to very low resiliency. Under the National Wildlife Refuge System Improvement Act of 1997 (Pub. L. 105-57), refuges prepare comprehensive conservation plans (CCPs), which provide a blueprint for how to manage for the purposes of each refuge; address the biological integrity, diversity, and environmental health of a refuge; and facilitate compatible wildlife-dependent recreation. National Wildlife Refuges have assigned population objectives from the 2003 recovery plan through their CCPs or as stepped down or modified in habitat management plans. Specific tasks in these plans include installation of artificial cavities; translocation; establishing recruitment clusters; population monitoring; prescribed fire; and silvicultural treatments, such as mid-story ***removal***, thinning of younger stands, and, where necessary, increasing stand age diversity with regeneration of pine stands.National Park Service

The National Park Service (NPS) manages two red-cockaded woodpecker populations, one with low and the other with very low resilience, on Big Cypress National Preserve (Preserve) in Florida. The NPS's plans do not include specific provisions for red-cockaded woodpecker management; however, at the Preserve, the NPS conducts prescribed fire to maintain and improve the south Florida slash pine ***forest*** communities that support the species. The NPS also allows Florida Fish and Wildlife Conservation Commission biologists to conduct red-cockaded woodpecker surveys, monitor, periodically install a limited number artificial cavities, and conduct translocations on occasion. From surveys and monitoring by the Florida Fish and Wildlife Conservation Commission, 75 percent of all cavity trees within the Preserve consist of natural cavities, which is an unusually high number relative to other populations, reflecting the predominately old condition of the Big Cypress south Florida slash pine ***forests*** (Spikler 2019, pers. comm).State ***Lands***

The States of Arkansas, Florida, Georgia, Louisiana, North Carolina, Oklahoma, South Carolina, Texas, and Virginia have red-cockaded woodpecker populations on State-owned ***lands***. All or parts of 40 currently delineated populations occur on State ***lands***. Seven populations on or partially on State ***lands*** have moderate to very high resiliency, while 32 populations have low to very low resiliency. These properties range from State ***Forest*** Service or ***Forest*** Commission holdings to Department of Wildlife, Department of Natural Resources, and State Park Service properties. The mission, and therefore the extent and type of management, of each unit varies. For example, some State ***lands*** are managed generally to provide ecosystem benefits, such as managing pine-dominated ***forests*** with prescribed fire. However, other State properties implement proactive conservation management specifically for the red-cockaded woodpecker. For example, the Florida Fish and Wildlife Conservation Commission manages all of its properties under the umbrella of the Florida Red-cockaded Woodpecker Management Plan, with other specific plans for the agency's wildlife management areas.Other ***Lands***

Eight states have a Service-approved programmatic safe harbor agreement program with a section 10(a)(1)(A) enhancement of survival permit under the Act to enroll non-Federal landowners that voluntarily provide beneficial management. Of 459 enrolled non-federal landowners, one is for a State property and all others are private nongovernmental ***lands***. All or parts of 12 currently delineated demographic populations are covered under a current SHA. Again, we are aware of additional active clusters covered under SHAs, but we lack the data to delineate them as demographic populations. Safe harbor agreements are partnerships between landowners and the Service involving voluntary agreements under which the property owners receive formal regulatory assurances from the Service regarding their management responsibilities in return for contributions to benefit the listed species. For the red-cockaded woodpecker, this includes voluntary commitments by landowners to maintain and enhance red-cockaded woodpecker habitat to support baseline active clusters, which is the number of clusters at the time of enrollment, and additional above-baseline active clusters that increase in response to beneficial management. Beneficial management includes the maintenance and enhancement of existing cavity trees and foraging habitat through activities such as prescribed fire, mid-story thinning, seasonal limitations for timber harvesting, and management of pine stands to provide suitable foraging habitat and cavity trees. Because above-baseline active clusters and habitat covered under these plans can be returned to “baseline” conditions, any population growth on ***lands*** covered by SHAs may not be permanent. In addition, enrolled landowners can terminate their agreement at any time. However, fewer than 5 of the 459 enrolled landowners have ever used their permit authorities to return the number of active clusters to baseline conditions, and only 12 landowners have terminated their agreement. There currently are 241 active above-baseline clusters in the program.

In summary, the red-cockaded woodpecker is a conservation-reliant species, but one that responds very well to active management. The majority of red-cockaded woodpecker populations are managed under plans that address population enhancement and habitat management to sustain or increase populations, and to meet the 2003 recovery plan objectives for primary core, secondary core, and essential support populations. We expect these property owners will continue to implement their respective management plans, partially because, even if we reclassify the red-cockaded woodpecker as a threatened species, the woodpecker would remain protected under the Act.Summary of Biological Status

As described in the preceding section, the Act directs us to determine whether any species is an endangered or a threatened species because of any of the factors listed in section 4(a)(1) affecting the species' continued existence. The SSA report documents the results of our comprehensive biological status review for the red-cockaded woodpecker, including an assessment of the potential stressors to the species. The SSA report does not represent a decision by the Service on whether the species should be listed as an endangered or a threatened species under the Act. It does, however, provide the scientific basis for our regulatory decision, which involves the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found on the Southeast Region's website at [*https://www.fws.gov/southeast*](https://www.fws.gov/southeast)/ or at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018.Summary of SSA Report

To assess the red-cockaded woodpecker's viability, we used the three conservation biology principles of resiliency, representation, and redundancy (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, random fluctuations in birth rates or annual variation in rainfall); representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes); and redundancy supports the ability of the species to withstand catastrophic events (for example, hurricanes). In general, the more redundant and resilient a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the red-cockaded woodpecker's ecological requirements for survival and reproduction at the individual, population and species, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We utilized this information to inform our regulatory decision.

For the red-cockaded woodpecker to maintain viability, its populations or some portion thereof must be resilient. The SSA assessed resiliency at the population level, primarily by evaluating the current population size as the number of active clusters and secondarily by the associated past growth rate. Red-cockaded woodpecker resiliency primarily depends upon a single factor: Amount of managed suitable habitat. Historically, impacts to the red-cockaded woodpecker occurred as a result of clearcutting, incompatible ***forest*** management, and conversion to urban and ***agricultural*** ***lands*** uses. While these impacts have been significantly curtailed and replaced by beneficial conservation management, legacy stressors stemming from these historical impacts still remain, including: (1) Insufficient numbers of natural cavities and suitable, abundant old pines for natural cavity excavation; (2) habitat fragmentation and its effects on genetic variation, dispersal, and connectivity to support demographic populations; (3) lack of suitable foraging habitat for population growth and expansion; and (4) small populations. Intensive management is ongoing to ameliorate these threats.

Representation can be measured by the breadth of genetic or environmental diversity within and among populations and gauges the probability that a species is capable of adapting to environmental changes. The SSA evaluated representation based on the extent and variability of habitat characteristics across the geographical range of the species and characterized representative units for the red-cockaded woodpecker using ecoregions. This analysis generally followed the approach to representation used in the species' recovery plan (USFWS 2003, pp. 148, 152-155). A genetic analysis of material prior to 1970 in eight ecoregions indicates the species appears to have been a single genetic unit or population without significant genetic structure or differentiation (Miller et al. 2019, entire). The best available rangewide genetic data indicate a loss of genetic variation after 1970 with development of significant contemporary genetic structure among ecoregions. This structuring is most likely in response to fragmentation of this historically more widespread and abundant species, reduced dispersal between populations and regions, and genetic drift (Stangel et al. 1992, entire; Haig et al. 1994a, p. 590; Haig et al. 1996, p. 730; Miller et al. 2019, entire). However, the similarity of genetic parameters between the 1992-1995 and 2010-2014 periods indicates that a further significant loss of genetic diversity with an increase in differentiation among ecoregions may have been ameliorated by conservation management that began in the 1990s to rapidly increase populations and translocate individuals from large populations to augment small populations (Miller et al. 2019, entire). Mitochondrial DNA haplotype diversity has declined significantly since the pre-1970s, but not to extent of a loss of any phylogenetically distinct lineages that may represent evolutionarily significant units (Miller et al. 2019, p. 9-10).

For the red-cockaded woodpecker to maintain viability, the species also needs to exhibit some degree of redundancy. Measured by the number of populations, their resiliency, and their distribution, redundancy increases the probability that the species has a margin of safety to withstand, or can bounce back from, catastrophic events. The SSA reported redundancy for red-cockaded woodpeckers as the total number and resilience of population segments and their distribution within and among representative units.Current ConditionResiliency

In the SSA report, we identified 124 demographic populations across the range of the red-cockaded woodpecker for which sufficient data were available to complete the SSA analyses for the recent past to current condition. We acknowledge there are other small occurrences of red-cockaded woodpeckers, particularly on private ***lands***; however, spatial data for these other occurrences were incomplete, so for purposes of the SSA analysis, and subsequently throughout this proposed rule, we focused only on these 124 demographic populations that could be spatially delineated. The SSA categorizes two important parameters related to current population resiliency: Current population size and associated population growth rate. Population resilience size categories are defined as follows: Very low (fewer than 30 active clusters); low (30 to 99 active clusters); moderate (100 to 249 active clusters); high (250 to 499 active clusters); and very high (greater than or equal to 500 active clusters).

Population resilience size-classes were derived from spatially explicit individual-based models and simulations for this species (Letcher et al. 1998, entire; Walters et al. 2002, entire), the performance of which have been reasonably validated with reference to actual populations (Schiegg et al. 2005, entire; Walters et al. 2011, entire). We also considered subsequent modifications of these models and simulations that incorporated adverse effects of inbreeding depression on population persistence and growth (Daniels et al. 2000, entire; Schiegg et al. 2006, entire). These models were developed from extensive actual biological data and specifically designed to incorporate the dynamics of the red-cockaded woodpecker's cooperative breeding system that are not accurately represented in other types of population models (Zieglar and Walters 2014, entire). These models simulated populations of different initial sizes under natural conditions without any limiting habitat and cavity conditions that could impair population growth. We consider these results as indicators of inherent resilience because effects of conservation management actions to sustain and increase populations were not simulated. These beneficial management practices would include installation of recruitment clusters with artificial cavities to induce new red-cockaded woodpecker groups and translocation to augment the size and growth of small populations. The vast majority of the 124 current populations have been and currently are subject to specific conservation management actions for this species, including recruitment clusters. Thus, the inherent resilience size-classes derived from population models and simulations have been further qualified by actual growth rates as indicators of effects of beneficial management for this conservation-reliant species.

Populations with very low resiliency (fewer than 30 active clusters) are the most vulnerable to future extirpation following stochastic events with declining growth and future extirpation likely in 50 years. Populations with low resiliency (30 to 99 active clusters) are more persistent, but remain vulnerable to declining growth, inbreeding depression, and extirpation. Inbreeding depression reduces red-cockaded woodpecker egg hatching rates and survival of fledglings (Daniels and Walters 2000a, entire). Inbreeding in red-cockaded woodpeckers is a consequence of breeding among close relatives in response to naturally short dispersal distances of related birds among nearby breeding territories exacerbated by small populations and fragmentation among populations that reduce immigration rates of unrelated individuals (Daniels and Walters 2000a, entire; 2000b, entire; Daniels et al. 2000, entire; Schiegg et al. 2002, entire; 2006, entire). The consequences of inbreeding depression further reduce population growth rates and increase the probabilities of extirpation in populations in sizes up to about 100 active clusters (Daniels et al. 2000, entire; Schiegg et al. 2006, entire). The largest populations in this class may have long-term average growth rates (λ or lambda) near 1.0 (a λ of 1.00 is considered stable, less than 1.00 is declining, and greater than 1.00 is increasing), but with slow rates of decline and a high risk of inevitable future extirpation. The moderate resiliency category (100 to 249 active clusters) is a large transitional class. Smaller populations without inbreeding likely will experience a slow decline, but without extirpation in 25 to 50 years because at least some territories will survive, although as much smaller and more vulnerable populations. The largest populations in this class may be relatively stable or nearly so. Populations with a high resiliency (250 to 499 active clusters) on average should be stable except perhaps for the very smallest that may have average growth rates slightly less than 1.00 In high resiliency populations, adverse demographic effects of inbreeding depression are not expected. Populations in the very high resiliency class (greater than or equal to 500 active clusters) are stable and the most resilient, with average growth rates of 1.0 or slightly greater. Based on the most recent data, 3 red-cockaded woodpecker populations fall within the very high category (totaling 2,143 clusters); 3 are high (1,364 total clusters); 10 are moderate (1,555 total clusters); 37 are low (1,923 total clusters); and 71 are very low (809 total clusters). In short, of the estimated 7,794 active clusters distributed among 124 populations across the range of the species, 5,062, or 65 percent, are in 16 moderate to very high resiliency populations.

The second resiliency parameter measured in the SSA was growth rate of the populations. For the SSA, there were only sufficient GIS data to delineate past demographic populations with population size data to compute past-to-current growth rates for 98 of the 124 populations. Of these 98 populations, the SSA determined that 13 (13.3 percent) were declining (λ <1.00), 19 (19.4 percent) were stable (λ = 1.00-1.02), and 66 (67.3 percent) were increasing (λ >1.02). Combining growth rates with population sizes of these 98 populations, growth rates have been stable to increasing for all of those moderate, high, and very high resiliency populations where growth rate could be measured. At the other end, of the 86 very low and low resiliency populations where growth rate could be measured, 73 populations demonstrated stable and positive growth rates, with several populations showing very high growth rates. This is indicative of the positive effects of red-cockaded woodpecker conservation management programs on these locations and the ability of such management to offset inherently low or very low population resilience. Growth rates are decreasing in only 13 (15 percent) of the low and very low resiliency populations where growth rate could be measured.

Current population conditions in the SSA report were derived from the number and location of active clusters primarily in 2016 and 2017. These conditions did not take into account Hurricane Michael, which came ashore near Mexico Beach, Florida, on October 10, 2018, as a Category 4 storm. More than 1,500 cavity trees were blown down or damaged in populations in the Apalachicola National ***Forest***, Silver Lake Wildlife Management Area (WMA), Jones Ecological Research Center, and Tate's Hell State ***Forest*** (Dunlap 2018, entire; McDearman 2018, entire). These represented three demographic populations: Apalachicola National ***Forest***-St. Marks NWR-Tate's Hell State ***Forest***, Jones Ecological Research Center, and Silver Lake WMA. The effects of Hurricane Michael did not change current conditions for these populations in terms of their resilience size-classes as described in the SSA report, and as summarized here.

After this hurricane, 870 clusters were rapidly assessed in Apalachicola National ***Forest*** where 1,410 cavity trees were damaged or blown down, followed by the installation of 682 artificial cavities (Dunlap 2018, entire). In 2018, prior to this hurricane, the Apalachicola National ***Forest*** population survey estimate was 833 active clusters (Casto 2018, p. 4). After the hurricane, the 2019 survey estimate was 857 active clusters (Casto 2019, p. 9). At Silver Lake WMA, 154 cavity trees were damaged or lost; however, within two weeks of the storm more than 90 artificial cavities were installed (Burnham 2019a, p. 9). The pre-storm population was 36 active clusters and 32 potential breeding groups, with a post-storm decline to 33 active clusters and 28 potential breeding groups (Burnham 2019b, p. 6). About 24 percent of all cavity trees at the Jones Ecological Research Center were damaged or destroyed (Rutledge 2019, p. 13). The pre-storm Jones Center population was 38 active clusters with 34 potential breeding groups (Henshaw 2019, p. 4). Post-storm, after installation of artificial cavities, there were 40 active clusters with 31 potential breeding groups (Henshaw 2019, p. 4). At Tate's Hell State ***Forest***, about 23 of 527 cavity trees among 61 active clusters and 51 PBGs were blown down (Alix 2018, pers. comm.). After post-storm management, the Tate's Hell State ***Forest*** currently consists of 64 active clusters and 54 PBGs (Alix 2019, pers. comm.). Overall, the total decline in number of active clusters from all of these properties is minor, demonstrating that with prompt, active management, the vulnerability of these populations to stochastic events can potentially be reduced. Additional intermediate and long-term habitat restoration treatments at these properties are still required to reduce hazardous fuels from large and small woody debris, restore habitat, and implement reforestation or regeneration in the most severely damaged pine stands. Overall, we do not anticipate that Hurricane Michael will affect long-term viability of these populations. However, we will continue to evaluate the success of the emergency, intermediate, and long-term response efforts.

In summary, although most of red-cockaded woodpecker populations for which we have data are still small, and remain vulnerable to stochastic events and possibly inbreeding depression, the vast majority of populations are showing stable or increasing growth rates, and the majority of birds and clusters occur in a few large, resilient populations. Of the 98 populations for which trend data are available, only 13 percent are declining. In addition, over 65 percent of red-cockaded woodpecker clusters are currently in moderate to very high resiliency populations.Representation

We evaluated representation based on the extent and variability of habitat characteristics across the species' geographical range. For the red-cockaded woodpecker, the SSA report characterizes representative units using ecoregions, which align with the recovery units identified in the recovery plan (USFWS 2003, pp. 145-161). These ecoregions are broad areas defined by physiography, topography, climate, and major historical and current ***forest*** types and thus serve as surrogates for the variability of habitat characteristics across the species' range, such as ecology, life history, geography, and genetics. There are currently 13 ecoregions containing at least one red-cockaded woodpecker population: (1) Cumberland Ridge and Valley; (2) Florida Peninsula (= South/Central Florida); (3) East Gulf Coastal Plain; (4) Mid-Atlantic Coastal Plain; (5) Ouachita Mountains; (6) Piedmont; (7) South Atlantic Coastal Plain; (8) Sandhills; (9) Upper East Gulf Coastal Plain; (10) Upper West Gulf Coastal Plain; (11) West Gulf Coastal Plain; and (12) Gulf Coast Prairie and Marshes and (13) Mississippi River Alluvial Plain, two ecoregions that the SSA includes that were not represented in the recovery plan because they only have one small population each. In the SSA report, figures 20 and 24 provide maps illustrating the ecoregions (USFWS 2019, pp. 91, 109), and figure 25 includes the historical county records for the range of the species (USFWS 2020, p. 116).

The historical range of the red-cockaded woodpecker included the entire distribution of longleaf pine ecosystems, but the species also inhabited open shortleaf, loblolly, slash pine, and Virginia pine ***forests***, especially in the Ozark-Ouachita Highlands and the southern tip of the Appalachian Highlands with occasional occurrences noted for New Jersey, Pennsylvania, Maryland, and Ohio (Costa and Walker 1995, pp. 86-87). Red-cockaded woodpeckers no longer occur in six ecoregions (Ozarks, Central Mixed Grass Prairies, Cross Timbers and Southern Mixed Grass Prairies, Northern Atlantic Coast, Central Appalachian ***Forest***, and Southern Blue Ridge). The recovery plan did not consider recovery in these areas to be essential to the conservation of the species.

The remaining 13 ecoregions still contain red-cockaded woodpeckers. In these ecoregions, red-cockaded woodpeckers occupy a wide variety of pine-dominated ecological settings scattered across a broad geographic range. Considerable geographic variation in habitat types exists, illustrating the species' ability to adapt to a wide range of ecological conditions within the constraints of mature or old growth, southern pine ecosystems. However, of these 13 ecoregions, only 4 currently have populations that are considered to have high or very high resiliency (East Gulf Coastal Plain, South Atlantic Coastal Plain, Sandhills, and Mid-Atlantic Coastal Plain), and 6 have populations that are low or very low resiliency (Florida Peninsula, Ouachita Mountains, Cumberland Ridge and Valley, Piedmont, Gulf Coast Prairie and Marshes, and Mississippi River Alluvial Plain). Of those six, the latter four have only one or two populations each, meaning these ecoregions, and the ecology, life history, geography, and genetics they represent, are particularly vulnerable to stochastic events. However, five of the six populations in these four ecoregions all demonstrate stable or increasing growth rates (growth rate for the sixth, Mitchell Lake in the Piedmont Ecoregion, could not be measured), primarily because they are being actively managed.

In summary, the species no longer persists in six ecoregions where it was historically present. However, it is still currently represented in the 13 remaining ecoregions, and this level of representation has not decreased further since the 2003 recovery plan revision, which did not consider the extirpated ecoregions necessary for recovery. Nevertheless, while populations persist in the 13 ecoregions, many of the ecoregions contain only populations that have low or very low resiliency, and four ecoregions only have one or two populations, which are all of low or very low resiliency, making them vulnerable to stochastic events.Redundancy

In the SSA report, redundancy for red-cockaded woodpeckers is characterized by the number of resilient populations and their distribution within each ecoregion. Of the 124 current populations, there are 3 populations that have very high resiliency, 3 with high, 10 with moderate, 37 with low, and 71 with very low resiliency. As noted above, 4 of 13 ecoregions currently harbor high or very high resiliency populations: East Gulf Coastal Plain (2 populations), Mid-Atlantic Coastal Plain (1 population), Sandhills (2 populations), and South Atlantic Coastal Plain (1 population). In terms of redundancy, only two ecoregions, East Gulf Coastal Plain and Sandhills, have more than one population classified as having high or very high resiliency, and only these two ecoregions also have more than two populations classified as having moderate to very high resiliency. Redundancy of smaller populations is higher with a greater number of populations in the moderate, low, and very low resiliency categories within and across ecoregions. Four ecoregions (South Atlantic Coastal Plain, Mid-Atlantic Coastal Plain, West Gulf Coastal Plain, and Upper East Gulf Coastal Plain) have two populations exhibiting moderate to high resiliency, and thus some level of redundancy in terms of resilient populations. Most of the populations in these regions have moderately resiliency. The greatest number of current populations reside in the Mid-Atlantic Coastal Plain (24) and Florida Peninsula (22), although most of these are in the very low and low resiliency class. However, even for the more resilient populations, habitat fragmentation has resulted in wide gaps between ***forested*** areas, meaning there is little connectivity between populations.

Across the range of the red-cockaded woodpecker, the populations with the most resiliency (high or very high) populations tend to be in the eastern half of the range and in coastal or near coastal ecoregions rather than interior. Florida Peninsula and the western ecoregions currently only have populations in the moderate to very low resiliency categories. This concentration of the more resilient populations in coastal and near coastal areas could affect the species' ability to withstand catastrophic events such as hurricanes. Particularly for these populations, post-storm management actions are critical, as they can mitigate cavity loss and reduce hazardous fire fuels.

In summary, a species needs a suitable combination of all three characteristics (resiliency, representation, and redundancy) for long-term viability. Based on our analysis of the three factors, the red-cockaded demonstrates some degree of stability in all three factors. The species' viability is reduced over historical levels, but habitat conditions and population numbers are improving. In terms of resiliency, most of the populations are still quite small, but the vast majority are stable or even growing. The species has not lost any representative populations since the 2003 revised recovery plan, and while a few ecoregions still only contain one or two populations, most of these populations are stable or growing. Finally, there is a fair degree of redundancy within ecosystems across the range of the species, although, again, most of these populations are still quite small and are isolated from each other. The improving viability of the red-cockaded woodpecker has been largely due to intensive, extensive management, including actions immediately after large storm events to offset cavity loss and reduce hazardous fuels. Without this intervention, many populations, especially the low and very low resilience populations, likely would have been extirpated.Future Conditions

Our analysis of stressors and risk factors, as well as the past, current, and future influences on what the red-cockaded woodpecker needs for long-term viability, revealed that the primary predictor of future viability of the species is the continuation of active management (including cavity management, midstory treatment such as prescribed fire, and translocation efforts).

We assessed future red-cockaded woodpecker population growth, population size (active clusters), and resiliency by first modeling past trends and variation in population size of demographically delineated populations as affected by factors including management treatments (e.g , number of artificial cavities, recruitment clusters, birds received by translocations, and frequency of prescribed fire and mid-story hardwood control), dominant pine species, the density of active clusters, and parameters to account for unexplained sources of variation to population size by this procedure (USFWS 2020, chapter 6 and appendix 2). We obtained historical information for 87 demographically delineated populations and were also able to extrapolate missing data for certain populations by imputation with an expectation-maximization algorithm (USFWS 2020, appendix 1). Populations were separately modeled as small (6 to 29 clusters), medium (30 to 75 clusters), and large (more than 75 clusters) classes. Populations with fewer than six active clusters were not modeled because of high variation in growth rates.

For past growth rate of small populations, the most important variables were the number of new recruitment clusters, number of new artificial cavities in previously existing clusters (cavity management), midstory treatments by prescribed fire or mechanical methods, number of red-cockaded woodpeckers translocated into the population, and dominant pine type. Translocation had the greatest positive effect on growth of any management technique. For medium populations, recruitment clusters and midstory treatments by prescribed fire were significant management covariates. The best model for large populations included recruitment clusters, cavity management, and spatial configuration of active clusters. In all cases, effects of recruitment clusters, cavity management, midstory treatment, and translocation were positive.

We then used the best assessed future growth and conditions for each red-cockaded woodpecker population to assess viability under four future 25-year management scenarios: Low management, medium management, high management, and the “Manager's Expectation.” In the Manager's Expectation scenario, we elicited estimates for red-cockaded woodpecker conservation management treatments (e.g , number of artificial cavities, number of recruitment clusters, midstory treatments, prescribed fire frequency, translocation, etc.) from property biologists, foresters, and managers.

For the low management scenario, values for each management covariate (e.g , cavity management, prescribed fire treatments, number of recruitment clusters, midstory hardwood treatment, translocation) were set to zero. However, this scenario does not reflect no management, but rather, the absence of management techniques specific to red-cockaded woodpeckers and instead a reliance on ecosystem management. Thus, some baseline habitat management, which would indirectly provide some nesting and foraging habitat, would be expected under the low management scenario. However, because most of the past populations for which we had sufficient data have been actively managed more aggressively than this scenario, we were unable to accurately model this type of minimal baseline habitat management. Therefore, future simulated population growth in the low management scenario is probably overestimated. Management covariate parameters for the medium management scenario assume the average of the past parameters employed to conserve red-cockaded woodpeckers over the past 20 years will continue into the future. For the high management scenario, management treatments for simulated populations reflect the parameter values in the 90th percentile of all past population treatments, as if populations were more intensely and extensively managed. The high management scenario thus represents projections of what might potentially be achieved should the species be systematically managed more intensively across its range than it has been in the past. The Manager's Expectation scenario was based on what the experts, described above, thought was the most likely annual future number of recruitment clusters, artificial cavities, prescribed fire treatments, and other management parameters at 5-year intervals for a 25-year period.

We chose to project 25 years into the future because the combination of species' response to natural factors and management and the ability of managers to accurately predict future management treatments becomes highly uncertain at longer intervals. The red-cockaded woodpecker is a conservation-reliant species of naturally fire-dependent, open, and mature to old southern pine ***forests***. These ***forest*** conditions do not currently occur without management due to the history of fire-exclusion, incompatible ***forest*** management, and other ***land*** uses. Planning and successfully implementing management and treatments for each active cluster and population requires extensive resources that are difficult for managers to accurately predict for longer than 25 years. In addition to a population's response to management, there is natural variation in nest success, number of fledglings, survival of young-of-year and adults, and cooperative breeding dynamics with replacement of adult breeders by other birds dispersing from other territories. In turn, this affects annual variation in population size (active clusters) and patterns of population growth or decline. Simulations of future population conditions under different management scenarios included effects of some management treatments, though not all, as model parameters. However, effects of these management treatment parameters did not account for all sources of annual variation affecting population size that still occurred in the model and simulations. Because of the variation in future simulated population size at 25 years (USFWS 2020, appendix 2), future estimates of population size after 25 years are more uncertain.

Table 1 summarizes the model outputs for the four scenarios at the end of the 25-year simulation period. Data from 106 of the 124 current populations were available for future simulations. Of those 106 populations, initial populations with fewer than 6 active clusters were not simulated unless they demographically merged with other populations to create new, larger populations during the 25-year period. In addition, the total number of simulated future populations at year 25 are not equal among management scenarios because of the different number of initial populations that demographically merge to establish new populations. In other words, a lower number of populations at the end than the start for each scenario does not mean that all those populations were extirpated, rather some of the populations increased and merged to create new, larger populations. Therefore, the initial starting number of populations, and predicted number of populations at the end of the simulation period, varied. We also compare the results of current and future population resiliency classes as percentages in this proposed rule rather than absolute numbers because of this variation. Furthermore, although the initial starting numbers varied for each of the scenarios for the reasons discussed above, we present the current condition of the 124 demographic populations as the starting place for each of these scenarios. The current condition (Past-to-Current in Table 1) for these populations are: 57.3 percent have very low resiliency, 29.8 percent have low, 8.1 percent have moderate, 2.4 percent have high, and 2.4 percent have very high. For more details on the model, please see the SSA report (USFWS 2020, pp. 130-136, appendix 1, appendix 2).Table 1—Resilience Summary Based on Current Condition and Population Simulations Under 4 Future Management Scenarios Model series/scenario Population resilience category percentages Very low Low Moderate High Very highPast-to-Current 57.3 29.8 8.1 2.4 2.4Future Low 61.7 14.8 11.1 6.2 6.2Future Medium 25.0 45.2 15.5 8.3 6.0Future High 22.2 39.5 21.0 11.1 6.2Future Manager's 28.6 42.9 14.3 8.3 5.9

Low management scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 81 simulated demographic populations are: 6.2 percent of populations (5) very high; 6.2 percent (5) high; 11.1 percent (9) moderate; 14.8 percent (12) low; and 61.7 percent (50) very low. The low management scenario projects a modest increase in the percentage of current populations of moderate to very high resiliency from about 13 percent (16) to about 24 percent (19) of the 81 simulated populations compared to current conditions, but the majority of the populations that currently have low resiliency decline sufficiently to transition into the very low resiliency category. The projected outcome of this scenario clearly demonstrates the dependence of red-cockaded woodpecker population resiliency on intensive, species-specific management.

Medium management scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 84 simulated demographic populations are: 6.0 percent of populations (5) very high; 8.3 percent (7) high; 15.5 percent (13) moderate; 45.2 percent (38) low; and 25.0 percent (21) very low. The medium management scenario projected a more substantial increase in the percentage of populations of moderate to very high resiliency from about 13 percent (16) to about 30 percent (25) of the populations. At the other end, the percentage of low and very low resiliency populations decreased.

High management scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 81 demographic populations are as follows: 6.2 percent of populations (5) very high; 11.1 percent (9) high; 21.0 percent (17) moderate; 39.5 percent (32) low; and 22.2 percent (18) very low. The high management scenario projected an even more substantial increase in the percentage of populations of moderate to very high resiliency, increasing to about 38 percent (31) of the populations. However, the ***land*** base available for conservation has a substantial effect on the growth of these populations under this scenario. For example, none of the populations with low or very low resiliency in this scenario has the carrying capacity on their respective managed properties to transition to a higher resiliency category, regardless of the intensive management reflected in this scenario. Thus, there are 50 red-cockaded woodpecker populations that, in the absence of acquisition of additional habitat for population expansion, will always remain small regardless of the management efforts.

Manager's Expectation scenario: At the end of the 25-year simulation period, the predicted resiliency for the resulting 84 demographic populations are: 5.9 percent of the populations (5) very high; 8.3 percent (7) high; 14.3 percent (12) moderate; 42.9 percent (36) low; and 28.6 percent (24) very low. The results are very similar to the medium management scenario.

Future Representation and Redundancy of the Species: Under all management scenarios, five populations in four ecosystems are predicted to have very high resiliency (East Gulf Coastal Plain (2), Sandhills (1), Mid-Atlantic Coastal Plain (1), and South Atlantic Coastal Plain (1)). Under the Manager's Expectation and medium management scenarios, seven populations in five ecosystems are considered to have high resiliency (East Gulf Coastal Plain (2), South Atlantic Coastal Plain (1), Sandhills (2), Upper West Gulf Coastal Plain (1), and West Gulf Coastal Plain (1)). Also, compared to current conditions, the greater number of future high and very high resiliency populations are more widely distributed among ecoregions and include the western geographic range; however, over the whole range of the woodpecker, the occurrence of high and very high resiliency populations is most concentrated in the East Gulf Coastal Plain and Sandhills ecoregions.

Only two ecoregions (Cumberland Ridge and Valley and Gulf Coast Prairie and Marshes) have no simulated populations of moderate to very high resiliency in the Manager's Expectation, medium management, and high management scenarios, compared to six ecoregions (Florida Peninsula, Ouachita Mountains, Cumberland Ridge and Valley, Piedmont, Gulf Coast Prairie and Marshes, and Mississippi River Alluvial Plain) that currently do not have moderate to very high resiliency populations. The one current population in the Mississippi River Alluvial Plain ecoregion was not simulated in the future. In the low management scenario, four ecoregions (Cumberland Ridge and Valley, Gulf Coast Prairie and Marshes, Ouachita Mountains, and Piedmont) that currently only have low or very low resiliency populations are not projected to gain any moderate to very high resiliency populations at 25 years.

Summary: The total number of simulated populations at 25 years varied slightly among the management scenarios because of a different number of initial populations that demographically merged during simulations to establish new and larger populations. Results of the Manager's Expectation and medium management scenarios were most similar, while the low management and high management scenarios represented more extreme future resiliency conditions. These simulations, particularly for the low management and high management scenarios, illustrate the extent to which the red-cockaded woodpecker is a conservation-reliant species that responds positively or negatively to management, and how successful management can sustain small populations with low or very low resiliency. In all scenarios, most populations at year 25 were still in the very low, low, and moderate resiliency categories. However, the majority of populations were projected to be stable or increasing in all but the low management scenario, highlighting how successful management can sustain even small populations, albeit with a greater inherent risk in response to poor or insufficient management. The low management scenario illustrates that without adequate species-level management, in contrast to ecosystem management alone, very little increase in the number of moderate to very high resiliency populations can be expected and small populations of low or very low resiliency are unlikely to persist. The high management scenario represents the limit of what can be accomplished given the current ***land*** base and carrying capacity to support populations. However, management at current levels, as represented by the medium management scenario, further increases the number of moderate to very high resiliency populations and projects that small populations can be preserved. In addition, at current (or greater) levels of future management, redundancy and representation are expected to improve significantly in response to increasing populations. Because, if we reclassify the red-cockaded woodpecker as a threatened species, the woodpecker would remain protected under the Act, current levels of management are expected to continue into the future.Recovery and Recovery Plan Implementation

The original red-cockaded woodpecker recovery plan was first issued by the Service on August 24, 1979. A first revision was issued on April 11, 1995, and the second, and current, revision on January 27, 2003. The 2003 recovery plan provided management guidelines fundamental to the conservation and recovery of red-cockaded woodpeckers. The Service continues to strongly encourage the application of these guidelines to the management of woodpecker populations on public and private ***lands***. As explained in Conservation Measures that Benefit the Species, above, implementation of the recovery plan has been carried out through the incorporation of management guidelines into various Federal and State ***land*** management plans. In addition to the management guidelines, the 2003 recovery plan provides guidelines to private landowners to follow on private ***lands*** occupied by red-cockaded woodpeckers. The 2003 recovery plan provides guidelines for installing artificial cavities; management of cavity trees and clusters; translocation; silviculture; and prescribed fire under the management guidelines, and guidelines for managing foraging habitat on private ***lands*** are provided under the private ***land*** guidelines. After the issuance of the 2003 recovery plan, two additional sets of foraging guidelines were developed (USFWS 2005, entire). As described in the 2005 guidance, the recovery standard for good quality foraging habitat is intended for recovery management to sustain and increase populations.

The recovery plan contains both downlisting and delisting criteria. The recovery criteria in the 2003 recovery plan are based on 39 designated populations in different viability size classes. Although these were not the only red-cockaded woodpecker populations known at the time, they were selected as recovery populations because of anticipated future management by their management agencies or entities, the estimated future capacity of the properties, and their geographic distribution within and among recovery units (e.g , ecoregions). Each of these designated populations have a future population size objective with various potential roles toward achieving the downlisting and delisting criteria in the recovery plan. The populations are distributed within 11 recovery units or ecoregions that represent broad patterns of ecological and potential genetic variation and that enhance immigration to reduce the loss of genetic variation (e.g , representation), with multiple populations to reduce risks of catastrophic impacts of periodic hurricanes, and adverse stochastic demographic, environmental, and genetic factors (e.g , redundancy). The 39 designated recovery populations are either primary core (13), secondary core (10), or essential support (16), according to recovery population size potential breeding group (PBG) objectives. As described above, a PBG is a cluster with a potentially breeding adult male and female, with or without adult helpers or successfully fledging young. An active cluster can be either a PBG or a single territorial bird. Further discussion of these terms, along with the rationale for each delisting and downlisting criterion, can be found in the recovery plan (USFWS 2003, pp. 140-145). Further detail on the specific populations required to meet each criterion can also be found in the recovery plan.

Downlisting may be achieved by having a total of 20 designated recovery populations fulfilling the following criteria. Qualifying populations with the largest population sizes are listed for each criterion when a specific population is not required. No particular population may satisfy more than one criterion.

Downlisting Criterion 1: There is one stable or increasing population of 350 PBGs (400 to 500 active clusters) in the Central Florida Panhandle. This criterion has been met. In our 2006 5-year review (USFWS 2006), we identified that part of one of the five properties (Apalachicola Ranger District-Apalachicola National ***Forest***) comprising the Central Florida Panhandle Primary Core population alone had 451 PBGs. Now, there are 909 active clusters representing about 809 PBGs for the Central Florida Panhandle Primary Core population. The average growth rate for this population is increasing. Downlisting Criterion 2: There is at least one stable or increasing population containing at least 250 PBGs (275 to 350 active clusters) in each of the six following recovery units: Sandhills, Mid-Atlantic Coastal Plain, South Atlantic Coastal Plain, West Gulf Coastal Plain, Upper West Gulf Coastal Plain, and Upper East Gulf Coastal Plain. This criterion has been partially met. Currently, four of the six recovery units have a population that has reached the minimum required size to fulfill this criterion (Sandhills, North Carolina Sandhills East Primary Core; Mid-Atlantic Coastal Plain, Francis Marion Primary Core; South Atlantic Coastal Plain, Fort Stewart Primary Core; and Upper West Gulf Coastal Plain, Sam Houston Primary Core). The Vernon-Fort Polk primary core with 223 active clusters and 185 PBGs (West Gulf Coastal Plain) and Bienville Primary Core with 162 active clusters and 144 PBGs (Upper East Gulf Coastal Plain) have not fulfilled this criterion. Downlisting Criterion 3: There is at least one stable or increasing population containing at least 100 PBGs (110 to 140 active clusters) in each of the four following recovery units: Mid-Atlantic Coastal Plain, Sandhills, South Atlantic Coastal Plain, and East Gulf Coastal Plain. This criterion has been fulfilled by the following populations: Coastal North Carolina Primary Core (235 active clusters, 209 PBGs, Mid-Atlantic Coastal Plain), South Carolina Sandhills Secondary Core (237 active clusters, 211 PBGs, Sandhills), Osceola/Okefenokee Primary Core (212 active clusters, 189 PBGs, South Atlantic Coastal Plain), and Eglin Primary Core (526 active clusters, 462 PBGs, East Gulf Coastal Plain). Downlisting Criterion 4: There is at least one stable or increasing population containing at least 70 PBGs (75 to 100 active clusters) in each of the following This criterion has been partially met by two populations: North Carolina Sandhills West Essential Support (187 active clusters, 166 PBGs, Sandhills) and Oconee/Piedmont Secondary Core (85 active clusters, 76 PBGs, Piedmont). Three of the five populations presently do not meet the required population size: Ouachita Secondary Core (73 active, 69 PBGs, Ouachita Mountains), Northeast North Carolina/Southeast Virginia Essential Support (68 active clusters, 61 PBGs, Mid-Atlantic Coastal Plain), and Talladega/Shoal Creek Essential Support (45 active clusters, 43 PBGs, Cumberland Ridge and Valley). The Ouachita Secondary Core population in the Ouachita Mountains recovery unit, with an estimated 69 PBGs, is on the threshold of achieving the size criterion. Downlisting Criterion 5: There are at least four populations each containing at least 40 PBGs (45 to 60 active clusters) on State and/or Federal ***lands*** in the South/Central Florida Recovery Unit. This criterion has been met by four populations: Big Cypress Essential Support, (88 active clusters, 78 PBGs); Goethe Essential Support (63 active clusters, 52 PBGs); Ocala Essential Support (123 active clusters, 109 PBGs); Withlacoochee Citrus Tract (80 active clusters, 78 PBGs). Downlisting Criterion 6: There are habitat management plans in place in each of the above populations identifying management actions sufficient to increase the populations to recovery levels, with special emphasis on frequent prescribed burning during the growing season. This criterion has been mostly met. These 20 populations occur on properties owned by 6 Federal and 5 State agencies, and 2 nongovernmental entities. Agency management plans meet this criterion for 18 of these 20 populations. The remaining two populations, the Big Cypress Essential Support population and the Northeast North Carolina/Southeast Virginia Essential Support population, do not currently fulfill this management criterion for various reasons. The Big Cypress Essential Support population, on the Big Cypress National Preserve, has exceeded its recovery population size objective, and while the Preserve management plan doesn't mention species-specific management activities, appropriate habitat management is occurring along with a limited application of artificial cavity installation. In addition, because of the current distribution and number of natural cavities and continued excavation of natural cavities on the Preserve by woodpeckers, there may be sufficient old pines for natural cavity excavation to sustain this population even if the Preserve does not manage for artificial cavities in the future. The Northeast North Carolina/Southeast Virginia Essential Support population is spread over five properties with a mixture of management plans and management activities. For example, The Nature Conservancy does not have a management plan for the Piney Grove Preserve in Virginia; however, this population segment is intensively and successfully managed. Red-cockaded woodpeckers on the remaining four properties inhabit ecologically unique conditions that limit the application of the standard management techniques, and a management plan does not exist for one of these properties. In addition, the available management plans for these 20 populations include none to minimal provisions for post-hurricane or post-storm management, although such management generally does occur when needed.

Delisting can be achieved with a minimum 29 populations that fulfill required size criteria in, when required, specific recovery units. As with downlisting, a population that fulfills one criterion cannot be applied to meet another criterion. All of these populations must exist with suitable natural cavities and without dependence on continued artificial cavity management. Sufficient management and monitoring plans must be available by respective management agencies to continue to sustain these populations. Finally, the recovery plan indicates that only 11 of the 13 primary core populations must meet the delisting criteria because at any time 2 may be recovering from adverse impacts of hurricanes. Similarly, the requirement for secondary core populations is 9 of 10, and the requirement for essential support populations is 9 of 16 to allow for hurricane impacts.

Of the 29 populations required for delisting, only 12 (41.4 percent) currently meet delisting population size requirements. Of the following four recovery criteria with delisting population size requirements, Delisting Criterion 3, concerning populations in the South/Central Florida recovery unit, is the only criterion in which all populations have attained minimum size attributes. All of these 29 populations currently remain dependent on artificial cavities.

Delisting Criterion 1: There are 10 populations of red-cockaded woodpeckers that each contain at least 350 PBGs (400 to 500 active clusters), and one population that contains at least 1,000 PBGs (1,100 to 1,400 active clusters), from among 13 designated primary core populations, and each of these 11 populations is not dependent on continuing installation of artificial cavities to remain at or above this population size. This criterion has not been met. Five of the 11 primary core populations in this criterion have met or positively exceeded the minimum population size, but all populations remain dependent on artificial cavities and no population has reached at least 1,000 PBGs: North Carolina Sandhills East Primary Core (520 active clusters, 514 PBGs), Fort Stewart Primary Core (504 active clusters, 480 PBGs), Eglin Primary Core (526 active clusters, 462 PBGs), Francis Marion Primary Core (465 active clusters, 414 PBGs), Fort Benning Primary Core (400 active clusters, 387 PBGs) The Central Florida Primary Core is the closest to achieving the 1,000 PBG goal (858 active clusters, 764 PBGs). In addition, the following populations have not yet met the goal of 350 PBGs: Sam Houston Primary Core (289 active clusters, 257 PBGs), Coastal North Carolina Primary Core (235 active clusters, 209 PBGs), Osceola/Okefenokee Primary Core (212 active clusters, 189 PBGs), Vernon/Fort Polk Primary Core (223 active clusters, 199 PBGs), and Bienville Primary Core (162 active clusters, 144 PBGs) Delisting Criterion 2: There are nine populations of red-cockaded woodpeckers that each contain at least 250 PBGs (275 to 350 active clusters) from among 10 designated secondary core populations, and each of these nine populations is not dependent on continuing installation of artificial cavities to remain at or above this population size. This criterion has not been met. None of the 10 designated secondary core populations harbors 250 PBGs, which range in size from 69 PBGs in the Ouachita Secondary Core to 211 PBGs in the South Carolina Sandhills Secondary Core, and all of these populations remain dependent on artificial cavities. Delisting Criterion 3: There are at least 250 PBGs (275 to 350 active clusters) distributed among designated essential support populations in the South/Central Florida Recovery Unit, and six of these populations (including at least two of the following: Avon Park, Big Cypress, and Ocala) exhibit a minimum population size of 40 PBGs This criterion has been partially met. The size of the six populations and total number of PBGs has been fulfilled: Babcock/Webb Essential Support (46 active clusters, 42 PBGs), Big Cypress Essential Support (88 active clusters, 78 PBGs), Goethe Essential Support (63 active clusters, 52 PBGs), Ocala Essential Support (123 active clusters, 109 PBGs), Three Lakes Essential Support (48 active clusters, 45 PBGs), and Withlacoochee Citrus Tract Essential Support (80 active clusters, 78 PBGs). All populations continue to be dependent on artificial cavities. Delisting Criterion 4: There is one stable or increasing population containing at least 100 PBGs (110 to 140 active clusters) in northeastern North Carolina and southeastern Virginia, the Cumberland Ridge and Valley recovery unit (Talladega/Shoal Creek), and the Sandhills recovery unit (North Carolina Sandhills West), and these populations are not dependent on continuing artificial cavity installation to remain at or above this population size. This criterion has been partially met. Of these three populations, the size objective of the North Carolina Sandhills West Essential Support (187 active clusters, 166 PBGs) has been fulfilled, while the Northeast North Carolina/Southeast Virginia Essential Support (73 active clusters, 65 PBGs) and the Talladega/Shoal Creek Essential Support (42 active clusters, 32 PBGs) have not achieved the population size objective. Also, all three populations continue to be dependent on artificial cavities. Delisting Criterion 5: For each of the populations meeting the above size criteria, responsible management agencies shall provide (1) a habitat management plan that is adequate to sustain the population and emphasizes frequent prescribed burning, and (2) a plan for continued population monitoring. This criterion has not been met. Once the populations required for delisting have achieved population size objectives and are not dependent on artificial cavities, this criterion requires adequate future management plans to continue to sustain habitat and populations with active habitat management and monitoring. Such management is essential to ensure populations do not decline and the species falls to an endangered or threatened status. These management and monitoring plans would represent post-delisting commitments by respective management entities for this conservation-reliant species. Various management plans currently exist for these populations, but not as continued commitments upon recovery and delisting of the red-cockaded woodpecker.

Summary

Since the recovery plan was last revised in 2003, the number of red-cockaded woodpecker active clusters has increased from 5,627 to over 7,800 (USFWS 2020, entire). The population size objectives to meet applicable downlisting criteria have been met for 15 of 20 designated populations. All of these designated populations show stable or increasing long-term population growth rates (λ ≥ 1). However, not all of the designated recovery populations are demographically a single functional population as intended by the recovery plan. Nine of the 20 designated recovery populations toward fulfilling downlisting population size criteria consist of multiple smaller demographic populations. Based on the largest single demographic population for a designated recovery population, 14 of 20 designated recovery populations have achieved downlisting population size criteria. As to delisting criteria, because the delisting criteria all require all-natural cavities, none of the delisting criteria have been fully met. With continued ***forest*** management to retain and produce sufficient old pines for natural cavity excavation, future populations would no longer be dependent artificial cavities. Regardless, there has been encouraging progress towards meeting the delisting criteria, as 12 of 29 demographically delineated populations corresponding to designated recovery populations currently have achieved population sizes that meet the delisting criteria.

While recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents. Revisions to the List, including downlisting or delisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species due to threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.” Therefore, while it is valuable to consider the progress a species has made towards meeting downlisting or delisting criteria, the decision to reclassify an endangered species as threatened or to delist a species due to recovery does not rely on the recovery plan. For the red-cockaded woodpecker, although the population objectives from the recovery plan have yet to be reached, the primary recovery task of increasing existing populations on Federal and State ***lands*** has been successful, and the population growth rates indicate sufficient resiliency to stochastic disturbances with effective management. In addition, redundancy of moderate to very high resiliency populations suggests that risks from future catastrophic events to overall viability is low.Determination of Red-Cockaded Woodpecker Status

Section 4 of the Act (16 U.S.C 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of “endangered species” or “threatened species.” The Act defines an “endangered species” as any species that is “in danger of extinction throughout all or a significant portion of its range” and a “threatened species” as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether a species meets the definition of “endangered species” or “threatened species” because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We must consider these same five factors in reclassifying (e.g , changing a species status from endangered to threatened) or delisting a species.Status Throughout All of Its Range

Red-cockaded woodpeckers were once considered a common bird across the southeastern United States. At the time of listing in 1970, the species was severely threatened by lack of adequate habitat due to historical logging, incompatible ***forest*** management, and conversion of ***forests*** to urban and ***agricultural*** uses. Fire-maintained old growth pine savannahs, on which the species depends, were extremely rare. What little habitat remained was mostly degraded due to fire suppression and silvicultural practices that hindered the development of older, larger trees needed by the species for cavity development and foraging. Even after listing, the species continued to decline. However, new restoration techniques, such as artificial cavities, along with changes in silvicultural practices and wider use of prescribed fire to recreate open pine parkland structure, has led to stabilization of the species' viability and resulted in an increase in the number and distribution of populations. While most populations are still small and vulnerable to stochastic events, the majority of populations for which we were able to determine trends are stable or increasing (λ = 1.0 or greater), and only 13 percent are declining. There are currently at least 124 populations across 13 ecoregions.

When we modeled future scenarios, the majority of populations were projected to be stable or increasing in all but the low management scenario, highlighting how successful management can sustain even small populations, albeit with a greater inherent risk in response to poor or insufficient management. Future management at current and recent past levels, as represented by the medium management scenario, further increases the number of moderate to very high resiliency populations and projects that small populations can be preserved. In addition, at current (or greater) levels of management, redundancy and representation are expected to significantly improve because most populations are expected to increase in size across the ecoregions.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

We determined the foreseeable future to be 25 years from present, because it is a reasonable timeframe in which we can reasonably estimate population responses to natural factors and management. As discussed under Future Conditions above, in the SSA report, future population conditions under different management scenarios were simulated and modeled to 25 years into the future, and we determined that we can rely on the timeframe presented in the scenarios and predict how future stressors and management will affect the red-cockaded woodpecker. It is the timeframe in which the 95 percent confidence intervals around the future scenario modeling have reasonable bounds of uncertainty. This timeframe, given the species' life history, is also sufficient to identify any effects of stressors or conservation measures on the red-cockaded woodpecker's viability at both population and species levels. Finally, 25 years represents 4 to 5 generations of red-cockaded woodpecker, which would be sufficient time for population-level impacts from stressors and management to be detected.

The red-cockaded woodpecker still faces a variety of stressors due to inadequate habitat across its range, but these are now mostly legacy stressors resulting from historical ***forest*** conversion and fire suppression practices rather than current habitat loss. These legacy stressors include insufficient numbers of cavities and suitable, abundant old pines for natural cavity excavation; habitat fragmentation and its effects on genetic variation, dispersal, and connectivity to support demographic populations; lack of suitable foraging habitat for population growth and expansion; and small populations. The species also still faces stress from natural events, especially hurricanes. Immediate management response after natural disasters is key to preventing cluster abandonment in all populations and is critical to keeping smaller populations from being extirpated altogether. More broadly, this species remains conservation-reliant throughout its range. Red-cockaded woodpeckers rely on, and will continue to rely almost completely on, active management by property managers and biologists to install artificial cavities and manage clusters, restore additional habitat and strategically place recruitment clusters to improve connectivity, control the hardwood midstory through prescribed fire and silvicultural treatments, and translocate individuals to augment small populations and minimize loss of genetic variation. In addition, emergency response after severe storms and other natural disasters will continue to be necessary to prevent cluster abandonment and minimize wildfire fuel loading. However, both the emergency response and routine management are well-understood and are currently being implemented across the range of the woodpecker. In addition, much of the red-cockaded woodpecker's currently occupied habitat is now protected under various management plans. As a conservation-reliant species, securing management commitments for the foreseeable future would ensure that red-cockaded woodpecker populations grow or are maintained. This conclusion is reinforced by the future scenario simulations, which indicate that management efforts equal to or greater than current levels will further increase the number of moderate to very high resiliency populations and preserve small populations.

After evaluating the threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we find that, while the stressors identified above continue to negatively affect the red-cockaded woodpecker, new restoration techniques and changes in silvicultural practices has led to stabilization of the red-cockaded woodpecker's viability and even resulted in a substantial increase in the number and distribution of populations. Thirteen percent of all current red-cockaded woodpecker clusters are within moderate, high, or very highly resilient populations, and populations are spread across multiple ecoregions, providing for redundancy and representation. However, the species remains highly dependent on continued conservation management and the majority of populations contain small numbers of clusters. Thus, after assessing the best available information, we conclude that the red-cockaded woodpecker is not in danger of extinction throughout all of its range; however, it is likely to become in danger of extinction within the foreseeable future throughout all of its range.

However, if ongoing and future proactive red-cockaded woodpecker management were assured, the remaining negative factors identified above could be ameliorated. Therefore, in this proposed rule, we ask the public to provide comments regarding the adequacy of existing management plans for the conservation of the red-cockaded woodpecker, and the likelihood that those plans will continue to be implemented into the future (see Information Requested, above).Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in Center v. Everson, 2020 WL 437289 (D.D.C Jan. 28, 2020) (Center for Biological Diversity), vacated the aspect of the 2014 Significant Portion of its Range Policy that provided that the Services do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and, (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in Center for Biological Diversity, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e , endangered). In undertaking this analysis for the red-cockaded woodpecker, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered.

For the red-cockaded woodpecker, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. We examined the following stressors: Natural disasters such as hurricanes and vulnerability due to small population sizes and fragmentation. Other identified stressors, such as inadequate habitat, are uniform throughout the red-cockaded woodpecker's range. Although hurricanes may impact populations across the red-cockaded woodpecker's range, return intervals are shorter and impacts are more pronounced in near-coastal populations compared to inland populations (USFWS 2020, pp. 119-122). Furthermore, while small populations occur throughout the species' range, we found that there is a concentration of threats from the combination of both hurricanes and small population sizes in the Florida Peninsula, West Gulf Coastal Plain, and the southernmost near-coastal extension of the Upper West Gulf Coastal Plain ecoregions. This means these portions of the range together may constitute a portion of the species range where the species could have a different status because the threats are not uniform throughout the range and the species may face a greater level of imperilment where threats are concentrated.

Having determined that these are portions of the range where the species may be in danger of extinction, we next examined the question of whether these portions may be significant. In undertaking this analysis for the red-cockaded woodpecker, we considered whether the portions of the species' range identified above may be significant based on their biological importance to the overall viability of the species. Although these areas contain 49 of the 124 demographic populations identified in the SSA (40 percent), only three populations currently have moderate resiliency and the remaining populations demonstrate low and very low resiliency. One of the moderate populations is projected to increase to high resiliency in the low management scenario and two of three moderate populations are projected to increase to high resiliency in the remaining future scenarios. However, the majority of the populations remain in the low or very low resiliency category and do not contribute significantly, either currently or in the foreseeable future, to the species' total resiliency at a biologically meaningful scale compared to other representative areas. Although the populations in these ecoregions are relatively small, the current and future redundancy suggests that hurricanes would be unlikely to extirpate red-cockaded woodpeckers in an entire ecoregion, thus overall representation should not be impacted. Even if some populations in these portions were to become extirpated, the species would maintain sufficient levels of resiliency, representation, and redundancy in the rest of these ecoregions and in other ecoregions across its range, supporting the species' viability as a whole. Thus, we do not find that these are portions of the red-cockaded woodpecker's range that may be significant.

In conclusion, we do not find any portions of the species' range may be significant based on their biological importance to the overall viability of the red-cockaded woodpecker. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in Desert Survivors v. Department of the Interior, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D Cal. Aug. 24, 2018), and Center for Biological Diversity v. Jewell, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).Determination of Status

Our review of the best available scientific and commercial information indicates that the red-cockaded woodpecker meets the definition of a threatened species. Therefore, we propose to reclassify the red-cockaded woodpecker as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.Effects of This Proposed Rule

This proposal, if made final, would revise 50 CFR 17.11(h) to reclassify the red-cockaded woodpecker from endangered to threatened. This reclassification is due to the substantial efforts made by Federal, State, and private landowners to recover the species. Adoption of this proposed rule would formally recognize that this species is no longer in danger of extinction throughout all or a significant portion of its range and, therefore, does not meet the definition of an endangered species. However, the species is still impacted by the effects of habitat loss and degradation, habitat fragmentation, and small populations such that it meets the Act's definition of a threatened species.Proposed Section 4(d) RuleBackground

Section 4(d) of the Act contains two sentences. The first sentence states that the “Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation” of species listed as threatened. The U.S Supreme Court has noted that very similar statutory language like “necessary and advisble” demonstrates a large degree of deference to the agency (see Webster v. Doe, 486 U.S 592 (1988)). Conservation is defined in the Act to mean “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the Act] are no longer necessary.” Additionally, the second sentence of section 4(d) of the Act states that the Secretary “may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or 9(a)(2), in the case of plants.” Thus, regulations promulgated under section 4(d) of the Act provide the Secretary with wide latitude of discretion to select appropriate provisions tailored to the specific conservation needs of the threatened species. The statute grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife or included a limitated taking prohibition (see Alsea Valley Alliance v. Lautenbacher, 2007 U.S Dist. Lexis 60203 (D. Or. 2007); Washington Environmental Council v. National Marine Fisheries Service, 2002 U.S Dist. Lexis 5432 (W.D Wash. 2002)). Courts have also upheld 4(d) rules that do not address all the threats a species faces (see State of Louisiana v. Verity, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species” (H.R Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising its authority under section 4(d) of the Act, the Service has developed a proposed 4(d) rule that is designed to address the red-cockaded woodpeckers' specific threats and conservation needs. Although the statute does not require the Service to make a “necessary and advisable” finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in seciton 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the red-cockaded woodpecker. As discussed above, the Service has concluded that the red-cockaded woodpecker is likely to become an endangered species within the foreseeable future primarily due to threats stemming from lack of suitable habitat. Therefore, the provisions of this proposed 4(d) rule prohibit incidental take associated with actions that would result in the further loss or degradation of red-cockaded woodpecker habitat, including damage to or loss of cavity trees. Maintaining and expanding existing populations is also vital to the conservation of the species; therefore, the proposed 4(d) rule would also prohibit incidental take associated with actions that would harm or harass red-cockaded woodpeckers during breeding season as well as ban the use of insecticides and herbicides on standing pine trees in and around active cavity tree clusters (to provide for adequate foraging).

The red-cockaded woodpecker relies, and will continue to rely, on artificial cavities until a sufficient number of large mature pines becomes widely available; the installation and maintenance of artificial cavities is an essential management tool to sustain populations until such time as there are adequate natural cavities. However, the proper techniques to install cavity inserts, drill cavities, or install cavity restrictor plates require training and experience; therefore, the proposed 4(d) rule would prohibit incidental take associated with these activities, so that they can be properly regulated under a section 10(a)(1)(A) permit. Similarly, inspecting cavities to monitor eggs and hatchlings, typically using a video scope, drop light, or mirror inserted into the cavity, could cause incidental take, through flushing of adult or subadult birds resulting in possible injury or even death, if not done correctly. Therefore, the proposed 4(d) rule would prohibit incidental take associated with inspections of cavity contents, including the use of video scopes, drop lights, or mirrors, inserted into cavities; however, these activities could be covered under a section 10(a)(1)(A) permit.

The proposed 4(d) would also provide for certain exceptions to the prohibitions. In addition to certain standard exceptions, they include incidental take on Department of Defense installations under certain circumstances, incidental take associated with conservation and habitat restoration actions carried out in accordance with a Service- or State-approved management plan, and certain actions that would harm or harass red-cockaded woodpeckers during breeding season associated with existing infrastructure that are not increases in the existing activities. All of these prohibitions and exceptions are discussed in more detail below.

The provisions of this proposed 4(d) rule are one of many tools that the Service would use to promote the conservation of the red-cockaded woodpecker. This proposed 4(d) rule would apply only if and when the Service makes final the determination to reclassify the red-cockaded woodpecker as a threatened species.Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of the red-cockaded woodpecker by prohibiting the following activities, except as otherwise authorized or permitted: Importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; and selling or offering for sale in interstate or foreign commerce. We also propose several standard exceptions to the prohibitions for the red-cockaded woodpecker, such as activities authorized by permits under § 17.32 of these regulations; take by employees of State conservation agencies operating under a cooperative agreement with the Service in accordance with section 6(c) of the Act; and take by an employee of the Service, Federal ***land*** management agency, or State conservation agency to aid sick or injured red-cockaded woodpeckers, which are set forth under Proposed Regulation Promulgation, below.

Under the Act, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined by regulation at 50 CFR 17.3 Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating intentional and incidental take would help preserve the species' remaining populations; enable beneficial management actions to occur; and decrease synergistic, negative effects from other stressors.

In this 4(d) rule, we propose to prohibit intentional take, including capturing, handling, and similar activities, because these activities require training and experience. Such activities include, but are not limited to, translocation, banding, collecting tissue samples, and research involving capturing and handling red-cockaded woodpeckers. While these activities are important to red-cockaded woodpecker recovery, there are proper techniques to capturing and handling birds that require training and experience. Improper capture, banding, or handling can cause injury or even result in death of red-cockaded woodpeckers. Therefore, to assure these activities continue to be conducted correctly by properly trained personnel, the proposed 4(d) rule would prohibit intentional take; however, these activities could be covered under a section 10(a)(1)(A) permit.

For the purposes of this rule, “occupied habitat” is defined as an active cavity tree cluster with surrounding suitable foraging habitat. An “active cavity tree cluster” is defined as the area delineated by a polygon of active cavity trees plus a 200-foot buffer, although there are some exceptions to this. Foraging habitat is delineated as surrogate foraging partitions according to described Service procedure and standard.

As discussed above under Summary of Stressors and Conservation Measures Affecting the Species, the lack of suitable habitat is the primary factor continuing to affect the status of the red-cockaded woodpecker. Historical clearcutting, incompatible ***forest*** management, and conversion to urban and ***agricultural*** ***lands*** uses resulted in the loss of the majority of longleaf and other open-canopy pine habitat across the range of the species. While these impacts have been significantly curtailed and mostly replaced by beneficial conservation management, stressors caused by adverse historical practices still linger, such as insufficient numbers of cavities, low numbers of suitable old pines, and habitat fragmentation. In addition, these types of actions do still occur within red-cockaded woodpecker habitat, so maintaining existing habitat is essential. Therefore, in addition to the activities prohibited above, this proposed 4(d) rule would prohibit incidental take of any red-cockaded woodpecker: (1) Associated with damage or conversion of currently occupied red-cockaded woodpecker nesting and foraging habitat to other ***land*** uses that result in conditions not able to support red-cockaded woodpeckers; and (2) associated with ***forest*** management practices in currently occupied red-cockaded woodpecker nesting and foraging habitat that result in conditions not able to support red-cockaded woodpeckers. Such actions could include, but are not necessarily limited to, timber harvesting for thinning or regeneration in occupied habitat that temporarily or permanently ***removes*** active cavity trees or suitable foraging habitat and renders the remaining habitat and timber insufficient for red-cockaded woodpeckers, or actions that permanently convert currently occupied red-cockaded woodpecker nesting and foraging habitat to other non-***forest*** ***land*** uses, such as real estate development, cultivation or crops, firing ranges on military installations, roads, rights-of-way, and pasture.

However, under this 4(d) rule, we propose that habitat restoration activities that would sustain, improve, or increase quality and quantity of habitat for the red-cockaded woodpecker would be excepted from incidental take prohibitions if they are conducted under a Service- or State-approved management plan that provides for the conservation of the red-cockaded woodpecker. The Service encourages landowners and managers to conduct activities that maintain and improve red-cockaded woodpecker habitat. These habitat restoration activities may include, but are not limited to, thinning overstocked stands; converting loblolly, slash or other planted pines to more fire-tolerant native pines such as longleaf pine; regeneration of stands to provide more sustainable future habitat; and prescribed fire. Current conditions in certain pine stands can limit the amount of red-cockaded woodpecker habitat. For example, foraging habitat dominated by even-aged stands of old senescent pines may limit the ability of younger stands to grow and replace the future natural loss of older stands. Regeneration can be an important tool to provide a more sustainable future source of suitable red-cockaded woodpecker nesting and foraging habitat with trees of sufficient size and age. However, harvesting occupied red-cockaded woodpecker habitat for regeneration in these conditions could result in loss of suitable habitat, resulting in a reduction to the red-cockaded woodpecker population. Under this proposed 4(d) rule, we would under certain conditions except incidental take associated with habitat restoration activities that have short-term adverse effects to red-cockaded woodpecker, but that are intended to provide for improved habitat quality and quantity in the long term, with coinciding increase in numbers of red-cockaded woodpeckers. Current and future red-cockaded woodpecker habitat conditions that require such restoration can vary significantly among sites and properties, to the extent that it would be extremely difficult to prescribe a universal condition by which this exception would apply. Therefore, in this 4(d) rule we propose that these activities may proceed in compliance with a Service- or State-approved management plan, where the site-specific conditions can be strategically and accurately assessed. Suitable management plans may consist of stand-alone documents, or may be tiered to other plans, such as U.S ***Forest*** Service ***Land*** and Resource Management Plans, National Wildlife Refuge System Comprehensive Conservation Plans, and wildlife management area plans, State Wildlife Action Plans, or other State agency plans.

Potentially, these management plans could cover more than just situations where ***land*** managers are seeking to alter habitat in the short term for long-term restoration of improved habitat. In this 4(d) rule we propose to except incidental take associated with other management activities conducted under Service- or State-approved red-cockaded woodpecker management plans. Public agencies and private landowners prepare a variety of plans for different purposes. A Service- or State-approved plan in this regard would include a red-cockaded woodpecker management component, whether as a part of a larger plan or a stand-alone plan, to address factors including, but not limited to, the red-cockaded woodpecker population size objective and how management for artificial cavities as needed and habitat management to sustain, restore, or increase habitat for foraging and cavity trees will attain population size objectives. For example, once certain population size objectives, such as those identified in the 2003 recovery plan, are met, and other parameters are established (such as commitments relating to the amount, extent, and location of any future incidental take), a landowner following a Service- or State-approved management plan could be excepted from incidental take for red-cockaded woodpecker conservation activities or habitat restoration activities, including, but not limited to silviculture and prescribed fire, activities causing harm or harassment of red-cockaded woodpeckers, and use of insecticides or herbicides on their ***lands***. Again, the Service seeks to encourage comprehensive, proactive management that results in red-cockaded woodpecker population growth and stability. Excepting incidental take once such ***targets*** are met will encourage these beneficial management activities. However, because of the differences in needed management across the range of the species, it is appropriate to identify these population ***targets*** and other parameters on a case-by-case basis in a Service- or State-approved management plan, rather than in a blanket exception in this 4(d) rule. State agency Safe Harbor plans and agreements implemented for non-governmental landowners, as approved by the Service, do not need to be covered under this exception because they receive permits under the authority of section 10(a)(1)(A) of the Act that provides exemption from the prohibitions of incidental take.

We acknowledge the critical role that the States play in the conservation of the red-cockaded woodpecker. As described in Conservation Measures that Benefit the Species, above, States solely own and manage ***lands*** occupied by at least 31 demographic populations and oversee State-wide safe harbor agreements that have enrolled 459 non-Federal landowners covering approximately 2.5 million acres. Because of their authorities and their close working relationships with landowners, State agencies are in a unique position to assist the Services in implementing conservation programs for the red-cockaded woodpecker. We also acknowledge the workload that will be associated with the management plans as envisioned, and the limited resources the Service may have to participate fully in developing these plans, especially if multiple landowners were to request to develop such plans if and when this 4(d) rule is made final. Our intention is that these management plans would be developed in coordination with all affected entities—the Service, the landowner or manager, and the State conservation agency. However, because of the States' unique relationship with landowners, and their experience and sustained performance implementing conservation programs for red-cockaded woodpeckers in their States, in this rule, we propose that management actions implemented under red-cockaded woodpecker management plans developed with and approved by State conservation agencies and not necessarily the Service are excepted from the incidental take prohibitions. The Service seeks comment on what conditions, if any, should be placed upon State-approved management plans such that they would provide both protections to red-cockaded woodpeckers and incentives to landowners similar to a Service-approved plan (see Information Requested, above).

The Service is also considering how to expand and provide further clarity regarding red-cockaded woodpecker conservation actions and habitat restoration activities that would be excepted from the incidental take prohibition in the 4(d) rule, and therefore we seek comment on our proposed provision excepting incidental take resulting from conservation or habitat management activities, including silviculture, prescribed fire, and use of insecticides or herbicides, with a Service- or State-approved management plan for red-cockaded woodpecker conservation (see Information Requested, above). In addition, we seek comment and information about the important factors that should be considered for these Service- or State-approved management plans. These factors may include the duration of the plan; personnel and funding for plan implementation; current habitat conditions and management limitations; the treatments to improve habitat and resolve limitations; desired future habitat conditions; and the past, current, and anticipated future size of the red-cockaded woodpecker population. In addition, these factors may include the role and extent of Service oversight of both Service- and State-approved plans, such as monitoring requirements and reporting to the Service any resulting take of red-cockaded woodpeckers. Continued conservation activities and beneficial ***land*** management are necessary to address habitat degradation and fragmentation, and it is the intent of this proposed rule to encourage these activities. We also seek comment on whether an exception could be made for beneficial long-term ***forest*** regeneration activities without a Service- or State-approved management plan, if limiting conditions were placed on the activities, such as red-cockaded woodpecker current population size and a future limit to the reduction of population size as a result of the restoration project, and what those limiting conditions should be.

The use of insecticides and herbicides within or near an active cavity tree cluster could expose red-cockaded woodpeckers and their invertebrate prey to toxic chemicals, even when application follows labeling requirements. Depending on chemical ingredients, toxicity, and dose exposure, there is an ecological risk that foraging red-cockaded woodpeckers could be adversely exposed and injured (National Research Council 2013, p. 3-15). Adverse impacts to red-cockaded woodpeckers include reduced quantity of insects available for foraging or ingestion of contaminated prey (e.g , EPA 1993, p. 1-3; National Research Council 2013, pp. 3-15). This proposed 4(d) rule would prohibit incidental take associated with using insecticides and herbicides on any standing pine tree in habitat occupied by red-cockaded woodpeckers within 0.50-mile from the center of an active cavity tree cluster, the area in which red-cockaded woodpeckers in an active territory are most likely to forage (Convery and Walters 2004, entire).

This measure would not prohibit use of insecticides or herbicides in applications that do not result in an adverse chemical exposure to red-cockaded woodpeckers. The Service recognizes that herbicides can be safely applied in occupied habitat (McDearman 2012, entire). For example, hand application of herbicides by direct foliar spray in occupied habitat to control undesirable shrubs or hardwoods may not result in incidental take if no chemicals are applied—either directly or inadvertently—to standing pine trees where red-cockaded woodpeckers are expected to forage on uncontaminated invertebrates within the 0.50-mile radius of the center of the active cavity tree cluster. The use of insecticides or herbicides within these areas could be permitted under a Service- or State-approved management plan, as described above, with an appropriate toxicological risk analysis of the likelihood of an adverse oral, dermal or respiratory exposure to the red-cockaded woodpecker, and incidental take could be excepted when adverse short-term impacts are essential or unavoidable for a long-term benefit. We seek comment from the public on the spatial area covered by this prohibition, and whether the prohibition should apply to other vegetation, such as the herbaceous ground layer in addition to standing pine trees, within 0.50-mile from the center of an active cavity cluster, as well as the clarity of the prohibition, (see Information Requested, above).

The proposed 4(d) rule would also prohibit incidental take of actions that would render cavity trees unusable to red-cockaded woodpeckers. This could result from activities such as parking vehicles, stacking pallets, or piling logging slash or logging decks, pine straw, or other material near active cavity trees; activities that damage active cavity trees; and accidently-set wildfires, because such activities could render the cavity trees unusable to red-cockaded woodpeckers. This prohibition is intended to prevent incidental take resulting from operations in the vicinity of active cavity trees that may damage the trees through, for example, collision or compaction of tree roots. This prohibition would also apply to activities that result in damage to cavity trees, rendering them unusable to red-cockaded woodpeckers. For example, incidental take caused by accidently started fires that damage cavity trees or a small- or large-arms munitions ricochet that hit a cavity tree, causing damage that ultimately kills the tree, would be prohibited.

Within the range of the species, all Department of Defense Army, Air Force, and Marine Corps installations have red-cockaded woodpecker management plans and guidelines incorporated into their Service-approved INRMPs to minimize the adverse effects of military training and to achieve recovery objectives. These plans and guidelines include red-cockaded woodpecker conservation and population size objectives, management actions to achieve conservation goals, monitoring and reporting, and specific training activities that are allowed or restricted within clusters and near cavity trees. Under the Sikes Act (16.U.S.C 670 et seq.), the Service is required to review and approve INRMPs, when they are revised, at least every 5 years, and participate in annual reviews. As a result of these conservation programs under Service-approved INRMPs, red-cockaded woodpecker populations have increased on all installations. In fact, Fort Bragg, Fort Stewart, Eglin Air Force Base, Fort Benning, and Camp Blanding all have achieved or surpassed their red-cockaded woodpecker recovery plan population size objectives and are expected to continue to manage towards larger populations. Active and beneficial red-cockaded management to increase population sizes on military installations has been an essential component of sustaining the species, and it offsets the adverse effects of training. Therefore, the proposed 4(d) rule would except incidental take resulting from red-cockaded woodpecker management and military training activities on Department of Defense installations with a Service-approved INRMP. Any incidental take resulting from new proposed training or construction activities that is not incorporated into a Service-approved INRMP would not be excepted under this proposed rule, but could be excepted through an incidental take statement associated with a biological opinion resulting from section 7 consultation under the Act. The Service seeks comments on this exception (see Information Requested, above).

During the breeding season in particular, vehicles and equipment, floodlights, other construction activities, extraction activities, military maneuvers, or even just human presence can potentially harass breeding red-cockaded woodpeckers, resulting in nest failure. Therefore, this proposed 4(d) rule would also prohibit incidental take associated with the operation of vehicles or mechanical equipment, the use of flood lights at night, activities with a human presence, (including military activities), other actions associated with construction or repair, or extraction activities in an active cavity tree cluster during the breeding season. The breeding season for red-cockaded woodpeckers can vary across the latitudinal range and, depending on location, the season can start as early as March and end as late as July; therefore we do not propose specific dates for this prohibition in this rule. We furthermore acknowledge that incidental take from such activities can also occur outside of the breeding season, so we seek comments from the public about whether this prohibition should encompass the whole year, and not just during the breeding season (see Information Requested, above).

We acknowledge that there are active cavity tree clusters within areas with existing human presence, activities, and infrastructure, including Federal, State, and county roads, private ***forest*** access roads and trails, military installations, nature trails, golf courses, and residential areas. We also recognize the use of vehicles and mechanical equipment may need to be used for maintenance requirements to ensure safety and operational needs of existing infrastruture, including maintaining existing infrastructure such as firebreaks, roads, rights-of-way, fence lines, and golf courses, and we understand that these maintenance requirements to ensure human safety may need to take place during the breeding season. Incidental take resulting from these ongoing activities are excepted from this prohibition. In addition, we recognize there is existing human presence, activities, and infrastructure within active cavity tree clusters and that red-cockaded woodpeckers have demonstrated tolerance, or an ability to habituate, to these stressors without adversely affecting essential feeding, breeding, or sheltering behaviors. Therefore, for continuation of ongoing activities, as long as there is no increase in the frequency, intensity, duration, pattern, or extent of existing operations, use, or activities, such that red-cockaded woodpeckers would negatively respond to the stressor, the activities may continue (i.e , are not prohibited), and any incidental take, although unlikely, resulting from existing operation of vehicles or mechanical equipment, use of lights at night, or activities with human presence are excepted from the incidental take prohibitions. An example of an activity that would be excepted from the incidental take prohibitions would be routine, ongoing road maintenance, such as mowing rights-of way or trimming back vegetation, during the breeding season on a ***forest*** road that bisects an active cavity tree cluster. Other examples of ongoing activities include a continuation of recreation at golf courses and parks and driving vehicles on existing highways and roads. On the other hand, new activities, or ongoing activities that increase in frequency, intensity, duration, or extent would not be excepted. For instance, new road construction initiated during the breeding season in an active cavity tree cluster would potentially increase the extent or duration of stressors beyond existing, routine operations, and therefore would be prohibited.

However, there are also operations conducted near active cavity trees that render the tree unusable to red-cockaded woodpeckers, through sustained harassment that prevents individual birds from using cavities. For example, staging and use of equipment such as generators and floodlights within an active cavity tree cluster can cause birds to roost outside of their cavities and become exposed to predation, disrupt incubation and kill eggs, or alter feeding of nestlings, which could result in their death. We seek comment on whether this prohibition should also apply to these situations where harassment is likely (see Information Requested, above).

Red-cockaded woodpeckers must have sufficient nesting and foraging habitat to survive. Maintaining an adequate number of suitable cavities in each woodpecker cluster is fundamental to the conservation of the species. Loss of natural cavity trees was a major factor in the species' decline, and availability of natural cavity trees currently limits many populations. Until a sufficient number of large, old pines become widely available, installation and maintenance of artificial cavities is an essential management tool to sustain populations and bring about population increases, and the Service continues to encourage the installation of artificial cavities. However, we also acknowledge that there are proper techniques to install cavity inserts, drill cavities, or install cavity restrictor plates, and these techniques require training and experience. Improperly installed artificial cavities can cause injury or even result in death of red-cockaded woodpeckers attempting to roost or nest in them. Therefore, to assure artificial cavities continue to be installed correctly by properly trained personnel, the proposed 4(d) rule would prohibit incidental take associated with the installation of artificial cavity inserts, drilled cavities, or cavity restrictor plates; however, these activities could be covered under a section 10(a)(1)(A) permit.

We acknowledge that many of our partners have the training and extensive experience in installing artificial cavities. We, therefore, ask the public to comment regarding whether the installation of artificial cavities should be excepted from the incidental take prohibitions for individuals who have completed training and have achieved a certain level of proficiency, and what that training and proficiency should be (see Information Requested, above).

Similarly, we encourage monitoring of red-cockaded woodpecker clusters and populations, including inspecting cavities to monitor eggs and hatchlings, typically using a video scope, drop light, or mirror inserted into the cavity. However, these inspections can cause incidental take if not done correctly, as red-cockaded woodpeckers sometimes will flush from the cavity chamber and injure themselves trying to escape past the probe. Therefore, the proposed 4(d) rule would prohibit incidental take associated with inspections of cavity contents, including the use of video scopes, drop lights, or mirrors, inserted into cavities. These activities could be covered under a section 10(a)(1)(A) permit.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32 With regard to threatened wildlife, a permit may be issued for the following purposes: Scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. There are also certain statutory exceptions from the prohibitions, which are found in sections 9 and 10 of the Act.

The Service recognizes the special and unique relationship with our State conservation agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the red-cockaded woodpecker that may result in otherwise prohibited take without additional authorization, including installation of artificial cavities.

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the red-cockaded woodpecker. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see Information Requested, above).Required DeterminationsClarity of the Proposed Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in ADDRESSES. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.National Environmental Policy Act

We have determined that we do not need to prepare an environmental assessment or environmental impact statement, as defined in the National Environmental Policy Act (42 U.S.C 4321 et seq.), in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244).Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, “Government-to-Government Relations with Native American Tribal Governments” (59 FR 22951), Executive Order 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal ***lands*** are not subject to the same controls as Federal public ***lands***, to remain sensitive to Indian culture, and to make information available to tribes. As we move forward with this reclassification process, we will continue to consult with tribes on a government-to-government basis as necessary.References Cited

A complete list of references cited is available on the internet at [*http://www.regulations.gov*](http://www.regulations.gov) under Docket No. FWS-R4-ES-2019-0018 and upon request from the person listed under FOR FURTHER INFORMATION CONTACT, above.Authors

The primary authors of this proposed rule are staff members of the Service's Southeastern Region, Division of Conservation and Classification.Signing Authority

The Director, U.S Fish and Wildlife Service, approved this document and authorized the undersigned to sign and submit the document to the Office of the Federal Register for publication electronically as an official document of the U.S Fish and Wildlife Service. Aurelia Skipwith, Director, U.S Fish and Wildlife Service, approved this document on September 24, 2020, for publication.Dated: September 24, 2020.Madonna Baucum,Regulations and Policy Chief, Division of Policy, Economics, Risk Management, and Analytics, Joint Administrative Operations, U.S Fish and Wildlife Service.List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:Part 17 Endangered and Threatened Wildlife and Plants

1. The authority citation for part 17 continues to read as follows:Authority

16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.

2. Amend § 17.11(h) by revising the entry for “Woodpecker, red-cockaded” under BIRDS in the List of Endangered and Threatened Wildlife to read as follows:§ 17.11Endangered and threatened wildlife.

\* \* \* \* \*

(h) \* \* \*Common name Scientific name Where listed Status Listing citations andapplicable rules \* \* \* \* \* \* \* Birds \* \* \* \* \* \* \* Woodpecker, red-cockaded Dryobates borealis Wherever found T 35 FR 16047, 10/13/1970; [Insert Federal Register citation when published as a final rule]; 50 CFR 17.41(h). 4d \* \* \* \* \* \* \*

3. Amend § 17.41 by adding a paragraph (h) to read as follows:§ 17.41Special rules—birds.

\* \* \* \* \*

(h) Red-cockaded woodpecker (Dryobates borealis).

(1) Definition. Under this paragraph (h), an “active cavity tree cluster” means the area delineated by a polygon of red-cockaded woodpecker active (i.e , occupied) cavity trees with a 200-foot buffer.

(2) Prohibitions. The following prohibitions in this paragraph (h)(2) that apply to endangered wildlife also apply to red-cockaded woodpecker. Except as provided under paragraph (h)(3) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b).

(ii) Intentional take, including capturing, handling, or other activities, except as set forth in paragraphs (h)(3)(ii) and (iii) of this section.

(iii) Possession, sale, delivery, carrying, transportation, or shipment, by any means whatsoever, of any red-cockaded woodpecker taken in violation of paragraphs (h)(2)(i) and (ii) of this section, except as set forth in paragraph (h)(3)(iv) of this section.

(iv) Incidental take resulting from the following activities:

(A) Damage or conversion of currently occupied red-cockaded woodpecker nesting and foraging habitat to other ***land*** uses that results in conditions not able to support red-cockaded woodpeckers.

(B) ***Forest*** management practices in currently occupied red-cockaded woodpecker nesting and foraging habitat, including, but not limited to, timber harvesting for thinning or regeneration, that result in conditions not able to support red-cockaded woodpeckers.

(C) Operation of vehicles or mechanical equipment, the use of floodlights, activities with a human presence, other actions associated with construction and repair, or extraction activities in an active cavity tree cluster during the red-cockaded woodpecker breeding season, except as set forth under paragraph (h)(3)(v)(C) of this section.

(D) Installation of artificial cavity inserts, drilled cavities, or cavity restrictor plates.

(E) Inspecting cavity contents, including, but not limited to, use of video scopes, drop lights, or mirrors inserted into cavities.

(F) Activities that render active cavity trees unusable to red-cockaded woodpeckers.

(G) Use of insecticide or herbicide on any standing pine tree within 0.50-mile from the center of an active cavity tree cluster of red-cockaded woodpeckers.

(iv) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1).

(v) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.21(e).

(vi) Sale or offer for sale, as set forth at § 17.21(f).

(3) Exceptions from prohibitions. In regard to this species, you may:

(i) Conduct activities as authorized by a permit issued under § 17.32

(ii) Take, as set forth at § 17.21(c)(2) through (c)(4) for endangered wildlife, and (c)(6) and (c)(7) for endangered migratory birds.

(iii) Take as set forth at § 17.31(b).

(iv) Possess and engage in other acts with unlawfully taken red-cockaded woodpeckers, as set forth at § 17.21(d)(2) through (d)(4) for endangered wildlife.

(v) Take incidental to an otherwise lawful activity caused by:

(A) Red-cockaded woodpecker management and military training activities on Department of Defense installations with a Service-approved integrated natural resources management plan.

(B) Habitat restoration activities carried out in accordance with a management plan providing for red-cockaded woodpecker conservation developed in coordination with, and approved by, the Service or a State conservation agency.

(C) Operation of vehicles or mechanical equipment, the use of lights at night, or activities with a human presence in active cavity tree cluster during the red-cockaded woodpecker breeding season provided that they:

(1) Are maintenance requirements to ensure safety and operational needs of existing infrastructure, including maintaining existing infrastructure such as firebreaks, roads, rights-of-way, fence lines, and golf courses; and

(2) Do not increase the frequency, intensity, duration, pattern, or extent of existing operation, use, or activities.[FR Doc. 2020-21510 Filed 10-7-20; 8:45 am]BILLING CODE 4333-15-P

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**End of Document**



[***Denitrification is the major nitrous acid production pathway in boreal agricultural soils***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2K1-JCWX-C0N2-00000-00&context=1516831)

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**Body**

Introduction

Up to 60% of primary production of atmospheric hydroxyl (OH) radicals can be attributed to photolysis of nitrous acid (HONO). Hydroxyl radicals are vital for the ***removal*** of pollutants and reactive gases, such as carbon monoxide and methane, from the atmosphere, and they are also an essential precursor of cloud formation by transforming volatile organic compounds into secondary organic aerosols,. The current global HONO budget is not balanced when all known sources and sinks are included, which suggests that there is a missing source of HONO–. Although soils have only recently been identified as important HONO emitters–, soils have been proposed as a key component of this missing HONO source. Soil nitrite (NO2−) may be the key HONO precursor but this has not yet been directly demonstrated using 15N tracer approaches and accounting for primary microbial pathways producing it. Nitrite is mainly produced during microbial ammonia (NH3) oxidation (autotrophic and heterotrophic nitrification) and nitrate (NO3−) reduction (denitrification and dissimilatory nitrate reduction to ammonium (DNRA)) pathways–. In addition, direct release of HONO by NH3 oxidizers (autotrophic nitrifiers) has also been demonstrated,. Although the mechanisms that underpin HONO production are not yet fully understood, several studies have demonstrated the importance of microbial pathways in soil HONO production–. However, abiotic pathways (e.g., hydroxylamine+water = HONO) have been proposed but have not been investigated in soils to date.

The first evidence on a potential link between soil HONO ***emissions*** and underlying microbial processes was provided conducting 15N tracer experiments, showing that nitrifiers outpaced denitrifiers in soil HONO ***emissions***. Another study, proving the concept, also provided evidence on the participation of microbial processes in soil HONO ***emissions***, especially the involvement of NH3 oxidizers (nitrifiers) by using 15N-labeled urea. To date, only one systematic study has addressed the pathways of soil HONO formation using a tracer approach (labeled ammonium (15NH4+)), highlighting the sole importance of NH3 oxidizers in HONO production and excluding the role of NO3− reduction in aerobic soils. However, microbial NO3− reduction is a widespread phenomenon in soils of many ecosystems, with NO2− produced as an intermediate of the process. Recently, the participation of denitrification processes in water-saturated soils (~100% water-holding capacity (WHC)) was demonstrated for soil HONO formation, suggesting that NO3− reduction to NO2− under anoxic conditions could be crucial for soil HONO ***emissions***. Nevertheless, besides water-saturated conditions, soil aggregates can also generate anoxic microsites that can favor microbial NO3− reduction in water-unsaturated soils, e.g., in ***agricultural*** soils,. In addition, the relative contribution of different microbial pathways to HONO production may vary in soils, as—beyond soil moisture and oxygen saturation—microbial activity is also influenced by soil pH, organic matter (OM) content, soil carbon to nitrogen (C:N) ratio, and temperature,,. Thus, HONO production could occur at the microscale level and by contrasting pathways that need to be further investigated. Moreover, the proposed abiotic pathway needs to be addressed in soils. Thus, in order to get a better understanding of the processes that contribute to HONO ***emissions*** from soils and their impact on the global HONO budget, the expected link between the soil inorganic N cycle and HONO formation requires further investigation,,. ***Agricultural*** soils, which cover 50% of the global habitable ***land*** area,, possess a strong potential to release HONO because of enhanced N fertilizer use, which is expected to increase by ~2–4-fold by 2050. Therefore, it is crucial to understand HONO production pathways in ***agricultural*** ecosystems.

This study focused on the understanding of HONO production and ***emissions*** from ***agricultural*** soils of the boreal region, which are typically acidic (pH < 7). To date, only three studies,, have investigated HONO ***emissions*** from boreal ***agricultural*** soils. Yet, the processes and pathways behind those HONO ***emissions*** have not been demonstrated. In this study, we performed a series of 15N tracer experiments to understand HONO production pathways in two distinct boreal ***agricultural*** soils in Finland; one with a low organic matter (LOM) content and the other with a high organic matter (HOM) content (Supplementary Table ). First, we aimed to distinguish between biotic and abiotic HONO production pathways by adding 15N-labeled NO2−(LNi) to both, live, and sterile soils. Second, to determine the contribution of the two main biotic HONO production pathways (microbial NH3 oxidation and NO3− reduction), we performed separate experiments using 15N-labeled ammonium (NH4+, LA) and NO3− (LNa) in live (non-sterilized) soils. The HONO flux rates were then compared with data compiled in a global HONO flux rate synthesis, which was generated for the first time here. In addition, gross NO2− production rates across soil pH levels, and the contribution of nitrification and denitrification to the soil NO2− pool were also compared with published data.

Results

Time kinetics of added 15NO2− and HO15NO production in live and sterile soils

We sterilized the soil samples by autoclaving to ensure that the biotic pathways that produce HONO via NO2− or NH3-oxidizing microbes were completely blocked. Autoclavation is the most effective sterilization method in soils, though autoclavation can alter the structure of OM content and cause disaggregation, for example, increasing the availability of dissolved organic matter. We examined the 15N atom percent excess (APE) of emitted HONO (HO15NO APE) and of soil NO2− (15NO2− APE) in live and sterile soil samples from time zero to 240 minutes, after the addition of labeled 15NO2− (LNi) and unlabeled NO2− (control) (Fig. ).

The 15N atom percent excess (APE) of nitrous acid (HONO) and soil nitrite (NO2−) in labeled 15NO2− (LNi) and control treatments.

The 15N enriched HONO and NO2− produced over time (x axis) after the addition of labeled (treatment LNi; pink) or unlabeled NO2−(treatment control; light green) is shown as 15N APE of HONO and NO2− on the y axis. At zero min, labeled 15NO2− was added to increase APE to 50% in the live (a, b) and sterile (c, d) high organic matter soils (a, c) and low organic matter soils (b, d). The square and triangle symbols indicate 15N APE of HONO and NO2−, respectively. The data points show the mean values, and error bars denote standard deviation (n = 3). Note: the error bars, in some cases, are smaller than the size of the symbols. Statistical results are shown in Supplementary Tables –.

In the LNi treatment under live conditions, labeled 15NO2− gradually declined (Fig. ), indicating the presence of active microbial pathways that produce and consume NO2−. Further, 15NO2− consumption was not equally accompanied by 15NO3−production (by nitrifiers) under live conditions (Supplementary Figure ). Microbial NO2− production pathways led to a 50% decrease in 15NO2− APE by the end of the experiments in both soils (Fig. , Supplementary Table –). Both soils also showed a steady decrease in HO15NO APE under live conditions, with the HOM soils exhibiting a stronger decrease than the LOM soils. Under sterile conditions, 15NO2−APE remained stable at the approximate initial values during the whole incubation period, confirming the blockage of biotic pathways that produce NO2− (Fig. ). Despite stable 15NO2− APE, HO15NO APE decreased towards the end of the incubation period under sterile conditions (Fig. ), although the 15N depletion of HO15NO occurred later in time and was less pronounced (at least for LOM) than under live conditions.

Relationship between biotic pathways and HONO production

To further disentangle the biotic HONO production pathways (in addition to 15NO2− (LNi; see experiment above)), we added 15NH4+ (LA) and 15NO3− (LNa) to the live soil samples and measured the subsequent change in 15NO2− and ***emissions*** of HO15NO. We also quantified gross production and gross consumption rates of NH4+, NO2−, and NO3− in the live soil samples, based on 15N pool dilution approaches, to better explain the relationship between the microbial pathways that use 15NH4+ and 15NO3− to produce HONO. Production (i.e., N mineralization) and consumption rates of NH4+ were relatively low and did not differ between soils. Production (i.e., nitrification) and consumption rates of NO3− were 6–24 times higher than gross NH4+ turnover rates and were significantly higher in the HOM soil than the LOM soil (Fig. ). Gross NO2− production and consumption rates ranged between the values observed for nitrification and mineralization, and were not significantly different between the two studied soils. Production of 15NO2− increased gradually in the LNa treatment in both soils, which exhibited high NO3− consumption rates (Fig. , Supplementary Table ), indicating that the reduction of NO3− to NO2− is a crucial biotic pathway in both water-unsaturated soils. Despite high nitrification rates (22 µg N gdw −1 d−1) in the HOM soil, the magnitude of 15NO2− and HO15NO production during nitrification was smaller compared with NO3− reduction (Fig. , treatments LA vs. LNa), which suggests that the capability to nitrify by the NH3 oxidizers, which reside in the HOM soil, was lower compared with the NO3− reducers that shared the same environment.

Gross transformation rates of mineral nitrogen and production of 15NO2− and HO15NO in live soils.

Gross consumption and production rates (µg N gdw−1 d−1) of NO2−, NO3−, and NH4+ in the live soil samples from the high (HOM; sky blue bar) and low (LOM; turquoise bar) organic matter soils are shown on the x axis of a. a also shows the maximum biotic HONO ***emission*** rates expressed in the same units as gross nitrogen transformation rates. For clarity, it is shown as an inset figure. 15N enriched HONO (squares) and NO2− (triangles) production over time (x axis) after the addition of 15NH4+ (treatment LA; dark brown), 15NO3− (treatment LNa; dark orange), and natural 15N abundance (treatment control; light green) in the live soil samples from the HOM (b) and LOM (c) soils are shown as 15N atom percent excess (APE) of HONO and NO2− on the y axis. Bars and data points in a–c show the mean values, and error bars denote standard deviation (n = 3). Nitrification (F = 9.00, P = 0.03) and NO3− consumption (F = 8.98, P = 0.04) rates were significantly higher in the HOM soil than in the LOM soil, which is shown by asterisks. The absence of an asterisk right to the bars in a indicates no statistical difference in corresponding rates between the soils. Statistical results for b and c are shown in Supplementary Tables −. a n.d. denotes not detected.

The contribution of the microbial pathways that use NH4+ and NO3− to total production and ***emissions*** of HONO was evident. In general, reduction of 15NO3− affected the production of HO15NO via 15NO2− formation, as 15N APE values of HONO (on average ~1–18% in the LOM soil and 1.2–18% in the HOM soil) and of NO2− increased gradually with time only in the LNa treatment in both soils (Fig. ). The strong relationship between produced HO15NO and added 15NO2− (LNi treatment), or with 15NO2−produced from 15NO3− (LNa treatment) (Supplementary Figure ), further confirmed that HONO was generated mostly from NO2− produced via microbial NO3− reduction in both soils. In addition, the observation that HONO ***emission*** rates decreased with decreasing NO2− concentrations (Supplementary Figures – and Supplementary Table ) would also suggest that HONO production and ***emissions*** are directly linked to soil NO2−, especially in LOM soil. The HOM soil showed a curvilinear relationship between HONO ***emissions*** and soil NO2− concentrations (Supplementary Figure ), indicating rapid NO2− consumption processes that competed tightly with HONO production via the soil NO2− pool. In contrast, microbial NH4+ oxidation occurred only in the HOM soil but not in the LOM soil. Production of HO15NO (from 0.1 ± 0.1 at 30 min to 0.4 ± 0.1% 15N APE at 240 min) and 15NO2− (from 0.2 ± 0.3 at 90 min to 1.6 ± 1.3% 15N APE at 240 min) from 15NH4+ (LA treatment) was less than NO3− reduction (LNa treatment), and showed a weak, insignificant association (Supplementary Figure ).

Quantification of HONO ***emissions*** by biotic and abiotic processes

In the presence of microbial activity in the live soil samples, a two-source isotope mixing model showed that NO2− contributed 100% to HONO production in the LOM soil and 81% in the HOM soil. In the latter, (in addition to NO2−) an additional biotic HONO source contributed 19% to HONO production towards the end of the incubation period (Fig. ). Despite the presence of a consistent HONO precursor (i.e., NO2−), the dynamics of biotic HONO ***emissions*** in the LOM soil differed from the HOM soil (Fig. ). Biotic HONO ***emissions*** in the LOM soil peaked at 180 min and then decreased slightly until the end of the incubation, whereas biotic HONO ***emissions*** increased gradually in the HOM soil, and saturated after 180 min (Fig. , Fig. ). Microbial processes produced 10.5 ng N m−2 s−1 and 24.3 ng N m−2 s−1 of HONO in the HOM and LOM soils, respectively (Fig. ).

Source contribution and nitrous acid (HONO) ***emission*** rates from biotic and abiotic sources.

a, c Show the fraction of source contributions in live and sterile soil samples, respectively, from the high organic matter (HOM; sky blue) and low organic matter (LOM; turquoise) soils. b, d Show the biotic and abiotic HONO ***emission*** rates (ng N m−2 s−1), respectively, in both soils. The symbols in a and c indicate the HONO sources, nitrite (NO2−; triangles), sources other than NO2− (empty diamonds), and unknown (filled diamonds). Data points with error bars in a, c and filled areas in b and d show the mean values and standard deviation (n = 3). Source contributions to soil HONO ***emissions*** at 180 and 240 min in a are the maximum values from a single replicate in HOM soil. a–d were created using the data from the LNi treatment of the respective soils and conditions (see the Methods section for details).

Total soil nitrous acid (HONO) ***emission*** rates via abiotic and biotic processes, with the relative contribution of biotic pathways to HONO production as inset.

Total HONO ***emissions*** represent the rate of soil HONO production averaged over 240 minutes of HONO flux measurements. Total HONO production rates (ng N m−2 s−1) for the soils with high organic matter content (HOM, sky blue bar) and low organic matter (LOM, turquoise bar) are shown on the y axis. Bars show the mean values, and the error bars denote the standard deviation (n = 3). Inset shows the fractional contribution of microbial ammonium (NH4+) oxidation (dark red), nitrate (NO3−) reduction (light brick red), and organic nitrogen (org. N) oxidation to nitrite (purple) pathways in each soil.

Although 15N enrichment of NO2− remained constant in the sterile soil samples (as expected if only biotic processes form NO2−), HO15NO declined, which indicates the presence of an unknown abiotic HONO source (Fig. ). In the absence of microbial activities in the sterile soils, the unknown HONO production source increased with time (Fig. ). Furthermore, the unknown HONO source was more pronounced in the HOM soil than in the LOM soil (Fig. ). In the latter, the contribution of the unknown source to total HONO flux peaked at the end of the incubation, reaching a maximum of 22%. In the HOM soil, the contribution from the unknown source increased gradually, exceeding HONO production from soil NO2− at the end of the incubation, and contributed up to 52%. In both soils, the fractional contributions of the unknown source and abiotic HONO ***emissions*** showed similar increasing trends (Fig. ). In comparison with the LOM soil, the HOM soil had a greater contribution of an unknown source and also greater abiotic HONO ***emission*** rates (Fig. ).

Discussion

Soil HONO ***emissions*** in our boreal ***agricultural*** soils (10.5–24.3 ng N m−2 s−1, Fig. ) were relatively high compared to a global synthesis of soil HONO ***emission*** rates (median 5.0 ng N m−2 s−1, n = 199; Fig. , Supplementary Data ), but were reflective of managed soils, where fertilization or grazing promote N cycling, which increases soil HONO ***emissions*** (cropland ≥ grassland ≥ ***forest***, and peatland, Fig. ). Only deserts showed greater HONO ***emissions***, indicating arid biological soil crusts being hotspots of HONO ***emissions*** globally.

Global synthesis of soil nitrous acid (HONO) ***emissions*** rates, gross nitrite (NO2−) production, and the contribution of biotic pathways to the soil NO2− pool.

a Shows log-transformed HONO ***emission*** rates (ng N m−2 s−1) from the soils of a number of ecosystems under different management practices. Each yellow box denotes interquartile range (IQR; 25th percentile at lower end to the 75th percentile at upper end) with a central black line as median, lower whisker as a minimum (25th percentile — 1.5 × IQR), upper wisher as a maximum (75th percentile + 1.5 × IQR), and filled black circle as an outlier of sample numbers presented above the boxes of respective soil management practices. See Supplementary Data  for more details. Different letters in a indicate significant differences between means (F = 22.64,P < 0.05) in HONO ***emissions*** in different ecosystems. The correlation in b shows the relationship between gross nitrite production rates (µg N gdw −1 d−1) and soil pH in this study (pink triangle) and from synthesized data (light brown), i.e., Supplementary Data . The slope in b is marginally significant (P < 0.1), whereas the intercept is significant at P < 0.05. c Shows the percentage (%) contribution of different biotic pathways, organic nitrogen oxidation (white bar), nitrification (light gray bar), denitrification (dark gray bar), and ratio of denitrification to sum of nitrification and denitrification (black bar) to the soil NO2− pool. See Supplementary Data  for more details.

Biotic pathways of soil HONO formation and significance

A consistent decrease in the 15N enrichment of HONO, in parallel with that in NO2− in the live soil samples, and much higher rates of HONO production in the live soil samples compared with the sterile soil samples confirmed that microbial processes are the most important HONO sources in soils. Although soil HONO ***emissions*** have been previously linked to soil NO2− based on physicochemical reasoning (acid-base equilibria between H+ and NO2−-producing HONO), here for the first time we unequivocally and causally link the soil NO2− pool with HONO ***emissions***, based on 15N tracing and liquid chromatography-high resolution mass spectrometry. The findings further demonstrate that microbial NO3− reduction dominated HONO production and by far exceeded the concurrently accepted major HONO production pathway, i.e., NH3 oxidation by autotrophic nitrifiers, in aerobic, water-unsaturated soils, here boreal ***agricultural*** soils (Figs. a–c, ). Among the three soil NO2−-producing microbial pathways, only NO3− reduction triggered significant 15NO2− and HO15NO production in both soils. Soil NO3− reduction was solely linked to the presence of the periplasmic NO3− reductase (napA) gene, as the cytoplasmic NO3− reductase (narG) gene was absent in both soils (Supplementary Figure ). The lack of 15NH4+ production from 15NO3− in the LNa treatment (Supplementary Figure ) suggests that DNRA (dissimilatory nitrate reduction to ammonium) was absent and that denitrification dominated microbial NO3− reduction and soil HONO ***emissions***. This is further confirmed by the absence of the key DNRA gene, i.e., nitrite reductase (nrfA),, whereas the genes of key denitrifying genes were abundant, e.g. napA, nirK, nirS, and nosZ (Supplementary Figure ). Nitrification only contributed to a small extent to soil HONO production (Fig. ), and was only found in the HOM soil (Fig. ). Nitrification could be attributed to the presence of bacterial and archaeal NH3 oxidizers,, as suggested by higher gene copy numbers of bacterial (and archaeal) ammonia monooxygenase (amoA) in the HOM soil (Supplementary Figure ), and these are capable of directly producing HONO before accumulating NO2− (Supplementary Figure ). Decoupling of microbial NO3− reduction (high 15NO2− output, Fig. ) and biotic HONO production (Fig. ) in the HOM soil could be associated with the combined effect of microbial NO2− consumption and abiotic NO2− reactions with soil OM via nitration and nitrosation. In these soils, we observed a curvilinear relationship between soil NO2− concentrations and HONO ***emission*** rates (Supplementary Figure ), which indicates a gradual conversion of NO2− to NO3− (Supplementary Figure ) and concurrently occurring chemical reactions between NO2− and soil OM, the latter of which surpass HONO formation via NO2− after reaching an optimum.

Soil moisture is an important environmental driver of soil HONO ***emissions***. Maximum soil HONO ***emissions*** were identified in a wide range of ecosystems under low soil moisture contents (“dry” peak at 20–30% WHC),,. Such HONO ***emission*** peaks occurred during progressive reduction in soil moisture in the experiments and were linked to nitrifiers as NH3 oxidation is an aerobic pathway and requires oxygen. Therefore, it was assumed that with soil moisture reduction and progressively developing the aerobic condition, NH3 oxidation, dominates soil HONO production and ***emissions***. However, the 15NH4+ supplemented LOM soil did not emit HO15NO, even until the end of the experimental period, despite a slight reduction in soil moisture (from 60%start to 51%end WHC; Supplementary Figure ). In contrast, 15NH4+ supplemented HOM started to emit HO15NO, presumably by NH3 oxidizers,, from the middle of the experiment (Fig. , Supplementary Table –), despite a smaller reduction in soil moisture (from 60%start to 54%end WHC) compared with the LOM soil (Supplementary Figure ). In our study, we did not measure HONO ***emissions*** for longer periods and therefore did not reach lower soil moisture regimes, for example, 20–30% WHC, at which the contribution of nitrifier pathways could increase,. For example, Wu et al. showed that soil HONO ***emissions*** (at 20–30% WHC) were driven by NH3 oxidation in a pH neutral soil from the temperate region. On the other hand, Kubota and Asami estimated that ~69% of the soil emitted HONO originated from NH3 oxidation at 60% WHC from sub-tropical acidic soils (pH = 4.8–5.8) incubated at 30°C for 30 days. Our estimation shows that NH3 oxidation contributed only 0–10% to the total biotic HONO ***emissions*** (at 60–54% WHC range) from slightly acidic (pH = 6.1) boreal ***agricultural*** soils incubated at 21 °C for 48 hours. The likely reason for higher contributions of nitrifiers to soil HONO ***emissions*** in the two earlier studies, could be differences in soil moisture and temperature between studies, which are known to control the activities of NH3 oxidizers and thereby of soil HONO ***emissions***,,. Nevertheless, our results obtained from the LA treatments in two boreal ***agricultural*** soils suggest that the capabilities of NH3 oxidizers to produce HONO, vary according to soil type and/or climatic zone, which requires further studies.

Besides soil moisture, soil pH also has a significant role in HONO ***emissions***. Although nitrification (especially by bacterial ammonia oxidizers) decreases towards low soil pH levels, at the same time, regardless of its source, rapid protonation of NO2− in acidic soils can promote soil HONO formation and release. The reported HONO release from soils by acidophilic and high NH3 affinity archaea,, was lower than HONO ***emissions*** via microbial NO3− reduction (Supplementary Figure ), further supporting our finding that soil NO2− via microbial NO3− reduction is crucial for HONO production, especially in soils with pH < 7. In addition, denitrification demands the presence of protons (2NO3− + 10e− + 12H+→N2 + 6H2O) and therefore shows a pH optimum under acidic conditions unlike nitrification, which does the opposite, i.e., it releases H+ (NH3 + 2O2 → NO3− + H+ + H2O) into the soil and therefore shows a pH optimum at neutral to alkaline conditions. Therefore, acidic soils are likely to favor NO3− reduction via denitrification under suitable conditions, such as ample NO3− availability and anoxic microsites. Moreover, our data synthesis clearly shows that gross NO2− production rates increase in acidic soils (Fig. , Supplementary Data ). In published studies that have examined the contribution of nitrifiers and denitrifiers to soil NO2− production, an average 48% and 57% of the NO2− source was contributed by denitrifiers (n = 82, Fig. , Supplementary Data ), when organic N oxidation to NO2− by heterotrophic nitrifiers was included or excluded. The relationship between soil NO3− reduction by denitrifiers and soil HONO ***emissions*** as found in our study is in agreement with Wu et al. who recently demonstrated high HONO ***emissions*** from soils under water-saturated, anaerobic conditions (“wet” peak caused by microbial NO3− reduction at ~100% WHC). However, here we show the importance of microbial NO3− reduction for HONO production under water-unsaturated, aerobic soil conditions (between 51% and 60% WHC). This suggests that not only water-saturated, anoxic soils, but also anoxic microsites in aerobic soils that are commonly generated in the interior of soil aggregates are key to the promotion of microbial NO3− reduction and soil HONO formation. Therefore, soil HONO production via microbial NO3− reduction in aggregates is likely a more widespread phenomenon because of the anoxic soil microsites and the ubiquity and diversity of NO3− reducers (archaea, fungi, bacteria) in a wide range of ecosystems,, and across a wide range of soil pH and moisture contents.

Abiotic pathway of soil HONO formation

Decreasing 15N enrichment in HONO in sterile soils, despite the constant 15N enrichment in NO2−, suggests the presence of an abiotic HONO production pathway. With consistent 15N enrichment in NO2− and zero microbial production and consumption of NO2− (Fig. ), we can only assign the observed HONO flux to an unknown abiotic source, not related to the soil NO2− pool. As our HONO measurements were conducted in Teflon coated (inner wall) chambers in the dark, heterogeneous reactions that require nitrogen dioxide (NO2) and light conditions to form HONO, are expected to be insignificant. Also, the absence of microbial NO2− production in sterile conditions precludes the possibility of HONO production via self-decomposing HNO2, as its products (NO2 and nitric oxide (NO) gases) must pass through the soil NO2− pool. Recently, a reaction between soil hydroxylamine and H2O has been suggested to produce HONO abiotically on glass beads, although there is little evidence for this phenomenon in soils. Nevertheless, abiotic production of HONO was twofold higher (Fig. ) in the HOM soil (1.3 ng N m−2 s−1) compared with the LOM soil (0.6 ng N m−2 s−1), which indicates that soil OM may play a role in the abiotic formation of HONO. This unidentified abiotic HONO pathway, which does not require passage through the soil NO2−/HNO2 pool, clearly needs further investigation.

Conclusion

We confirmed that microbial processes are essential for HONO ***emissions*** from ***agricultural*** soils, as they contributed 8–42 times more to soil HONO ***emissions*** than abiotic processes (Fig. ). Using 15NO2−, 15NO3−, and 15NH4+ tracers, we showed, for the first time, that microbial NO3− reduction (denitrifiers) is driving soil HONO ***emissions*** in aerobic soils, by fueling the soil NO2−. Other microbial pathways contributed little or not to HONO production, i.e., nitrification (NH3 and organic N oxidation) and DNRA (Figs. , ). We conclude that microbial processes are essential for soil HONO ***emissions***, and that the microbial NO3− reduction pathway could be a significant contributor in aerobic soils of many ecosystems. Moreover, abiotic HONO production pathways that have remained elusive could exist in soils, thereby contributing to notable ***emissions*** of HONO to the atmosphere, although microbial pathways are dominant. Therefore, in order to better understand the impact of soil emitted HONO on the seasonally changing atmospheric HONO budget, atmospheric OH radical production and associated atmospheric chemistry,, (at present and in the future under a changing climate), we suggest that future studies should assess the relative contribution of microbial pathways, in tandem with concurrent abiotic processes (Fig. ), to soil HONO production, by applying appropriate 15N tracer approaches.

Conceptual model showing nitrous acid (HONO) production pathways associated with the nitrogen cycle in ***agricultural*** soils.

Pathways associated with HONO production are indicated with solid colored arrows and are defined at the bottom left of the figure. Pathways that are yet to be confirmed (e.g., NH2OH + H2O and DNRA) or having potential but were not studied yet, i.e., chemo-denitrification concerning HONO production in soils, are indicated by dotted colored arrows and with question marks (?). Chemo-denitrification is a process associated with the abiotic reaction of nitrite or nitrate in the presence of amines, reduced metals (e.g., Fe2+), and high soil organic carbon– to gaseous nitrogen forms. Arrows denoting denitrification are thickest, indicating denitrification to be the most significant pathway of HONO production via the soil nitrite (NO2−) pool in soils with pH <7. This conceptual model is based on findings here, and literatures published earlier.

Methods

Soil sampling and sample preparation

Two soils (HOM and LOM) with distinct edaphic properties (Supplementary Table ) were sampled from two separate ***agricultural*** fields maintained by the Natural Resources Institute Finland (LUKE) in eastern Finland, Maaninka (63°09ʹ N, 27°20ʹ E). According to the World Reference Base of soils, the LOM soil is classified as a Dystric Regosol, which covers 2% of the global ***land*** surface and the HOM soil is classified as a Histosol, typical of the northern latitudes, and covers 2.5% of the global ***land*** area, though 30% in Finland. The sampled bulk soils (0–20 cm soil depth) were immediately transported to the laboratory where the roots and remaining plant parts were removed manually. Then the soils were homogenized, sieved (4 mm), and stored at 4 °C until the start of the experiments. 15N tracer experiments were conducted with live (non-sterile) and sterile (autoclaved) soil conditions. More details are described in the Supplementary Methods.

15N tracer experiments

In all, 100 g of soil (live or sterilized) were transferred to a sterile petri dish (Ø 0.137 m, h = 0.017 m) with a sterilized spatula, and 15N tracer solution was added evenly to the soil surface with a pipette, immediately prior to the HONO measurements. We used three different tracers, 15NO2−, 15NH4+, and 15NO3−, thereby establishing three different treatments: labeled nitrite (LNi), labeled ammonium (LA), and labeled nitrate (LNa), respectively. We also established a control treatment, where live and sterile soil samples received all three N forms at natural 15N abundance. More details are described in the Supplementary Methods.

HONO flux measurements and flux calculation

The 15N-amended samples were immediately transferred inside an opaque dynamic chamber, and HONO concentrations were measured with a Long Path Absorption Photometer instrument (LOPAP). The HONO flux was measured as described in Bhattarai et al.. More details are provided in the Supplementary Methods.

Isotope pool dilution assays and determination of isotope ratios

The Isotope pool dilution (IPD) assays were performed for all three N pools in live and sterile soil samples. For IPD assays, 4 g fresh soil (live or sterile) were weighed into 50 ml sterile polypropylene tubes (CELLSTAR®, Greiner BIO-ONE) and supplemented with 300 µl 15N tracer mix. Here, concentrations and atom% of tracer solutions and the soil moisture content were the same as used in the HONO flux experiments. After tracer addition, the tubes were vortexed for 2 minutes to allow the tracers to mix sufficiently in the soil matrix. The incubations were stopped by extraction with 30 ml cold (4 °C) 1 M KCl at zero, 30, 60, 90, 120, 180, and 240 minutes. The isotope ratios (15N/14N) in NH4+ and NO3− were determined using the micro-diffusion method in the soil extracts collected at zero, 90, 180, and 240 during the IPD experiment. More details are provided in the Supplementary Methods.

Collection and purification of HONO and NO2− azo dyes

The collection and purification of HONO and NO2− azo dyes were performed following Wu et al., who established a method to analyze 15N APE in gaseous HONO. In the LOPAP instrument, HONO is reacted to an azo dye (C18H19O2N5S). Gaseous HONO is scrubbed in two sequential reactions, first with acidic sulfanilamide solution (R1) in a two-channel striping coil, and second with N-(1-Naphthyl)ethylenediamine solution (R2), which was collected separately from channel 1 and channel 2 after photometric detection in the LOPAP. Each 5 ml of HONO azo dye solution was collected in 15 ml sterile polypropylene tubes (CELLSTAR®, Greiner BIO-ONE) at six sampling points that ended at 30, 60, 90, 120, 180, and 240 minutes after connecting the soil samples to the LOPAP. In parallel, NO2− azo dyes were produced from the soil extracts collected during the IPD experiment and standards using an identical approach for preparing azo dye. Immediately upon extract collection at each time point, 5 ml azo dye was generated by reacting 2.5 ml R1 + R2 mix (mixed at 1:1 (v:v) ratio) with 2.5 ml soil extract or standards. The R1 and R2 solutions used in the LOPAP instrument and for generating NO2− azo dyes in the soil extracts were of the same concentrations and the same chemical brand. The generation of NO2− azo dye from the soil extracts in the IPD assays was done for the first time in this study to understand the dynamics in the isotope ratios (15N/14N) of NO2− produced by different microbial N cycling pathways and to relate them to the isotope dynamics of HONO emitted from soils. HONO and NO2− azo dyes were purified by a reversed-phase extraction, according to Wu et al., except for the volume of acetonitrile and milli-Q H2O used for the preconditioning and final washing step of SPE (Solid Phase Extraction) columns. We used 1 ml acetonitrile and 2 ml milli-Q H2O more than used by Wu et al., to ensure the best cleaning of SPE columns (during preconditioning) and to maximize the ***removal*** of inorganic ions (in the final washing step). In brief, the pH of the azo dye solutions was adjusted to ~5 with 2 M sodium hydroxide and loaded onto 6 ml pre-conditioned SPE columns (Discovery® DSC-18 6 ML/500MG SPE, Sigma-Aldrich). The SPE columns were pre-conditioned by washing with 3 ml acetonitrile (HPLC grade, ≥99.8%, Thermo fisher Scientific) followed by 4 ml milli-Q H2O (18.2 MΩ). The SPE columns loaded with azo dye were then washed with 4 ml milli-Q H2O and stored at −20 °C for further analyses.

Elution and analyses of HONO and NO2− azo dyes

The frozen SPE columns were transported to the Terrestrial Ecosystem Research laboratory, University of Vienna, Austria, within one month after collection, where elution and analyses were performed. To avoid temperature effects (if any) during transportation, the frozen samples were transported in a sealed cooling box that contained ice bags. Immediately upon arrival, they were transferred to a −20 °C freezer until elution. The elution and analyses of HONO and NO2− azo dyes were different from those in Wu et al.. The fundamental difference was the instrument used to analyze the isotope ratios (15N/14N) in HONO and NO2− azo dyes. In our study, we analyzed HONO and NO2− azo dyes with an UPLC system (Ultimate 3000, Thermo Fisher Scientific, Bremen, Germany) coupled to an Orbitrap Exactive HCD MS (Thermo Fisher Scientific) with a mass resolution of 50,000. The choice of the device was made to optimize the detection of the 15N signal in azo dyes, as suggested by Wu et al.. The high resolution, high mass accuracy, and sensitivity of the Orbitrap-MS allowed us to separate the 15N and 13C isotopologue peaks that have a very small mass difference (∆mass of 0.00632 Da),. This and similar instruments are widely used to study metabolites, including those in soil extracts. The choice of instrument (with electrospray ionization) eventually also led us to use eluents and reagents different from Wu et al. for elution and chromatographic separation. Prior to elution, the SPE columns were transferred to room temperature for 20 minutes. Azo dyes were eluted with 5 ml eluent [80% methanol (HPLC grade, Sigma-Aldrich, ≥99.9%)+1% formic acid (98–100%, Merck Pro analysis)] using SPE vacuum manifolds. The eluates were diluted at 1:1 (v:v) ratio with milli-Q H2O and analyzed on the same day of elution. More details are provided in the Supplementary Methods.

Calculation of 15N enrichment in HONO and NO2− azo dyes

The 14N and 15N peak areas in the samples and calibration standards were integrated manually with Xcalibur software and exported into Microsoft Excel sheets for further calculations. After blank correction of the 14N and 15N peaks of the samples and standards, we then calculated the concentrations (µM) of the samples using the peak area sum (area of 14N plus area of 15N peaks), based on the slope and intercept build from the unlabeled concentration calibration standards using equation 1. Next, we calculated the percentage (%) of isotopically heavy (i.e., 15N) molecules of total molecules by dividing the peak area of the heavy isotopologues by the peak area sum of heavy and light isotopologues, as shown in Eq. . The atom% 15N of the azo dyes of HONO and NO2− were quantified from a series of polynomial functions generated from % of the heavy atoms (theoretical 15N in NO2− azo dye of isotope calibration standards) and atom% 15N measured in NO2− azo dyes by LCMS at two concentration levels of nitrite, 1.56 µM and 25 µM, and their average. These polynomial functions were applied depending upon the concentration and % of heavy isotopologues in the azo dye samples, which adapted within and between samples over time (e.g., LA vs. LNa vs. LNi treatments). The calibration curves for concentration from natural abundance calibration standards and theoretical 15N atom% 15N in NO2− azo dyes and atom% 15N as measured by LCMS at 1.56 and 25 µM labeled calibration standards are shown in the Supplementary Methods and in Supplementary Figure .

Gross rates

Gross production and consumption rates of NO2−, NH4+, and NO3− were calculated according to Kirkham and Batholomew. More details are provided in the Supplementary Methods.

Source contribution and determination of abiotic and biotic HONO fluxes

The contributions (%) of NH4+ oxidation, NO3− reduction, and organic nitrogen oxidation (the inset in Fig. ) were calculated using the slopes (Fig. ) generated between 15NO2− and HO15NO from the live soil samples of the LNi, LNa, and LA (only in the HOM soil) treatments. The contribution of NH4+ oxidation and NO3− reduction was obtained by dividing the respective slopes by the slope between 15NO2− and HO15NO in the LNi treatment. The contribution of organic N oxidation was obtained by subtracting the sum of NH4+ oxidation and NO3− reduction from 100%. The contribution of a potentially unknown abiotic HONO source was quantified from the LNi treatment using Eqs.  and .In Eqs.  and , atom% represents the values of the mixture and the sources (i.e., source 1 and source 2), and the fractional contributions of source 1 and source 2 are represented by f1 and f2, respectively. Here, the mixture was HONO, source 2 was NO2− and source 1 assumed to be at natural 15N abundance, i.e., 0.3663 atom% 15N. The fractional contribution of an unknown source (i.e., f1) was determined using Eq. , with the assumption that the sum of fractional source contributions is 1, and that the contribution of NO2− (f2) is determined by 1−f1. The abiotic and biotic HONO ***emissions*** were quantified using the HONO ***emissions*** from live and sterile LNi treatment. To obtain an estimate of the abiotic HONO flux, we quantified the HONO flux, which solely originated from NO2− and was subtracted from the total HONO emitted there, in the LNi treatment that used fractional contributions of NO2− to HONO ***emissions*** (ng N m−2 s−1) in the sterile soil samples. For the biotic HONO flux, HONO that originated from the NO2− added to the sterile soils was subtracted from the HONO measured from the live soil samples.

Total HONO

Total abiotic and biotic HONO represents the ***emission*** rates of soil HONO production averaged over 240 minutes of HONO flux measurements. To do that, first, total HONO in ng N m−2 was obtained for all replicates separately. Here, the HONO ***emission*** rates (in µg N m−2 s−1) at each sampling point were multiplied by the time in seconds between the two consecutive sampling points, and their sum was calculated to obtain the total HONO. The total HONO (ng N m−2) thus obtained was divided by 14,400 (240 × 60) for all replicates separately to get the HONO ***emissions*** rate averaged over 240 minutes in ng N m−2 s−1. Finally, mean values and standard deviations were calculated for the abiotic (sterile soil samples) and biotic (live soil samples) sources.

Soil analyses

A detailed description of basic soil properties (Supplementary Table ) and mineral N concentrations (Supplementary Figures –) are provided in the Supplementary Methods.

Nucleic acid extractions, purification, and gene quantification

Nucleic acids in both soils were extracted from the control samples, which were used for HONO flux measurements in accordance with a protocol based on Yeates and Gillings and Griffiths et al.. Real time quantitative polymerase chain reactions were used for gene quantification. Details on nucleic acid extractions and gene quantification are explained in the Supplementary Methods and in Supplementary Tables –.

Statistics

Statistical analysis and graphical presentations were performed in R statistical software (R version 3.6.1), unless otherwise specified. Before performing a statistical test, the distribution of the data was assessed using the Shapiro–Wilk test, Q–Q plots, and histograms, and were transformed (log or square root) when required. More details are provided in the Supplementary Methods.

**Acknowledgements**

This study was funded by the Academy of Finland under the project “The origin of nitrous acid (HONO) ***emissions*** from northern soils and linkages to nitrogen cycle processes” (grant no. 297735) and the doctoral program of the University of Eastern Finland (grant to H. R Bhattarai). We also thank the Academy of Finland Center of Excellence program (project no. 307331) for supporting this study. We thank Jaana Rissanen for laboratory assistance and Pasi Yli-Pirilä for technical assistance. We highly appreciate all the laboratory and technical personnel for their help during our research visit in the Terrestrial Ecosystem Research laboratory at the University of Vienna. We also thank Natural Resources Institute Finland (LUKE) for providing the study sites and for providing data on soil texture.

**Notes**

Supplementary informationThe online version contains supplementary material available at [*https://doi.org/10.1038/s43247-021-00125-7.Peer*](https://doi.org/10.1038/s43247-021-00125-7.Peer) review information Primary handling editors: Leiyi Chen, Joe Aslin, Clare Davis.Publisher’s note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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**End of Document**



[***The Brazilian forestry giant striking a blow for sustainability***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:610C-P151-JB77-K53K-00000-00&context=1516831)

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October 4, 2020 Sunday

**Length:** 1490 words

**Body**

For a company that makes billions of dollars from cutting down and pulping trees in Brazil, Suzano has a surprising following among some env... For a company that makes billions of dollars from cutting down and pulping trees in Brazil, Suzano has a surprising following among some environmentalists. “Suzano has been playing a sustainable leadership role,” says...

**End of Document**



[***UK will be hit by 'food shortages, power cuts, floods and catastrophic heatwaves every TWO years by 2050': Damning report slams government for failing to prepare homes and services for devastating climate change***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62XP-6J51-DY4H-K32C-00000-00&context=1516831)

MailOnline

June 15, 2021 Tuesday 11:33 PM GMT

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**Section:** NEWS; Version:3

**Length:** 3832 words

**Byline:** Colin Fernandez, Environment Correspondent For The Daily MailMark Duell for MailOnline

**Body**

* Flooding caused by rising seas, landslides, heatwaves, droughts and river destruction are all predicted

1. Food shortages and power cuts are also threats linked to global warming, says Climate Change Committee
2. Report produced by 450 experts found average UK temperatures had risen by 1.2C since the 19th century
3. It said by 2050 a heatwave similar to that in 2018 will fall every other year and summers will be 10% drier

From crop risks to more floods: Eight areas where experts want more to be done to protect Britain from climate impacts

The Climate Change Committee is urging the Government and devolved administrations to take immediate action to ensure the UK can cope with the inevitable impacts of climate change. Here are the eight key areas that the committee warns need to be tackled within the next two years:

1) Risks to ***land*** and freshwater habitats and species

Climate change threatens wildlife at a time when it is already in decline, with increased temperatures, drought and wildfire among the biggest risks, and the UK uplands are particularly vulnerable. Action is needed to reduce pollution and create suitable habitats for species to continue to live, such as shading rivers using trees, helping wildlife to move, for example with fish passes, and improving the resilience of habitat with mixed planting and ***removing*** material that risks wildfires.

2) Risks to soil health from more floods and drought

Soils are a key natural asset which provide foods, store carbon and are a home to wildlife, but they are at risk from erosion and damage from heavier rainfall and drought. Healthy soils are also needed to boost crop yields, which will free up ***land*** to plant trees to help cut carbon ***emissions***. Action is needed to bring in soil-friendly farming practices, and the post-Brexit overhaul of environmental laws, including new payments to farmers to provide public goods, provides an opportunity to encourage soil conservation.

3) Risks to natural carbon stores such as woods

Hotter, drier conditions reduce the functioning of peatlands and ***forests*** and threaten their existence, while 'blue carbon' stores such as saltmarsh and kelp ***forests*** are at risk from warming seas and the loss of coastal habitat. Meeting ***targets*** to cut UK ***emissions*** to net zero by 2050 relies on these natural stores of carbon to absorb around 50 million tonnes of ***emissions*** per year, so protecting them is a high priority, the Climate Change Committee says. Action is required to ensure the right trees are planted in the right places and degraded peatlands are restored.

4) Risks to crops, livestock and commercial trees:

Climate change poses a direct risk to ***agriculture*** and forestry through heat, drought, waterlogging, flooding, fire, and spread of pests, diseases and non-native species - and there is no evidence these risks are being strategically planned for, the report says. Action to cope with these issues will include new varieties of crops and trees and different breeds which are more resilient, and changes to ***land*** management including better technology for managing water and supplying nutrients as well as improving soil conservation.

5) Risks to supply of food, goods and vital services due to collapse of supply chains and distribution networks

Climate change can disrupt the often international supply chains of goods, through heavy rainfall, flooding and high temperatures. Action includes better information, diversifying supply chain risks, and new technology and infrastructure, and will mostly fall to businesses, though the Government can support them with advice and information.

6) Risks to people from power system failure

The UK currently gets around 15-20% of its energy from electricity but that is set to grow to around 65% as we switch to electric vehicles and heat pumps, alongside its use for lighting, communications and other necessities. Flooding, water shortages, wildfire, high temperatures, rising seas and increases in storms can all hit parts of the power supply system, causing blackouts and hitting multiple areas of the economy. As the UK ramps up investment in electricity generation such as offshore wind farms and the grid, there is an urgent need to ensure the power system is resilient to climate impacts.

7) Risks to health, wellbeing and productivity from increased exposure to heat in homes and buildings

People are already at risk of illness and death from high temperatures, with more than 2,500 deaths linked to last year's heatwave in England - more than at any time since records began in 2003. Without adaptation, the number of people dying from heat could treble to around 7,000 by 2050, while there will also be losses in productivity, and effects on elderly people being cared for in their homes. Efforts to stop overheating in buildings are missing, even though it is one of the biggest risks the UK faces, the report warns as it calls for updating of building regulations and policies to ensure new homes are built with cooling measures as well as energy efficiency.

8) Risks to UK from impacts of climate change overseas

Extreme weather events such as floods and hurricanes could create cascading risks that spread through sectors and countries, in the same way Covid-19 has caused terrible impacts to society and costs to Government, the report warns. Overseas aid programmes should reduce underlying vulnerabilities, not just respond to disasters, and there should be greater finance for adaptation as part of efforts to help poorer countries tackle climate change.

The UK is unprepared for the devastating consequences of global warming in the coming years, the Government's climate advisers warned today.

Rising seas, flooding, landslides, power cuts, food shortages, droughts, heatwaves and destruction of natural habitats such as freshwater lakes and rivers are all predicted to become more common as temperatures rise.

Our planning for such events has been 'genuinely poor', the Climate Change Committee warns today in a damning 1,500-page report exposing the risks of global warning to Britain.

The report - produced by 450 scientists and experts - suggests the Government's focus on reaching 'net zero' ***emissions*** by 2050 could be derailed as the plans do not take account of rising temperatures.

It found average temperatures in Britain have risen by 1.2C since the 19th century and another 0.5C is expected - even with ambitious action to curb greenhouse gases.

The report comes as Britain prepares to host the UN's climate change conference COP26 in Glasgow in November, seeking renewed global commitments to prevent a catastrophic rise in the world's temperature.

The report said that by 2050, the heatwave of 2018 will fall every other year on average, summers will be 10 per cent drier, winters 5 per cent wetter, heavy rainfall could increase by 10 per cent and sea levels will be 10-30cm (4-12 inch) higher than in 1981-2000.

The committee said urgent protective measures are needed across many different areas to prevent disaster. This includes heatwave planning, improved water efficiency and the restoration of upland peat, vital for helping stop or slow the spread of flood waters.

Chris Stark, the chief executive of the Government advisory group, said: 'We really want to get across the extent of climate risks we now face in the UK and the genuinely poor extent of planning we see for many of them.'

'Our preparations are not keeping pace with the extent of the risks we face in this country.

'That is a very concerning conclusion, particularly since we've been raising our concerns consistently with the Government for some time and, they've found it far too easy to dismiss those concerns and we would like to see that change.'

Government inaction since the committee's last report five years ago has seen 570,000 homes being built which are not prepared for heatwaves, the report said.

It also highlighted how there have been more than 4,000 heat-related deaths in England since 2018.

The committee's latest study assessed 61 areas of risk in the UK from nature to infrastructure, health, cultural heritage, businesses and food production and found more action was needed in more than half of them.

Without adaptation, risks with annual costs totalling billions of pounds are set to triple by 2080 even if temperature rises stay below 2C, the report warns.

The committee calls for action within the next two years from Government in eight key areas, including guarding against power failures.

The UK will increasingly rely on electricity as it switches to electric vehicles and uses electricity to heat homes, while floods or storms causing power cuts could also hit transport and communications.

Solutions could include urging people to charge their cars ahead of bad weather so they have transport or can use the batteries to power their home in a blackout.

Urgent action is also needed on risks to crops and livestock, and the supply of food, goods and services as well as threats to human health, well-being and productivity from too-hot homes and buildings.

Heat exposure in homes will increase as businesses and workers adopt greater homeworking as a result of the pandemic, and retrofitting measures is much more expensive than building into new homes now.

Baroness Brown, chairwoman of the Adaptation Committee, said the Government's national action plan that followed the committee's last risk assessment was inadequate.

She said: 'The overall level of risk facing the UK has increased over the last five years, and adaptation is not keeping pace with the rate at which the climate is changing.

'The focus on net zero, which requires reducing pollution as much as possible and using measures such as planting trees to absorb remaining carbon, would not solve the problem as the climate would go on changing for decades.

'There's a really significant additional element of inevitable change that will continue and to which we need to adapt in order to protect people, nature and the economy in the UK,' she said.

'Our message to government is this has got to be a priority, we've got to get on with it, and we need to see much stronger government leadership.'

The CCC, an independent body formed under Britain's Climate Change Act to advise the government on tackling global warming, said preparations for changes brought about by climate change were also vital.

'New evidence shows that the gap between the level of risk we face and the level of adaptation under way has widened,' it said in the report. 'Adaptation action has failed to keep pace with the worsening reality of climate risk.'

Panel member Julia King warned 'the severity of the risks we face must not be underestimated' and would not disappear as the world moves towards net zero carbon ***emissions***, adding: 'Many of them are already locked in.'

Green Party MP Caroline Lucas urged for the report to be seen as a 'call to action', saying: '[It lays] out in forensic detail the cost of successive governments' failure to take the necessary action on the climate emergency.

'Almost every warning light on the climate dashboard is going from amber to red. This has to serve as a call to action, far beyond the piecemeal policies and programmes the government has put in place.'

How the Climate Change Committee includes a former Wetherspoon legal boss among experts

Baroness Brown of Cambridge: Engineer who has held senior roles in industry and academia

Michael Davies: Professor of building physics and environment at University College London

Richard Dawson: Professor of earth systems engineering at Newcastle University

Ece Özdemiroglu: Founding director of Economics For The Environment Consultancy (Eftec)

Rosalyn Schofield: Solicitor who was JD Wetherspoon's legal director and worked for Associated British Foods

Piers Forster: Professor of physical climate change at the University of Leeds

Kate James: Professor of ecology and biodiversity at University College London

Doug Parr, policy director and chief scientist at Greenpeace UK, told the Independent: 'Change is now inevitable and it's time the government pulls its finger out to ensure we're ready to face the challenges the climate crisis poses.'

'That means bringing forward detailed, well-funded measures on everything from proper housing standards making them fit for living in a warmer world, to investment in soils and nature restoration.

'Putting money behind good action now will see us paid back many times through the benefits our society will reap.'

Government officials said UK action to adapt to the effects of climate change was integrated across departments, covering the natural environment, infrastructure, buildings, people and industry, with efforts including putting nature at the heart of its approach with new tree and peat action plans, and building resilience to flooding.

A Government spokesman said: 'The UK was the first major world economy to set a ***target*** of net zero greenhouse gas ***emissions*** by 2050.

'Our plan to further reduce ***emissions*** in 2035 by at least 78 per cent compared to 1990 levels is the highest reduction ***target*** by a major economy to date.

'As we work to eliminate the UK's contribution to climate change and build back greener after the pandemic we will increase biodiversity, protect and restore our peatlands, clean up our country's air and help protect our waterways through our landmark Environment Bill.

'We welcome this report and will consider its recommendations closely as we continue to demonstrate global leadership on climate change ahead of Cop26 in November.'

Cop26 is billed as the most important climate change conference since 2015, when countries pledged to limit global temperature rises to less than two degrees Celsius above pre-industrial levels and to pursue efforts to go down to 1.5 degrees.

Experts believe this can be achieved only by the world reaching net zero carbon ***emissions*** by 2050, a goal which was reaffirmed by the G7 on Sunday.

The club of the world's richest nations also agreed to halve collective ***emissions*** by 2030 compared with the level in 2010.

But the CCC warned that further warming was 'inevitable, even on the most ambitious pathways for the reduction of global greenhouse gas ***emissions***.'

Meanwhile today, a new unrelated report has found river flood defences prevent losses of £568 million a year, showing the vital need to maintain them.

The study for ABI and insurers Flood Re by flood risk specialists at JBA Risk Management looked at the benefits of flood protection upkeep over a 30-year period under different spending scenarios.

It found that without flood defences in place along rivers, losses could total £956 million a year, which was reduced to £388million with defences, showing they delivered a benefit of £568 million a year.

The report also found that increasing current maintenance spending by 50% could extend the lifespan of defences by an average of eight years and that every £1 spent on maintaining existing schemes can save up to £7 in spending on new defences.

It highlighted that well-funded flood defences do not breach, but if maintenance spending is cut the lifespan of the defences will reduce and overall annual costs will rise.

The joint review has been released ahead of the Government's comprehensive spending review later this year.

Simon Waller, executive chair at JBA Risk Management, said: 'The effectiveness of flood defences plays a significant role in the resilience of our communities and will continue to do so, especially with research suggesting that flooding is likely to increase in frequency and severity.'

UK river flood defences prevent losses of £568 million a year, study says

River flood defences prevent losses of £568 million a year, showing the vital need to maintain them, a new report has found.

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ABI and Flood Re say that flooding is the greatest natural disaster risk in the UK, suggesting an estimated one in six properties in England and Wales, one in 11 properties in Scotland and one in 34 properties in Northern Ireland are now at risk of flooding.

Since 2015, the UK Government has been investing £2.6 billion towards flooding protection in flood and coastal defence schemes.

In the 2020 Budget, it announced that it will double that amount to £5.2 billion over the next six years.

James Dalton, ABI's director of general insurance policy, said: 'At the upcoming comprehensive spending review, we urge the Government to ensure that adequate investment is allocated to flood defence maintenance projects as well as capital as part of the new funding cycle.

'The flood risk in the UK is only going to worsen as a result of climate change, so it is vital that investment in flood defences keeps pace.'

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'Our primary concern must be to protect communities and families from the impact of flooding. Today's report shows that it is also financially reckless to do otherwise,' said Flood Re chief executive Andy Bord.

'The Government must embrace the opportunity to commit additional budget to maintain our flood defences.

'If maintained, flood defences provide long-term security for communities which may otherwise be devastated by flooding.

'Protecting against flood risk is also critical to ensuring the long-term availability of affordable home insurance for those living in flood-prone areas.'

Also today, a survey has found more than 80 per cent of Britons want the Government to make refillable products a central part of its strategy for tackling the plastic pollution crisis.

Released on World Refill Day, the research found more than two-thirds (73 per cent) of respondents think plastic pollution is as bad or worse than it was before the onset of the pandemic.

A third have had a reusable container such as a coffee cup rejected in the last 12 months, despite guidance stating they are Covid-safe for servers to handle as long as basic hygiene practice is followed.

The survey of 2,000 adults conducted in May this year found 80 per cent were taking steps to reduce their consumption of single-use plastic.

Commissioned by Friends of the Earth and anti-plastic pollution charity City to Sea, the research found 81% wanted the Government to prioritise making refillable products more widely available.

It found 74 per cent would like to see more refill options for items such as dried foods, laundry detergents and take-away coffee.

Three in four reported feelings of 'anxiety, frustration or hopelessness' at the amount of plastic packaging that comes with their shopping.

More than half of those surveyed (55 per cent) think supermarkets and big name brands are not doing enough to address plastic pollution.

A further 59 per cent said supermarkets were not offering enough refillable, reusable or packaging-free products.

World Refill Day, a campaign set up by City to Sea, aims to prevent plastic pollution by helping people live with less waste by making small changes to their everyday shopping.

It directs people to businesses offering refill and reuse options on their goods via the Refill app, which has 200,000 refill stations logged globally.

City to Sea and Friends of the Earth are calling on the Government to make refill and reuse a central plank of the post-pandemic recovery, as well as introducing legally binding ***targets*** on plastic pollution.

They are also calling on retailers to make it easier for customers to make plastic-free choices by introducing refillable products and creating packaging-free aisles.

The two organisations want to see similar plans to those proposed in France, where 20% of shelf space would be dedicated to refill stations by 2030.

Jo Morley, City to Sea's head of campaigns, said: 'These latest figures support what organisations like City to Sea and Friends of the Earth have been long saying - we need nothing short of a refill revolution.'

She continued: 'This is about putting action behind the words that have long been promised to implement the waste hierarchy that clearly puts recycling as a last resort after all efforts to reduce, reuse and refill have been exhausted.

'As a global movement, we have the power to create a wave of change and show businesses, brands and governments that we still want to see action on plastic and reuse is the solution.'

Friends of the Earth plastics campaigner Camilla Zerr said: 'The results are in and couldn't be clearer - public support for a world where plastic pollution isn't choking our oceans, landscapes and wildlife is resounding.

'But so far, Government promises on plastic have been all bluff and bluster, with little guarantee of a real reduction in plastic pollution.'

She continued: 'There is now a fantastic opportunity to craft a new, ambitious vision for plastic pollution enshrined in law through the Environment Bill.

'The Government should use it to really listen to what the public wants and put reuse and refill at the heart of this much-needed legislation.'

A Department for Environment, Food and Rural Affairs (Defra) spokesperson said: 'The UK is a global leader in tackling plastic pollution. Recycling and reusing more of our waste is key to leaving the environment in a better state for future generations.

'We welcome refill initiatives and want companies to take more responsibility for their packaging waste, with consumers incentivised to reuse and recycle the billions of drinks bottles and cans purchased every year.

'That's why we have brought forward our landmark proposals for packaging reform and a deposit return scheme, which will boost recycling, step up our war on plastic pollution and reduce litter in our communities and countryside.'

**Load-Date:** June 16, 2021

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[***Environmental Quality Incentives Program (Updated on 26-10-2020)***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:615F-1KN1-F0YC-N33F-00000-00&context=1516831)

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**Body**

Washington, DC: This Rule document was issued by the Natural Resources Conservation Service (NRCS)

Action

Final rule.Summary

This final rule adopts, with minor changes, an interim rule published in the Federal Register on December 17, 2019, that made changes to the NRCS's Environmental Quality Incentives Program (EQIP). The changes were made to be consistent with the ***Agriculture*** Improvement Act of 2018 (the 2018 Farm Bill) and implemented administrative improvements and clarifications. NRCS received input from 197 commenters who provided 598 comments in response to the interim rule. This final rule makes permanent those changes appearing in the interim rule, responds to comments, and makes further adjustments in response to some of the comments received.Dates

Effective: October 26, 2020.For Further Information Contact

Michael Whitt; phone: (202) 690-2267; or email: [*michael.whitt@usda.gov*](mailto:michael.whitt@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).Supplementary InformationBackground

On December 17, 2019, NRCS published an interim rule with request for comments in the Federal Register (84 FR 69272-69293) to implement mandatory changes made by the 2018 Farm Bill and administrative improvements and clarifications. This final rule adopts, with minor changes, the amendments made by the interim rule. These changes are in response to public comment as explained in the summary of EQIP comments below.Discussion of EQIP (7 CFR Part 1466)

Through EQIP, NRCS incentivizes ***agricultural*** producers to conserve and enhance soil, water, air, plants, animals (including wildlife), energy, and related natural resources on their ***land***. EQIP promotes ***agricultural*** production, ***forest*** management, and environmental quality as compatible goals, and optimizes environmental benefits by assisting producers in addressing resource concerns on their operations. EQIP also helps ***agricultural*** producers meet Federal, State, and local environmental requirements and avoid the need for new requirements.

Eligible ***lands*** include cropland, grassland, rangeland, pasture, wetlands, nonindustrial private ***forest*** ***land***, and other ***land*** on which ***agricultural*** or ***forest***-related products or livestock are produced and natural resource concerns may be addressed. Participation in EQIP is voluntary.

The Secretary of ***Agriculture*** delegated authority to the Chief, NRCS, to administer EQIP on behalf of CCC.

The interim rule:

Incorporated the addition of new or expected resource concerns to EQIP program purposes, adapting to and mitigating against increasing weather volatility, and drought resiliency measures. Amended how EQIP interacts with the Regional Conservation Partnership Program (RCPP) since RCPP is now a stand-alone program. Amended some definitions and added others to address changes made by the 2018 Farm Bill, including—

○ Animal feeding operation (AFO);

○ Eligible ***land***;

○ Estimated income foregone;

○ ***Forest*** management plan;

○ High priority area;

○ Incentive practice;

○ Priority resource concern;

○ Semipublic;

○ Soil remediation;

○ Soil testing; and

○ Water management entity (WME).

Added “increased weather volatility” as a resource concern under the national priorities identified in the regulation. Added to outreach responsibilities the requirement to notify historically underserved producers about the availability to elect to receive advance payments. Addressed EQIP contract provisions associated with WMEs and certain water conservation projects. Removed the requirement that a participant must implement and develop a comprehensive nutrient management plan (CNMP) by the end of the contract and replaced it with the following: Any conservation practices in the EQIP plan of operation must be implemented consistent with a CNMP. Incorporated the ability to waive the $450,000 regulatory contract limitation and establish a $900,000 regulatory contract limitation for certain projects with joint operations, group projects, or contracts where NRCS has waived the payment limitation for a WME. Increased payment rates for certain high-priority practices and increased payment rates for practices that address source water protection. Updated the statutory payment limitations for general EQIP contracts and contracts entered into under the National Organic Initiative. Clarified provisions related to contract administration, including procedures for contract modification and termination. Relocated provisions related to administration of Conservation Innovation Grants (CIGs) to its own subpart and incorporated the addition of On-farm Conservation Innovation Trials (On-farm Trial), which include the Soil Health Demonstration (SHD) Trial. Added a new subpart to address EQIP incentive contracts, which are a new enrollment option created by section 2304 of the 2018 Farm Bill. Relocated the General Administration provisions from subpart C to a new subpart E and updated language addressing environmental markets to reflect changes made by the 2018 Farm Bill.

Summary of EQIP Comments

The interim rule had a 60-day comment period ending February 18, 2020. NRCS received 598 comments from 197 commenters in response to the rule. In addition, one organization submitted a spreadsheet with 12,852 comments. NRCS reviewed these comments and categorized and summarized them according to the topics identified below. The topics that generated the greatest response include conservation practices, contract limits, and national priorities.

In this rule, the comments have been organized in alphabetic order by topic. The topics include:

Administration; Advance payments; Applicability; CIG—On-farm Trials, Other, and SHD Trials; Conservation Practices—High Priority Practices, Incentive Practices, Other, Prairie Pothole Wildlife Practice, Soil Health, and Source Water Protection; Contract Administration; Contract Limits Unrelated to WMEs; Contract Requirements; Contracts with WMEs—Adjusted Gross Income (AGI) and Payment Limitation Waiver, ***Land*** Eligibility Criteria, and Other; Definitions—Eligible ***Land***, High Priority Area, Priority Resource Concern, Soil Testing, and WMEs; Eligibility; Environmental Assessment; EQIP Plan of Operations—Comprehensive Nutrient Management Plan; Fund Allocations; General; Incentive Contracts—Selection Criteria; National Priorities; Outreach Activities; Payment Limits; Payment Rates; and Ranking.

Of the 598 comments raised by the 197 commenters, 47 were general in nature and most expressed support for EQIP or how EQIP has benefitted particular operations. NRCS also received 21 comments that were not relevant to the EQIP interim rule. Seven comments criticized the regulation for not strengthening EQIP's impact on climate resilience or soil health. Six comments requested NRCS technical assistance for existing and potential projects. Several of these comments conveyed frustration with the process or specific working relationships. NRCS is committed to providing the highest quality service to its customers and partners, and these comments have been forwarded to the appropriate staff.

In general, comments focusing on topics that were outside the scope of the regulation will not be addressed. In response to the request that public comment be submitted through email, NRCS reminds the public that all comments should be submitted to the agency dockets on Regulations.gov and any comments that are received by another method will be posted on regulations.gov for public access to all of the comments in one place. In following the rulemaking process, NRCS seeks to provide equal consideration to all who wish to provide feedback. Submission of public comment through Regulations.gov provides a more equitable and reliable system by which to collect comments within the stated timeframes.

NRCS also received 24 comments that expressed nonspecific dissatisfaction with EQIP or the interim rule and 47 comments that supported EQIP or the interim rule. These comments do not include any recommendations for change. This final rule responds to the comments received by the public comment deadline and makes minor clarifying and related changes.Administration

Comment: NRCS received comment related to EQIP administration, including comment addressing outreach, organic production, input from State advisory committees, funding ***targets***, expanding the Working ***Lands*** for Wildlife model, additional training to employees, and allowing grazing on all ***land*** uses.

Response: NRCS appreciates the suggestions for improving outreach and operations and will incorporate suggestions when updating outreach plans and EQIP policies. No change is being made to the regulation in response to this issue.Advance Payments

Comment: NRCS received comment recommending making advance payments mandatory or changing their timing, including making the advance payment when the producer is ready to begin the practice or to begin the 90-day clock upon practice installation.

Response: NRCS built criteria into business tools that must be met prior to approving an advance payment, including verification that the request is for an immediate need and that a final design has been accepted by the participant. NRCS cannot change the start time for the 90-day clock since statute specifies that the clock starts on the date that the advance payment is received by the participant. The participant's receipt of the advance payment, and NRCS's expenditure of funds, commences the 90-day clock. NRCS offers advance payments to all historically underserved producers and records, by contract item, the producer decision to receive advance payments on the EQIP schedule of operations. No change is being made to the regulation in response to this issue.Applicability

Comment: NRCS received comment recommending changes to EQIP's purpose, scope, and objectives as discussed in the Applicability section, § 1466.1, including identifying that EQIP participation should also avoid the need for regulatory programs, identifying that the EQIP purpose includes financial and technical assistance to organic producers, adding that new or expected resource concerns relate also to organic producers, and suggesting that assisting producers with transitioning from an expiring Conservation Reserve Program (CRP) contract should be an EQIP priority in order to keep ***land*** in grass and maintain financial and resource investments.

Response: The final rule focuses on the purposes spelled out in statute, including referencing assistance related to organic production and helping producers transition from CRP and, in doing so, keeping ***land*** in grass and thereby maintaining financial and resource investments. The regulatory text has been modified at § 1466.1(a) and § 1466.20(b) to address these concerns. No other changes are being made to the regulation in response to this issue.CIGsCIG On-Farm Trials

Comment: NRCS received comment supporting CIG On-farm Trials testing of new technologies at the field level, including recommending that NRCS clearly state that on-farm conservation research is authorized under CIG, and that soil health testing be required of all On-farm Trials to determine impacts to soil health.

Response: On-farm Trials “facilitate and incentivize experimentation and testing of new and innovative conservation approaches. ” If research falls within the scope of “experimentation and testing,” it is an authorized activity for On-farm Trials. Soil health testing is not a required part of every On-farm Trials project, although NRCS may apply the extent to which an On-farm Trial seeks to measure or improve soil health as a ranking consideration in the context of funding opportunities. No change is being made to the regulation in response to this issue.Other

Comment: NRCS received comment recommending changes to other aspects of CIG, requesting NRCS waive its one-to-one match requirement for grants that assist historically underserved producers, reword the 10 percent funding for grants that assist historically underserved producers to require that no less than 10 percent of CIG funding be awarded to historically underserved producers, expand the purpose of CIG to specifically mention on-farm practical field research as a purpose, and directing a CIG study for new and innovative manure management.

Response: This final rule allows a reduction of match requirements for historically underserved producers on a case-by-case basis and sets forth the criteria for granting such a match reduction. NRCS has consistently met the 10 percent funding goal for historically underserved producers and is committed to improving outreach to this demographic. No changes are made regarding the funding goal in the final rule. This rule is expanding the purposes language in the regulation to include practical field research and is continuing to work with producers and partners to develop innovative practices for manure management through multiple avenues, including CIG.SHD Trials

Comment: NRCS received comment recommending that NRCS add language to the rule to diversify participation in SHD Trials—for example, by farm type, size, location, and underrepresented producers. Comment also recommended funding for soil testing.

Response: The final rule provides for a process that results in diverse CIG participation. NRCS is developing a soil test activity which could be utilized in CIG contracts with producers. If an SHD Trial results in a reliable, efficient, and cost-effective process for soil health testing, NRCS will consider it in developing the soil test activity noted above. No additional language was added to the regulation in response to this issue.Conservation PracticesHigh-Priority Practices

Comment: NRCS received comment recommending specific ***targets*** and specific habitat and area restoration plans (such as prioritizing practices with a high environmental benefit but low adoption rate or offering longer contracts with additional payments for foregone income for practices that benefit wildlife).

Response: The EQIP regulation gives States the greatest flexibility to adapt to local needs and determine high-priority practices in consultation with State technical committees and local working groups. States currently have the authority to prioritize practices that have a high environmental benefit but low adoption rate to increase practice adoption. In addition, EQIP provides the opportunity for producers to enter into contracts of up to 10 years, and NRCS currently allows States to assign higher significance to wildlife habitat development and other natural resource concerns when determining rates for estimated foregone income. No change is being made to the regulation in response to this issue.Incentive Practices

Comment: NRCS received comment recommending prioritizing EQIP incentive practices that are compatible with ecosystem services markets; prioritizing applications with at least two priority resource concerns; allowing EQIP grazing practices on cover crops and other grass-based practices that have wildlife benefits; prioritizing payments for management practices to encourage long-term, beneficial changes to production systems; and using longer-term incentive contracts in certain circumstances, such as with wildlife projects.

Response: Incentive practices are a relatively new area for NRCS, and NRCS is continuing to work with State, local, and Tribal groups to develop practices that are best suited for incentive payments in each high-priority area. As NRCS develops those practices, it is considering compatibility with ecosystem services markets, multiplicity of benefits, wildlife benefits, long-term benefits, and term length where appropriate and within the bounds of statute. No change is being made to the regulation in response to this issue.Other

Comment: NRCS received comment recommending incorporating new technologies and advancements in conservation practice standards, creating interim standards where beneficial, and encouraging flexibility to better address State and local needs.

Response: NRCS will continue to adapt and innovate the application of science and technology to provide the best resource conservation possible through each of its programs, including EQIP. These adaptations and innovations will be reflected in future NRCS practice standards. No change is being made to the regulation in response to this issue.Prairie Pothole Wildlife Practice

Comment: NRCS received comment recommending prioritizing longer wildlife habitat contracts to benefit such areas as the Prairie Pothole Region and rice-producing areas. The EQIP statute (section 1240B(g)(3)), provides for longer-term (up to 10 year) contracts that benefit wildlife and includes postharvest flooding practices or practices that maintain the hydrology of temporary and seasonal wetlands.

Response: NRCS recognizes the importance of wildlife protection in the Prairie Pothole Region and rice-producing areas. State and regional priorities determine how best to implement strategies for ensuring the most appropriate contract terms are in place to protect wildlife. No change is being made to the regulation in response to this issue.Soil Health

Comment: NRCS received comment requesting that NRCS provide more soil health practice options, including suites or bundles of soil health practices through outreach efforts and asked that NRCS consider additional ranking points for applicants using suites or bundles of soil health practices. Comment also asked that NRCS develop soil health planning protocols for cropland, grazing ***land***, and other ***agricultural*** ***lands***; that these protocols be widely available through EQIP technical and financial assistance; and that soil health testing be required for any contract supporting the adoption of soil health practices and that grazing of cover crops be permitted to enhance soil health conditions.

Response: Improving and maintaining soil function is a priority for, and a foundation of, NRCS's programs and maintaining or developing relevant measures to promote soil health is a focus of the agency.

Regarding the overall process of additional soil health conservation practice options, NRCS follows a formal process to review each national conservation practice standard at least once every 5 years from its date of issuance or review. Interim conservation practice standards serve as mechanisms for field testing new technology. Interim conservation practices that prove successful are either developed into national conservation practice standards or incorporated into existing practice standards, as appropriate. States may modify national practice standards to meet State or local needs.

The National Technical Guide Committee publishes a notice in the Federal Register requesting comments on all additions or revisions to conservation practices in the NRCS National Handbook of Conservation Practice Standards. The comment period is not less than 30 days from the date of notice publication.

The NRCS Conservation Practice Standard Cover Crop (Code 340) provides guidance for grazing cover crops. Grazing of cover crops may be permitted depending on such factors as the soil condition and growth state of the cover crop. When addressing conditions such as soil health and organic matter content, cover crop species will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil. Grazing must not cause negative impact to the site (for example, erosion or compaction).

No change is being made to the regulation in response to these issues.Source Water Protection

Comment: NRCS received comment suggesting that wetland practices, such as wetland restoration and buffers, count as source water protection practices. Comment noted the importance of involving State technical committees in designating source water protection areas and eligible source water protection practices.

Response: NRCS will continue to work closely with State technical committees, which are crucial in designating source water protection areas and eligible source water protection practices. As determined by NRCS in collaboration with the State technical committees, wetland restoration and buffers will be source water protection practices. No change is being made to the regulation in response to this issue.Contract Administration

Comment: NRCS received comment encouraging that NRCS use the longest possible contract lengths (up to 10 years) for wildlife conservation, especially for wildlife practices that require high levels of site preparation and maintenance. Comment also highlighted that EQIP requires applicants to obtain the written concurrence of the landowner to apply a conservation practice, while Colorado state law allows ditch owners to install water pipelines to replace open-air ditches without the landowner's consent.

Response: States already may offer contracts with a term of up to 10 years with one or more annual management practices to restore, develop, protect, and improve wildlife habitat. Regarding the difference between State law and Federal regulation, the EQIP requirement to obtain landowner permission to apply a conservation practice cannot be waived. However, if the holder of the right of way has the property rights necessary to install water pipelines without consent of the fee title landowner, then NRCS considers the holder of the right of way the landowner for consent purposes. No change is being made to the regulation in response to this issue.Contract Limits Unrelated to Water Management Entities

Comment: NRCS received comment recommending ***removing*** joint operations and confined animal feed operations (CAFOs) from the list of operations for which a waiver can be requested to exceed the $450,000 contract limit. The specific change requested was to amend the rule by striking § 1466.21(e)(1)(ii)(A) and the words or individual member thereof from § 1466.6(d)(3)(iii).

While the higher contract limit does not relate specifically to CAFOs, the comment associated CAFOs with joint operations and the availability of higher levels of program assistance. Comment also recommended that EQIP not fund CAFOs at all.

Response: By statute, EQIP has an aggregate $450,000 payment limitation per person or legal entity, directly or indirectly, for all contracts entered into during fiscal years (FYs) 2019 through 2023. The overall program payment limitation may not be waived; further, NRCS does not have the discretion to automatically disqualify CAFOs from EQIP assistance. Under payment limitation requirements that apply to NRCS and Farm Service Agency programs, joint operations are able to receive a payment up to the maximum amount specified for a person or legal entity multiplied by the number of persons or legal entities that comprise ownership of that joint operation (see 7 CFR part 1400). When a joint operation consisting of two or more members enters into an EQIP contract, the EQIP contract with the joint operation may receive funding of up to $900,000. Without a contract limit, joint operations could receive very large payments under an EQIP contract.

To address concerns related to large contracts with joint operations, NRCS in 2009 imposed a regulatory contract limit that corresponded with the EQIP payment limit. The 2009 interim rule did not adjust the contract limit for joint operations, and this system was maintained in the EQIP regulation through the 2014 Farm Bill. The $450,000 limit does not, therefore, represent a change to EQIP brought about in the 2019 interim rule.

To clarify, the overall program payment limitation may not be waived. No member of a joint operation may receive more than $450,000 in payment through EQIP for program years 2019 through 2023. But, when a joint operation consisting of two or more members enters into an EQIP contract, the EQIP contract with the joint operation may receive funding of up to $900,000. EQIP is using this flexibility to help streamline contract administration for these types of arrangements. Unlike the Conservation Stewardship Program (CSP), EQIP does not require enrollment of the entire operation. Each operation may receive multiple contracts for EQIP; therefore, the purpose of contract limits in EQIP differs from that in CSP.

No change is being made to the regulation in response to these issues.Contract Requirements

Comment: NRCS received comment recommending provisions for NRCS to incorporate into the EQIP contracts with producers, including requiring participants to report EQIP environmental outcomes to NRCS; ensuring that the eligibility of irrigation districts for EQIP contracts does not alter the annual funding allocation to States; strengthening support for best grazing management practices; limiting contracts to only 1 year; and requiring consideration as to how irrigation projects and practices could inadvertently negatively impact wildlife habitats and wetlands and increase water consumption by bringing additional ***land*** into production or converting ***land*** to more water-intensive crops.

Response: NRCS provides an assessment of resource concerns, including impacts to wildlife and water conservation, before a practice or activity is implemented, and determines any potential effects and expected environmental outcomes through the ranking process prior to approving EQIP contracts. In accordance with statutory limitations, NRCS does not provide supplemental allocations to States for WME projects. Contract terms are up to 10 years with the actual term determined by the producer and agreed to by NRCS. No change is being made to the regulation in response to this issue.Contracts With Water Management EntitiesAdjusted Gross Income and Payment Limitation Waiver

Comment: NRCS received comment related to AGI and payment limitation waiver criteria with respect to contracts with WMEs, including: General support for the $900,000 payment limit; support for increasing the payment limitation amount to over $900,000 as long as it adheres to specific, narrow cases allowed by statute; and support for increasing the payment limit to at least 10 times the individual limit (over $4.5 million) to address large-scale irrigation infrastructure projects. Other comment suggested waiver criteria, such as if the contract addressed multiple natural resource concerns outlined in statute, service to multiple farm operations, or benefitted historically underserved producers. Some comment expressed a desire that individual producers maintain access to funds within State EQIP allocations, either by maintaining the $900,000 payment limit, reducing it to the standard $450,000, by establishing a separate national allocation pool for WME projects or continuing to fund WMEs thorough RCPP. Other comment recommended separating the AGI waiver and payment limitation waiver.

Response: NRCS appreciates the diverse array of views. When a WME establishes through its program application that it deserves an AGI waiver using the criteria established in the interim rule (and retained in this final rule), it also establishes that it needs an increased contract limit. The contract limit of $900,000 is an appropriate size to draw a distinction between EQIP and other programs that may protect watersheds, such as RCPP or Watershed Operation Assistance under public law 83-566. No change is being made to the regulation in response to this issue.***Land*** Eligibility Criteria

Comment: NRCS received comment expressing general support for contracts with WMEs; recommending expanding the definition of adjacent ***land*** to include ***lands*** that create a direct connection between the infrastructure under the control of a WME and the producer's ***land*** (i.e , any ***land*** over which the WME holds an easement); limiting the scope of adjacent ***land*** to ***land*** that abuts an EQIP-eligible farm or ranch and is necessary for the practice or system being implemented by the WME; limiting recipients of EQIP funds to existing ***agricultural*** producers; and, ensuring that EQIP contracts do not enable water spreading, increase consumptive use, or put new ***land*** into ***agricultural*** production.

Response: The term “adjacent” is not defined in the interim rule or in this final rule. However, the adjacent ***land*** must meet several criteria in order to be eligible for enrollment in a contract with a WME, including that it must be “necessary to support the installation of a conservation practice or system on eligible ***land***. ” This supports an expansive interpretation of “adjacent” while ensuring that the adjacent ***land***'s enrollment supports the installation of a practice or system on eligible ***land***. No change is being made to the regulation in response to this issue.Other

Comment: NRCS received comment supporting the expansion of EQIP eligibility to WMEs, including ***land*** grant—mercedes, and recommended streamlined processes, clarification on eligibility, and guidance for WMEs on application.

Response: Streamlining and clarification will be addressed through additional outreach and communication to stakeholders. No change is being made to the regulation in response to this issue. The regulation in § 1466.6, “Program requirements,” includes additional criteria for WME eligibility, consistent with statutory direction, to ensure water conservation projects typical of ***land*** grant—mercedes can be considered for assistance.DefinitionsEligible ***Land***

Comment: NRCS received comment recommending including reference to wildlife under the definition for eligible ***land*** to incentivize stewardship of ***land*** managed for wildlife and expanding the definition of associated ***agricultural*** ***lands*** to include neighboring properties as eligible ***lands*** to both support ***agriculture*** and wildlife habitat.

Response: NRCS appreciates the interest in EQIP from wildlife and conservation stakeholders. The purpose of EQIP is to provide financial and technical assistance to ***agricultural*** producers on eligible ***agricultural*** and nonindustrial private ***forest*** ***land***. No change is being made to the regulation in response to this issue.High-Priority Area

Comment: NRCS received comment on the definition of high-priority areas, including recommending how to conduct a robust consultation process with the State technical committees and other stakeholders, selecting areas that cover broad and diverse areas of ***agricultural*** production and resource concerns, and also selecting areas based on a narrower, prioritized implementation approach.

Response: NRCS will continue to work cooperatively with State technical committees through the local working group process to select high-priority areas consistent with national, State, and local priorities. No change is being made to the regulation in response to this issue.Priority Resource Concern

Comment: NRCS received comment supporting the local role of the State in setting priority resource concerns, including wildlife practices and high-priority practices.

Response: NRCS will continue to work cooperatively with State technical committees to select priority resource concerns consistent with national, State, and local priorities. No change is being made to the regulation in response to this issue.Soil Testing

Comment: NRCS received comment that supported identifying appropriate soil health testing protocols, requiring the protocols in all EQIP contracts related to soil health, and quantifying the environmental outcomes of EQIP contracts on soil health.

Response: NRCS appreciates the attention that the public has given to soil health. NRCS continues to develop activities designed around soil health and soil testing, which are likely to receive recognition in local, State, or national priorities for ranking or other purposes. No change is being made to the regulation in response to this issue.Water Management Entities

Comment: NRCS received comment recommending that the definition of “water management entity” include mutual ditch, irrigation, and canal companies as “similar entities” due to their similarities to acequias in their purpose, size, legal status, and organizational structure. Comment also supported limiting EQIP funding for WMEs to contracts where the water users are farmers and ranchers.

Response: NRCS will keep the current definition of WME in § 1466.3, since this definition does not exclude ditch and related companies. Ditch and related companies may be eligible WMEs if they are a semipublic organization with the purpose of assisting private ***agricultural*** producers manage water distribution or conservation systems. No change is being made to the regulation in response to this issue.Eligibility

Comment: NRCS received comment recommending EQIP eligibility language reflect grazing rights on public ***lands*** better, make entities that do not have direct control of the ***land*** and members of Internal Revenue Code (IRC) Section 501(d) religious organizations eligible for participation, and expand eligibility for On-farm Trials to organizations that conduct business related to conservation on ***agricultural*** ***lands***.

Response: Control of ***land*** is a necessary requirement for participant eligibility. The participant must be able to implement the requirements of the EQIP contract, which is demonstrated through control of the ***land***.

Regarding publicly-owned ***land***, NRCS considers whether the ***land*** is within the applicant's control (in other words, that the applicant can implement the terms of the EQIP contract), whether the ***land*** is a working component of the producer's ***agricultural*** or forestry operation (for example, that the producer uses the ***land*** for grazing), and whether conservation practices to be implemented on the public ***land*** are necessary and will contribute to an improvement in the identified resource concern. If all three criteria are met, the ***land*** may be eligible.

Religious organizations are not excluded from eligibility. A legal entity organized under IRC Section 501(d) meets the definition of legal entity in § 1466.3 provided it owns ***land*** or an ***agricultural*** commodity, product, or livestock or produces an ***agricultural*** commodity, product, or livestock.

An eligible entity for the purposes of On-farm Trials includes a third-party private entity, the primary business of which is related to ***agriculture***. This includes organizations that conduct business related to conservation on ***agricultural*** ***lands***.

No change is being made to the regulation in response to this issue.Environmental Assessment

Comment: NRCS received comment related to the Programmatic Environmental Assessment (EA). Comment asserted: The current “no action” alternative is not a legally permissible outcome; the Programmatic EA must indicate which decisions are discretionary or mandatory; for discretionary decisions, NRCS must list at least two legally permissible alternatives; and because the Programmatic EA is insufficient, the Finding of No Significant Impact (FONSI) is also insufficient.

Comment also indicated that data collection is a key input to assessing environmental impact, suggesting that NRCS incentivize producer participation in third-party data collection services to track environmental benefits of conservation practices.

Response: NRCS prepares its programmatic National Environmental Policy Act (NEPA) documents to provide broad-scale analyses to which site-specific program actions may tier, when appropriate, for purposes of complying with NEPA. NEPA does not require Federal agencies to consider alternatives that have substantially similar consequences; rather, it is clearly intended to help agencies avoid significant adverse impacts. The “no action” alternative describes continuation of EQIP under its previous regulations. NEPA regulations require analysis of a no action alternative for comparative reasons. Conservation activities associated with each EQIP contract undergo additional site-specific environmental review and analysis designed to avoid, minimize, rectify, reduce, eliminate, or compensate for any potential adverse impacts. No change is being made to the regulation in response to this issue.EQIP Plan of Operations—Comprehensive Nutrient Management Plan

Comment: NRCS received comment about progressive implementation of a CNMP, asserting that the interim rule only requires development of a CNMP and does not require progressive implementation and thus is contrary to the intent of Congress.

Response: NRCS understands these comments to suggest that the interim rule is ambiguous regarding CNMP implementation. This rule revises the regulation to add clarity. From a practical standpoint, a producer implementing EQIP-funded conservation practices consistent with CNMP is progressively implementing CNMP. However, some EQIP contracts are for development of CNMP as a conservation activity plan only. There are no practices to implement progressively under these contracts other than the plan itself. In addition, this rule clarifies that CNMP will address all “applicable” natural resources since natural resource issues are site-specific. In this manner, NRCS hopes to avoid any confusion about the scope of CNMP while maintaining core aspects that have been in the CNMP definition since 2003.Fund Allocations

Comment: NRCS received comment recommending that NRCS address the funding allocation for wildlife conservation practices, including that NRCS: Ensure the 10 percent allocation is a “floor” and not a “ceiling” for wildlife practice funding; set the 10 percent allocations at the State rather than national level; make a narrower list of practices that count toward the 10 percent allocation or including State partners in determining which practices should count in that State; and exclude EQIP contracts from the 10 percent allocation that involve either the Working ***Lands*** for Wildlife model or interagency cooperation with the U.S Fish and Wildlife Service. Comment also expressed a desire for increased collaboration with State and local partners for ***targeting*** wildlife habitat and conservation.

Other comment addressed the funding allocation for livestock practices, including disapproval of the statutory change from 60 percent to 50 percent, opinion that the 50 percent mandate was far too high, and request about how the national mandate is implemented on a State-by-State basis.

Comment also addressed other fund allocation topics as follows:

Concern over whether NRCS was making equitable allocations to States by citing a 2017 U.S Government Accountability Office report suggesting that NRCS was using historical allocation data rather than seeking to optimize environmental benefits. Recommendation to create a national initiative for ***targeted*** funding for small-scale operations based on existing State-level initiatives. Concern that allocations of funds to WMEs would take conservation dollars away from producers, so they requested that NRCS add language ensuring that producers would be the ultimate beneficiaries of EQIP funding for contracts with WMEs. Note that Congress did not want contracts with irrigation districts to adjust State funding allocations. Suggestion that contracts with WMEs should increase allocations for western States. Request that NRCS link funding allocations to accountability mechanisms so that activities with limited conservation benefits are not funded.

Response: NRCS will consider these comments in its allocation process. The breadth and depth of these comments indicate the importance of fund allocations to EQIP stakeholders and partners. EQIP implementation, including the allocation of funding, is complex in nature because the statute provides for multiple goals and requirements. All statutory goals must be addressed even though some desired outcomes are difficult or impossible to quantify given current information availability. Through local input, combined with the use of the Conservation Effect Assessment Project (CEAP) and other important data, USDA seeks to enable program managers and leaders to achieve the most effective and efficient program outcomes across the entire range of statutory goals.

State technical committees and local work groups, with the knowledge and expertise of their members, also provide additional sources of data and information. Their membership includes leaders in ***agriculture***, conservation, producers, and other stakeholders and their input provides a means of ensuring EQIP allocations are made according to the resource concern, ***targeted*** to the local conditions, and relevant to and contributing to national resource priorities. These State and local sources provide valuable information and data on environmental concerns not otherwise available, thus giving allocation decisions far more depth and granularity. The State technical committee regulation and standard operating procedures address this process and thus no change is being made to the EQIP regulation in response to this issue.General

Comment: NRCS received comment requesting a modification to how the changes made by the 2018 Farm Bill appear in the interim rule preamble.

Response: The interim rule preamble provides a summary and is not intended to represent a comprehensive description of the 2018 Farm Bill changes. NRCS encourages reviewers to read the 2018 Farm Bill if additional perspective is sought. No change is being made to the regulation in response to this issue.Incentive Contracts—Selection Criteria

Comment: NRCS received comment recommending NRCS modify the incentive contract selection criteria, giving priority to applications aiming to make the participant eligible for CSP at the end of the contract period.

Response: Incentive contracts are designed to serve as a bridge between EQIP and CSP. State technical committees and other local stakeholders designate priority resource concerns and high-priority areas and assist in determining priority resource concerns for CSP. The final rule maintains language in the interim rule to maximize local control over what EQIP practices are best suited for the applicant to transition to CSP. No change is being made to the regulation in response to this issue.National Priorities

Comment: NRCS received comment recommending the addition of soil health, climate resilience, and drought resiliency to the list of national priorities in § 1466.4(a), indicating that Congress made soil testing and soil health planning qualified activities for EQIP support in the 2018 Farm Bill, and that Congress spoke to the need to focus on climate resilience by making addressing weather variability and drought resilience new purposes for EQIP.

Response: Rather than increasing the number of national priorities from 8 to 10, this rule adds concepts of soil health and climate resiliency to existing national priorities. In particular NRCS incorporates concepts of climate resiliency through the addition of the language “increased resilience against drought and weather volatility” in § 1466.4(a)(4) and incorporates “improvement of soil health” in § 1466.4(a)(6).Outreach Activities

Comment: NRCS received comment recommending a variety of different actions with respect to its outreach activities, including: Requesting a focus on the conservation benefits of wildlife practices; ***targeting*** diverse farming operations; additional outreach at the local level; adding information on advance payment options in outreach to historically underserved producers to increase EQIP participation; and using USDA and other data to inform producers of the potential economic impact of adopting conservation practices. Comment recommended that NRCS track and provide annual information to the public on the results of the allocations for wildlife practices and the use of native plants. Other comment offered general support for NRCS activities.

Response: NRCS is committed to providing high-quality service across the Nation. Outreach strategies and efforts are in place at the national, State, and local levels, with those at the State and local level tailored to the needs of the specific area. In addition, ***targeted*** outreach efforts are underway for historically underserved producers and Tribes. In the regulation, § 1466.5 contains special outreach authorization for historically underserved producers and a paragraph including outreach and documentation to historically underserved producers pertaining to advance payments. Regarding economic impacts, NRCS considers estimated economic impact in its conservation planning process, including in the development of conservation practice standards. The 2018 Farm Bill also requires the Secretary to identify available data sets within USDA that link the use of conservation practices to farm and ranch profitability (including crop yields, soil health, and other risk-related factors).

NRCS tracks EQIP investment and performance. In addition to the 2018 Farm Bill's emphasis on reporting EQIP outcomes, the agency has an interest in understanding the impact of the statutory increase of the wildlife allocation from 5 to 10 percent. Regarding publicly available reports, the Soil and Water Resources Conservation Act (RCA) provides broad natural resource strategic assessment and planning authority for USDA. Information about NRCS's conservation programs at the State, regional, and national level, is available on the RCA interactive data viewer ([*https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/ida/*](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/ida/)).

No changes have been made to the regulation in response to these comments.Payment Limits

Comment: NRCS received comment related to payment limits, including opposition to the increased payment limit for participants in the organic initiative, request for ***removal*** of the $200,000 payment limit for incentive contracts, and support for keeping the aggregate payment limit of $450,000.

Response: NRCS provides financial and technical assistance, through the National Organic Initiative, to help organic or transitioning-to-organic producers. In the interim rule, in § 1466.24, NRCS updated the payment limitations for organic production from annual limits to an aggregate limit from FY 2019 through 2023, as required by the 2018 Farm Bill. Economic analysis indicates little impact as organic initiative contracts are usually well below the multiyear payment limit of $80,000 previously set by the 2014 Farm Bill. In the past, organic participants who exceed the organic initiative payment limit use other EQIP funding mechanisms. With the increased limit, more organic applicants will be able to make use of the organic initiative and consequently need only compete with other organic operations for funding.

The 2018 Farm Bill's introduction of EQIP incentive contracts provides a new option for participation. In § 1466.44 of the interim rule NRCS established criteria for incentive payments, including establishing a regulatory $200,000 payment limit similar to CSP, and ensuring that incentive contracts support a participant's ability to transition to CSP eligibility. While there were no comments submitted that opposed the $200,00 payment limit in this section, NRCS may consider setting a contract limit on EQIP incentive contracts in the future.

No change is being made to the regulation in response to this issue.Payment Rates

Comment: NRCS received comment on the topic of payment rates, including adding the cost of third-party measurement of environmental benefits of adopted practices to payment rates as well as soil testing and data collection costs associated with using emerging sustainability tools and platforms and emerging ecosystem markets; using additional financial incentives (for example, through increased foregone income payments or higher cost-share percentages for high-priority practices) to meet the funding goal for wildlife practices; concern that payments received by participants may exceed the actual costs associated with the practice; and recommending that States, not regions, set payment rates, as project costs can vary widely from State to State.

Response: NRCS follows a methodical approach and will consider each comment in developing payment schedules. The 2018 Farm Bill authorized increased payment rates for certain high-priority practices and for practices that address source water protection. Further, States can designate high-priority practices that will be eligible for higher payment rate at the State level. Policy requires soliciting input from State technical committees and the posting of payment schedules on a public website. In addition, as NRCS develops the functionality of digital tools, such as the Conservation Assessment and Ranking Tool (CART), the process of determining payment rate alignment with statutory factors will be refined. NRCS incorporates all statutory payment factors into regulations and ensures that payment rates are consistent between EQIP and CSP. No change is being made to the regulation in response to this issue.Ranking

Comment: NRCS received comment recommending criteria changes to ranking and the weighting of ranking factors including that: Ranking focus on the net benefit to stream flows; preference be given to operators who have demonstrated “best practices” (with a focus on nonpoint source pollution); accountability mechanisms be built to ensure practices are achieving the maximum benefit; States prioritize practices addressing multiple resource concerns; and priority for EQIP enrollment be provided to ***land*** transitioned through the CRP Transition Incentive Program (CRP-TIP) (see 16 U.S.C 3835(f)(1)(E)).

Response: NRCS will continue to work cooperatively with its State and local partners to develop ranking criteria that fit national, State, and local priorities. These priorities may include net benefit to stream flows, nonpoint source pollution, the feasibility of requiring accountability mechanisms in contract implementation, or multiplicity of conservation benefits. However, NRCS is not requiring these specific ranking factors in every situation.

State Conservationists, in consultation with State technical committees, determine how many extra points to provide CRP-TIP in ranking. NRCS is committed to protecting CRP-TIP ***land*** in transition to a covered farmer or rancher and has incorporated this statutory priority in this final rule by adding language to §§ 1466.1 and 1466.20(b). No other changes are made to the regulation in response to this issue.Paperwork Reduction Act and Effective Date

In general, the Administrative Procedure Act (APA) (5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are—

To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review.

Consistent with the use of the authority under 5 U.S.C 808 related to Congressional review for the immediate effect date of the interim rule, this rule is also effective on the date of publication in the Federal Register.Executive Orders 12866, 13563, 13771, and 13777

Executive Order 12866, “Regulatory Planning and Review,” and Executive Order 13563, “Improving Regulation and Regulatory Review,” direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, reducing costs, harmonizing rules, and promoting flexibility. The requirements in Executive Orders 12866 and 13573 for the analysis of costs and benefits apply to rules that are determined to be significant. Executive Order 13777, “Enforcing the Regulatory Reform Agenda,” established a Federal policy to alleviate unnecessary regulatory burdens on the American people.

The Office of Management and Budget (OMB) designated this rule as economically significant under Executive Order 12866, and therefore, OMB has reviewed this rule. The costs and benefits of this rule are summarized below in the next section of this rule. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/).

Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs,” requires that, to manage the private costs required to comply with Federal regulations for every new significant or economically significant regulation issued, the new costs must be offset by the savings from deregulatory actions. This rule involves transfer payments and is not required to comply with Executive Order 13771.

In general response to the requirements of Executive Order 13777, USDA created a Regulatory Reform Task Force, and USDA agencies were directed to ***remove*** barriers, reduce burdens, and provide better customer service both as part of the regulatory reform of existing regulations and as an on-going approach. NRCS reviews regulations and makes changes to improve any provision that was determined to be outdated, unnecessary, or ineffective.Cost Benefit Analysis

Most of this rule's impacts consist of transfer payments to producers for completed conservation practices under EQIP contracts. There are also costs and benefits, which are described after a discussion of the transfers. The 2018 Farm Bill increases EQIP funding over 2014 Farm Bill funding by 15 percent on average to $1.84 billion per year. From FY 2014 through 2018, EQIP was authorized at $8.0 billion, but annual funding restrictions resulted in actual authority being $7.51 billion, for an annual average amount of $1.50 billion. In contrast, the authorized level for EQIP for FY 2019 through 2023 is $9.18 billion (assuming future funding is set at authorized amounts). Additionally, EQIP funds remain available until expended, meaning that any unobligated balance at the end of a fiscal year is available for obligation in the subsequent year.

NRCS recognizes that a participant incurs costs in gaining access to EQIP. These costs are in addition to the participant's share of the cost of implementing conservation activities under EQIP. NRCS estimates the total cost of accessing the program over 5 years to be $17.7 million. The cost to participants of implementing conservation practices over 5 years is estimated at $4.46 billion and total transfers (NRCS funds) over 5 years are estimated at $9.18 billion. Given a 3 percent discount rate, this translates into a projected annualized real cost to producers for implementing conservation practices of $855.10 million and projected annualized real transfers of $1.76 billion (Table 1). In addition, participants incur $3.5 million in access costs in nominal terms.Table 1—Annual Estimated Costs, Benefits, and Transfers Category Annual estimateParticipant costs: Access a $3,549,676.Implementation b 855,100,000.Benefits Qualitative.Transfers c $1,760,000,000.

The costs associated with this rule consist of the administrative costs of applying for EQIP funding and are described in the full regulatory impact analysis. The benefits of this rule are the environmental improvements that are due to the increased conservation practices over and above those that farmers privately undertake. Conservation practices funded through EQIP will continue to: Contribute to improvements in soil health and reductions in water and wind erosion on cropland, pasture and rangeland; reduce nutrient losses to streams, rivers, lakes and estuaries; increase wildlife habitat; and provide other environmental benefits. Further, continued implementation of practices which treat and manage animal waste through EQIP will directly contribute to improvements in water quality and improvements in air quality (such as reduced risk of algal blooms or reduction in methane ***emissions***, respectively). NRCS estimates that the expenditures, from both public and private sources, of implementing EQIP conservation practices will be $13.6 billion dollars (FY 2019 through 2023), assuming a historical average participant cost of 40 percent and a technical assistance share of 27 percent.

Changes in funding levels for EQIP livestock and wildlife practices will alter to a minor extent the types of conservation practices that are funded. From FY 2014 through 2018, wildlife practices accounted for 7.6 percent of EQIP funds through wildlife and landscape initiatives and 16 designated wildlife conservation practices. The 2.4 percent increase in funding for wildlife to meet the new 10 percent level will likely occur through greater support for existing wildlife initiatives and may ***target*** additional wildlife habitat development efforts through new initiatives. With respect to livestock, over 60 percent of EQIP funds went to livestock-related practices during FY 2014 through 2018, but the 2018 Farm Bill reduced this ***target*** to 50 percent for each of fiscal years 2019 through 2023. With greater EQIP funding overall, the amount of funding being provided for the implementation of livestock conservation practices should not change significantly.

To address increasing demands on the nation's water supply, the 2018 Farm Bill expands EQIP eligibility to WMEs like irrigation districts, ground water management districts, and acequias, along with providing the Secretary with the authority to waive AGI and payment limits to encourage continued efforts in ***agricultural*** water conservation. In some states, particularly in the West, these WMEs may increase competition for funding and enhance conservation benefits per dollar spent. The impacts, however, on the allocation of EQIP funding will be limited. The 2018 Farm Bill directs NRCS to maintain current funding allocations to states, limiting the impact nationally. Also, NRCS in the interim rule established a payment limit of $900,000 on all contracts with WMEs.

The 2018 Farm Bill establishes conservation incentive contracts to address up to three priority resource concerns for each ***land*** use within a given watershed, or other region, or area. Contracts will range from a minimum of 5 years to up to 10 years in length and provide an annual payment and incentive practice payments. NRCS has established a payment limit of $200,000 to align with CSP. The impact of these new conservation incentive contracts is uncertain, particularly regarding benefits per dollar. Overall, given the current demand for regular enrollment in EQIP, and the currently uncertain impacts that conservation incentive contracts will have, the aggregate benefits from these new conservation incentive contracts may be limited.

Increasing the payment limit for participants in the organic initiative to $140,000 over the period FY 2019 through 2023, will likely have little impact on EQIP performance. This is because existing organic initiative contracts are usually well below the existing multi-year payment limit of $80,000 set by 2014 Farm Bill. Currently, organic participants who exceed the organic initiative payment limit use other EQIP funding mechanisms. The increase in the organic initiative limit to $140,000 may attract producers who have higher organic practice costs or perhaps larger operations, and EQIP participants may make greater use of the organic initiative and designated funding pool.Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because this rule is exempt from notice and comment rulemaking requirements of the APA and no other law requires that a proposed rule be published for this rulemaking initiative.Environmental Review

The environmental impacts of this rule have been considered in a manner consistent with the provisions of NEPA (42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR 1500 through 1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). NRCS conducted an analysis of the EQIP interim rule, which determined there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR 1508.1(l)). The 2018 Farm Bill requires minor changes to NRCS conservation programs, and there are no changes to the basic structure of the programs. The analysis has determined there will not be a significant impact to the human environment and as a result, an EIS is not required to be prepared (40 CFR 1508.1(l)). While OMB has designated this rule as “economically significant” under Executive Order 12866, “. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement” (40 CFR 1502.16(b)), when not interrelated to natural or physical environmental effects. The EA and FONSI were available for review and comment for 30 days from the date of publication of the interim rule in the Federal Register. NRCS considered this input and updated the EA and FONSI with information relevant to environmental concerns and bearing on the proposed action.Executive Order 12372

Executive Order 12372, “Intergovernmental Review of Federal Programs,” requires consultation with State and local officials that would be directly affected by proposed Federal financial assistance. The objectives of the Executive Order are to foster an intergovernmental partnership and a strengthened Federalism, by relying on State and local processes for State and local government coordination and review of proposed Federal financial assistance and direct Federal development. For reasons specified in the final rule-related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the program and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988

This rule has been reviewed under Executive Order 12988, “Civil Justice Reform. ” This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted.Executive Order 13132

This rule has been reviewed under Executive Order 13132, “Federalism. ” The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175

This rule has been reviewed in accordance with the requirements of Executive Order 13175, “Consultation and Coordination with Indian Tribal Governments. ” Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a Government-to-Government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes.

The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not, to their knowledge, have Tribal implication that require Tribal consultation under Executive Order 13175. Tribal consultation for this rule was included in the two 2018 Farm Bill Tribal consultations held on May 1, 2019, at the National Museum of the American Indian, in Washington, DC, and on June 26-28, 2019, in Sparks, NV. For the May 1, Tribal consultation, the portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title II session. There were no specific comments from Tribes on the EQIP rule during the Tribal consultation. If a Tribe requests consultation, NRCS will work with OTR to ensure meaningful consultation is provided where changes, additions, and modifications identified here in this rule are not expressly mandated by legislation. OTR has determined that Tribal consultation for this rule is not required at this time.

Separate from Tribal consultation, communication, and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests. Additionally, NRCS held several sessions with Indian Tribes and Tribal entities across the country in FY 2019 to describe the 2018 Farm Bill changes to NRCS conservation programs, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access. NRCS will continue to conduct these sessions with Indian Tribes and Tribal entities.Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal Governments or the private sector. Agencies generally must prepare a written statement, including cost-benefits analysis, for proposed and final rules with Federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local or Tribal Governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no Federal mandates, as defined under Title II of UMRA, for State, local, and Tribal Governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs

The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies:

10.912—Environmental Quality Incentives Program.E-Government Act Compliance

NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to Government information and services, and for other purposes.List of Subjects in 7 CFR Part 1466

Administrative practice and procedure, Animal welfare, Natural resources, Soil conservation, Water resources.

Accordingly, for the reasons stated above, the interim rule amending 7 CFR part 1466, which was published at 84 FR 69272 on December 17, 2019, is adopted as final with the following changes:Part 1466 Environmental Quality Incentives ProgramRegulatory Text

1. The authority citation for part 1466 continues to read as follows:Authority:

15 U.S.C 714b and 714c; and 16 U.S.C 3839aa-3839-8.

2. Amend § 1466.1 by revising paragraphs (a)(2) through (4) to read as follows:§ 1466.1 Applicability.

(a) \* \* \*

(2) Through EQIP, NRCS provides technical and financial assistance to eligible ***agricultural*** producers, including nonindustrial private ***forest*** (NIPF) landowners and Indian Tribes, to help implement conservation practices that address resource concerns related to organic production; soil, water, and air quality; wildlife habitat; nutrient management associated with crops and livestock; pest management; ground and surface water conservation; irrigation management; drought resiliency measures; adapting to and mitigating against increasing weather volatility; energy conservation; and related resource concerns.

(3) EQIP's financial and technical assistance helps:

(i) Producers comply with environmental regulations and enhance ***agricultural*** and ***forested*** ***lands*** in a cost-effective and environmentally beneficial manner; and

(ii) To the maximum extent practicable, avoid the need for resource and regulatory programs.

(4) The purposes of EQIP are achieved by planning and implementing conservation practices on eligible ***land*** to address identified, new, or expected resource concerns, including such resource concerns related to ***lands*** enrolled under a Conservation Reserve Program contract that are transitioning into production as specified in 16 U.S.C 3835(f).

\* \* \* \* \*

3. Amend § 1466.3 by revising the definition for “Comprehensive nutrient management plan (CNMP)” to read as follows:§ 1466.3 Definitions.

\* \* \* \* \*

Comprehensive nutrient management plan (CNMP) means a conservation plan that is specifically for an AFO. A CNMP identifies conservation practices and management activities that, when implemented as part of a conservation system, will manage sufficient quantities of manure, waste water, or organic by-products associated with a waste management facility. A CNMP incorporates practices to use animal manure and organic by-products as a beneficial resource while protecting all applicable natural resources including water and air quality associated with an AFO. A CNMP is developed to assist an AFO owner or operator in meeting all applicable local, Tribal, State, and Federal water quality goals or regulations. For nutrient-impaired stream segments or water bodies, additional management activities or conservation practices may be required by local, Tribal, State, or Federal water quality goals or regulations.

\* \* \* \* \*

4. Amend § 1466.4 by revising paragraph (a) to read as follows:§ 1466.4 National priorities.

(a) The national priorities in paragraphs (a)(1) through (8) of this section, consistent with statutory resources concerns, include soil quality, water quality and quantity, plants, energy, wildlife habitat, air quality, increased weather volatility, and related natural resource concerns, that may be used in EQIP implementation are:

(1) Reductions of nonpoint source pollution, such as nutrients, sediment, pesticides, or excess salinity in impaired watersheds consistent with total maximum daily loads (TMDL) where available;

(2) The reduction of ground and surface water contamination;

(3) The reduction of contamination from ***agricultural*** sources, such as animal feeding operations;

(4) Conservation of ground and surface water resources, including improvement of irrigation efficiency and increased resilience against drought and weather volatility;

(5) Reduction of ***emissions***, such as particulate matter, nitrogen oxides, volatile organic compounds, and ozone precursors and depleters that contribute to air quality impairment violations of the National Ambient Air Quality Standards;

(6) Reduction in soil erosion and sedimentation from unacceptable levels and improvement of soil health on eligible ***land***;

(7) Promotion of at-risk species habitat conservation including development and improvement of wildlife habitat; and

(8) Energy conservation to help save fuel, improve efficiency of water use, maintain production, and protect soil and water resources by more efficiently using fertilizers and pesticides.

\* \* \* \* \*

5. Amend § 1466.6 by revising paragraph (d)(1) to read as follows:§ 1466.6 Program requirements.

\* \* \* \* \*

(d) \* \* \*

(1) Notwithstanding paragraphs (b) and (c) of this section, NRCS may enter into an EQIP contract with a water management entity provided the criteria in paragraphs (d)(1)(i), (ii), and (iii) of this section can be met:

(i) The entity is a public or semipublic agency or organization,

(ii) Its purpose is to assist private ***agricultural*** producers manage water distribution or conservation systems, and

(iii) The water conservation or irrigation practices support a water conservation project under § 1466.20(c) that will effectively conserve water, provide fish and wildlife habitat, or provide for drought-related environmental mitigation, as determined by the Chief.

\* \* \* \* \*

6. Amend § 1466.7 by revising paragraph (d) to read as follows:§ 1466.7 EQIP plan of operations.

\* \* \* \* \*

(d) If an EQIP plan of operations includes an animal waste storage or treatment facility to be implemented on an AFO, the participant must agree to:

(1) Develop a CNMP by the end of the contract period; and

(2) Implement any applicable conservation practices in the EQIP plan of operation consistent with an approved CNMP.

\* \* \* \* \*

7. Amend § 1466.20 as follows:

a. In paragraph (b)(2)(viii), ***remove*** the word “and”;

b. Add paragraph (b)(2)(ix); and

c. Redesignate paragraph (b)(2)(xi) as paragraph (b)(2)(x).

The addition reads as follows:§ 1466.20 Application for contracts and selecting applications.

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

(ix) The ***land*** is enrolled under a CRP contract transitioning to a covered farmer or rancher as specified in 16 U.S.C 3835(f); and

\* \* \* \* \*

8. Amend § 1466.31 by revising paragraph (a) to read as follows:§ 1466.31 Purpose and scope.

(a) The purpose of Conservation Innovation Grants (CIG) is to stimulate the development and adoption of innovative conservation approaches and technologies, including field research, while leveraging Federal investment in environmental enhancement and protection in conjunction with ***agricultural*** production. Notwithstanding any limitation of this part, NRCS administers CIG in accordance with this subpart. Unless otherwise provided for in this subpart, grants under CIG are subject to the provisions of 2 CFR part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

\* \* \* \* \*

9. Amend § 1466.32 by redesignating paragraphs (c) and (d) as paragraphs (d) and (e), respectively, and by adding a new paragraph (c) to read as follows:§ 1466.32 Conservation innovation grant funding.

\* \* \* \* \*

(c) Authority to reduce matching requirement. The Chief may reduce the matching requirements of paragraphs (b)(1) and (2) of this section, provided that the applicant is:

(1) An historically underserved producer;

(2) A community-based organization comprised of, representing, or exclusively working with historically underserved producers on a CIG project;

(3) Developing an innovative conservation approach or technology specifically ***targeting*** historically underserved producers' unique needs and limitations; or

(4) An 1890 or 1994 ***land*** grant institution (7 U.S.C 3222 et seq.), Hispanic-serving institution (20 U.S.C 1101a), or other minority-serving institution, such as an historically Black college or university (20 U.S.C 1061), a tribally controlled college or university (25 U.S.C 1801), or Asian American and Pacific Islander-serving institution (20 U.S.C 1059g).

\* \* \* \* \*Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2020-23437 Filed 10-23-20; 8:45 am]BILLING CODE 3410-16-P

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**End of Document**



[***Environmental Quality Incentives Program (ID: CCC\_FRDOC\_0001-0405)***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:615F-1KN1-F0YC-N33V-00000-00&context=1516831)

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**Body**

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Action

Final rule.Summary

This final rule adopts, with minor changes, an interim rule published in the Federal Register on December 17, 2019, that made changes to the NRCS's Environmental Quality Incentives Program (EQIP). The changes were made to be consistent with the ***Agriculture*** Improvement Act of 2018 (the 2018 Farm Bill) and implemented administrative improvements and clarifications. NRCS received input from 197 commenters who provided 598 comments in response to the interim rule. This final rule makes permanent those changes appearing in the interim rule, responds to comments, and makes further adjustments in response to some of the comments received.Dates

Effective: October 26, 2020.For Further Information Contact

Michael Whitt; phone: (202) 690-2267; or email: [*michael.whitt@usda.gov*](mailto:michael.whitt@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).Supplementary InformationBackground

On December 17, 2019, NRCS published an interim rule with request for comments in the Federal Register (84 FR 69272-69293) to implement mandatory changes made by the 2018 Farm Bill and administrative improvements and clarifications. This final rule adopts, with minor changes, the amendments made by the interim rule. These changes are in response to public comment as explained in the summary of EQIP comments below.Discussion of EQIP (7 CFR Part 1466)

Through EQIP, NRCS incentivizes ***agricultural*** producers to conserve and enhance soil, water, air, plants, animals (including wildlife), energy, and related natural resources on their ***land***. EQIP promotes ***agricultural*** production, ***forest*** management, and environmental quality as compatible goals, and optimizes environmental benefits by assisting producers in addressing resource concerns on their operations. EQIP also helps ***agricultural*** producers meet Federal, State, and local environmental requirements and avoid the need for new requirements.

Eligible ***lands*** include cropland, grassland, rangeland, pasture, wetlands, nonindustrial private ***forest*** ***land***, and other ***land*** on which ***agricultural*** or ***forest***-related products or livestock are produced and natural resource concerns may be addressed. Participation in EQIP is voluntary.

The Secretary of ***Agriculture*** delegated authority to the Chief, NRCS, to administer EQIP on behalf of CCC.

The interim rule:

Incorporated the addition of new or expected resource concerns to EQIP program purposes, adapting to and mitigating against increasing weather volatility, and drought resiliency measures. Amended how EQIP interacts with the Regional Conservation Partnership Program (RCPP) since RCPP is now a stand-alone program. Amended some definitions and added others to address changes made by the 2018 Farm Bill, including—

○ Animal feeding operation (AFO);

○ Eligible ***land***;

○ Estimated income foregone;

○ ***Forest*** management plan;

○ High priority area;

○ Incentive practice;

○ Priority resource concern;

○ Semipublic;

○ Soil remediation;

○ Soil testing; and

○ Water management entity (WME).

Added “increased weather volatility” as a resource concern under the national priorities identified in the regulation. Added to outreach responsibilities the requirement to notify historically underserved producers about the availability to elect to receive advance payments. Addressed EQIP contract provisions associated with WMEs and certain water conservation projects. Removed the requirement that a participant must implement and develop a comprehensive nutrient management plan (CNMP) by the end of the contract and replaced it with the following: Any conservation practices in the EQIP plan of operation must be implemented consistent with a CNMP. Incorporated the ability to waive the $450,000 regulatory contract limitation and establish a $900,000 regulatory contract limitation for certain projects with joint operations, group projects, or contracts where NRCS has waived the payment limitation for a WME. Increased payment rates for certain high-priority practices and increased payment rates for practices that address source water protection. Updated the statutory payment limitations for general EQIP contracts and contracts entered into under the National Organic Initiative. Clarified provisions related to contract administration, including procedures for contract modification and termination. Relocated provisions related to administration of Conservation Innovation Grants (CIGs) to its own subpart and incorporated the addition of On-farm Conservation Innovation Trials (On-farm Trial), which include the Soil Health Demonstration (SHD) Trial. Added a new subpart to address EQIP incentive contracts, which are a new enrollment option created by section 2304 of the 2018 Farm Bill. Relocated the General Administration provisions from subpart C to a new subpart E and updated language addressing environmental markets to reflect changes made by the 2018 Farm Bill.

Summary of EQIP Comments

The interim rule had a 60-day comment period ending February 18, 2020. NRCS received 598 comments from 197 commenters in response to the rule. In addition, one organization submitted a spreadsheet with 12,852 comments. NRCS reviewed these comments and categorized and summarized them according to the topics identified below. The topics that generated the greatest response include conservation practices, contract limits, and national priorities.

In this rule, the comments have been organized in alphabetic order by topic. The topics include:

Administration; Advance payments; Applicability; CIG—On-farm Trials, Other, and SHD Trials; Conservation Practices—High Priority Practices, Incentive Practices, Other, Prairie Pothole Wildlife Practice, Soil Health, and Source Water Protection; Contract Administration; Contract Limits Unrelated to WMEs; Contract Requirements; Contracts with WMEs—Adjusted Gross Income (AGI) and Payment Limitation Waiver, ***Land*** Eligibility Criteria, and Other; Definitions—Eligible ***Land***, High Priority Area, Priority Resource Concern, Soil Testing, and WMEs; Eligibility; Environmental Assessment; EQIP Plan of Operations—Comprehensive Nutrient Management Plan; Fund Allocations; General; Incentive Contracts—Selection Criteria; National Priorities; Outreach Activities; Payment Limits; Payment Rates; and Ranking.

Of the 598 comments raised by the 197 commenters, 47 were general in nature and most expressed support for EQIP or how EQIP has benefitted particular operations. NRCS also received 21 comments that were not relevant to the EQIP interim rule. Seven comments criticized the regulation for not strengthening EQIP's impact on climate resilience or soil health. Six comments requested NRCS technical assistance for existing and potential projects. Several of these comments conveyed frustration with the process or specific working relationships. NRCS is committed to providing the highest quality service to its customers and partners, and these comments have been forwarded to the appropriate staff.

In general, comments focusing on topics that were outside the scope of the regulation will not be addressed. In response to the request that public comment be submitted through email, NRCS reminds the public that all comments should be submitted to the agency dockets on Regulations.gov and any comments that are received by another method will be posted on regulations.gov for public access to all of the comments in one place. In following the rulemaking process, NRCS seeks to provide equal consideration to all who wish to provide feedback. Submission of public comment through Regulations.gov provides a more equitable and reliable system by which to collect comments within the stated timeframes.

NRCS also received 24 comments that expressed nonspecific dissatisfaction with EQIP or the interim rule and 47 comments that supported EQIP or the interim rule. These comments do not include any recommendations for change. This final rule responds to the comments received by the public comment deadline and makes minor clarifying and related changes.Administration

Comment: NRCS received comment related to EQIP administration, including comment addressing outreach, organic production, input from State advisory committees, funding ***targets***, expanding the Working ***Lands*** for Wildlife model, additional training to employees, and allowing grazing on all ***land*** uses.

Response: NRCS appreciates the suggestions for improving outreach and operations and will incorporate suggestions when updating outreach plans and EQIP policies. No change is being made to the regulation in response to this issue.Advance Payments

Comment: NRCS received comment recommending making advance payments mandatory or changing their timing, including making the advance payment when the producer is ready to begin the practice or to begin the 90-day clock upon practice installation.

Response: NRCS built criteria into business tools that must be met prior to approving an advance payment, including verification that the request is for an immediate need and that a final design has been accepted by the participant. NRCS cannot change the start time for the 90-day clock since statute specifies that the clock starts on the date that the advance payment is received by the participant. The participant's receipt of the advance payment, and NRCS's expenditure of funds, commences the 90-day clock. NRCS offers advance payments to all historically underserved producers and records, by contract item, the producer decision to receive advance payments on the EQIP schedule of operations. No change is being made to the regulation in response to this issue.Applicability

Comment: NRCS received comment recommending changes to EQIP's purpose, scope, and objectives as discussed in the Applicability section, § 1466.1, including identifying that EQIP participation should also avoid the need for regulatory programs, identifying that the EQIP purpose includes financial and technical assistance to organic producers, adding that new or expected resource concerns relate also to organic producers, and suggesting that assisting producers with transitioning from an expiring Conservation Reserve Program (CRP) contract should be an EQIP priority in order to keep ***land*** in grass and maintain financial and resource investments.

Response: The final rule focuses on the purposes spelled out in statute, including referencing assistance related to organic production and helping producers transition from CRP and, in doing so, keeping ***land*** in grass and thereby maintaining financial and resource investments. The regulatory text has been modified at § 1466.1(a) and § 1466.20(b) to address these concerns. No other changes are being made to the regulation in response to this issue.CIGsCIG On-Farm Trials

Comment: NRCS received comment supporting CIG On-farm Trials testing of new technologies at the field level, including recommending that NRCS clearly state that on-farm conservation research is authorized under CIG, and that soil health testing be required of all On-farm Trials to determine impacts to soil health.

Response: On-farm Trials “facilitate and incentivize experimentation and testing of new and innovative conservation approaches. ” If research falls within the scope of “experimentation and testing,” it is an authorized activity for On-farm Trials. Soil health testing is not a required part of every On-farm Trials project, although NRCS may apply the extent to which an On-farm Trial seeks to measure or improve soil health as a ranking consideration in the context of funding opportunities. No change is being made to the regulation in response to this issue.Other

Comment: NRCS received comment recommending changes to other aspects of CIG, requesting NRCS waive its one-to-one match requirement for grants that assist historically underserved producers, reword the 10 percent funding for grants that assist historically underserved producers to require that no less than 10 percent of CIG funding be awarded to historically underserved producers, expand the purpose of CIG to specifically mention on-farm practical field research as a purpose, and directing a CIG study for new and innovative manure management.

Response: This final rule allows a reduction of match requirements for historically underserved producers on a case-by-case basis and sets forth the criteria for granting such a match reduction. NRCS has consistently met the 10 percent funding goal for historically underserved producers and is committed to improving outreach to this demographic. No changes are made regarding the funding goal in the final rule. This rule is expanding the purposes language in the regulation to include practical field research and is continuing to work with producers and partners to develop innovative practices for manure management through multiple avenues, including CIG.SHD Trials

Comment: NRCS received comment recommending that NRCS add language to the rule to diversify participation in SHD Trials—for example, by farm type, size, location, and underrepresented producers. Comment also recommended funding for soil testing.

Response: The final rule provides for a process that results in diverse CIG participation. NRCS is developing a soil test activity which could be utilized in CIG contracts with producers. If an SHD Trial results in a reliable, efficient, and cost-effective process for soil health testing, NRCS will consider it in developing the soil test activity noted above. No additional language was added to the regulation in response to this issue.Conservation PracticesHigh-Priority Practices

Comment: NRCS received comment recommending specific ***targets*** and specific habitat and area restoration plans (such as prioritizing practices with a high environmental benefit but low adoption rate or offering longer contracts with additional payments for foregone income for practices that benefit wildlife).

Response: The EQIP regulation gives States the greatest flexibility to adapt to local needs and determine high-priority practices in consultation with State technical committees and local working groups. States currently have the authority to prioritize practices that have a high environmental benefit but low adoption rate to increase practice adoption. In addition, EQIP provides the opportunity for producers to enter into contracts of up to 10 years, and NRCS currently allows States to assign higher significance to wildlife habitat development and other natural resource concerns when determining rates for estimated foregone income. No change is being made to the regulation in response to this issue.Incentive Practices

Comment: NRCS received comment recommending prioritizing EQIP incentive practices that are compatible with ecosystem services markets; prioritizing applications with at least two priority resource concerns; allowing EQIP grazing practices on cover crops and other grass-based practices that have wildlife benefits; prioritizing payments for management practices to encourage long-term, beneficial changes to production systems; and using longer-term incentive contracts in certain circumstances, such as with wildlife projects.

Response: Incentive practices are a relatively new area for NRCS, and NRCS is continuing to work with State, local, and Tribal groups to develop practices that are best suited for incentive payments in each high-priority area. As NRCS develops those practices, it is considering compatibility with ecosystem services markets, multiplicity of benefits, wildlife benefits, long-term benefits, and term length where appropriate and within the bounds of statute. No change is being made to the regulation in response to this issue.Other

Comment: NRCS received comment recommending incorporating new technologies and advancements in conservation practice standards, creating interim standards where beneficial, and encouraging flexibility to better address State and local needs.

Response: NRCS will continue to adapt and innovate the application of science and technology to provide the best resource conservation possible through each of its programs, including EQIP. These adaptations and innovations will be reflected in future NRCS practice standards. No change is being made to the regulation in response to this issue.Prairie Pothole Wildlife Practice

Comment: NRCS received comment recommending prioritizing longer wildlife habitat contracts to benefit such areas as the Prairie Pothole Region and rice-producing areas. The EQIP statute (section 1240B(g)(3)), provides for longer-term (up to 10 year) contracts that benefit wildlife and includes postharvest flooding practices or practices that maintain the hydrology of temporary and seasonal wetlands.

Response: NRCS recognizes the importance of wildlife protection in the Prairie Pothole Region and rice-producing areas. State and regional priorities determine how best to implement strategies for ensuring the most appropriate contract terms are in place to protect wildlife. No change is being made to the regulation in response to this issue.Soil Health

Comment: NRCS received comment requesting that NRCS provide more soil health practice options, including suites or bundles of soil health practices through outreach efforts and asked that NRCS consider additional ranking points for applicants using suites or bundles of soil health practices. Comment also asked that NRCS develop soil health planning protocols for cropland, grazing ***land***, and other ***agricultural*** ***lands***; that these protocols be widely available through EQIP technical and financial assistance; and that soil health testing be required for any contract supporting the adoption of soil health practices and that grazing of cover crops be permitted to enhance soil health conditions.

Response: Improving and maintaining soil function is a priority for, and a foundation of, NRCS's programs and maintaining or developing relevant measures to promote soil health is a focus of the agency.

Regarding the overall process of additional soil health conservation practice options, NRCS follows a formal process to review each national conservation practice standard at least once every 5 years from its date of issuance or review. Interim conservation practice standards serve as mechanisms for field testing new technology. Interim conservation practices that prove successful are either developed into national conservation practice standards or incorporated into existing practice standards, as appropriate. States may modify national practice standards to meet State or local needs.

The National Technical Guide Committee publishes a notice in the Federal Register requesting comments on all additions or revisions to conservation practices in the NRCS National Handbook of Conservation Practice Standards. The comment period is not less than 30 days from the date of notice publication.

The NRCS Conservation Practice Standard Cover Crop (Code 340) provides guidance for grazing cover crops. Grazing of cover crops may be permitted depending on such factors as the soil condition and growth state of the cover crop. When addressing conditions such as soil health and organic matter content, cover crop species will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil. Grazing must not cause negative impact to the site (for example, erosion or compaction).

No change is being made to the regulation in response to these issues.Source Water Protection

Comment: NRCS received comment suggesting that wetland practices, such as wetland restoration and buffers, count as source water protection practices. Comment noted the importance of involving State technical committees in designating source water protection areas and eligible source water protection practices.

Response: NRCS will continue to work closely with State technical committees, which are crucial in designating source water protection areas and eligible source water protection practices. As determined by NRCS in collaboration with the State technical committees, wetland restoration and buffers will be source water protection practices. No change is being made to the regulation in response to this issue.Contract Administration

Comment: NRCS received comment encouraging that NRCS use the longest possible contract lengths (up to 10 years) for wildlife conservation, especially for wildlife practices that require high levels of site preparation and maintenance. Comment also highlighted that EQIP requires applicants to obtain the written concurrence of the landowner to apply a conservation practice, while Colorado state law allows ditch owners to install water pipelines to replace open-air ditches without the landowner's consent.

Response: States already may offer contracts with a term of up to 10 years with one or more annual management practices to restore, develop, protect, and improve wildlife habitat. Regarding the difference between State law and Federal regulation, the EQIP requirement to obtain landowner permission to apply a conservation practice cannot be waived. However, if the holder of the right of way has the property rights necessary to install water pipelines without consent of the fee title landowner, then NRCS considers the holder of the right of way the landowner for consent purposes. No change is being made to the regulation in response to this issue.Contract Limits Unrelated to Water Management Entities

Comment: NRCS received comment recommending ***removing*** joint operations and confined animal feed operations (CAFOs) from the list of operations for which a waiver can be requested to exceed the $450,000 contract limit. The specific change requested was to amend the rule by striking § 1466.21(e)(1)(ii)(A) and the words or individual member thereof from § 1466.6(d)(3)(iii).

While the higher contract limit does not relate specifically to CAFOs, the comment associated CAFOs with joint operations and the availability of higher levels of program assistance. Comment also recommended that EQIP not fund CAFOs at all.

Response: By statute, EQIP has an aggregate $450,000 payment limitation per person or legal entity, directly or indirectly, for all contracts entered into during fiscal years (FYs) 2019 through 2023. The overall program payment limitation may not be waived; further, NRCS does not have the discretion to automatically disqualify CAFOs from EQIP assistance. Under payment limitation requirements that apply to NRCS and Farm Service Agency programs, joint operations are able to receive a payment up to the maximum amount specified for a person or legal entity multiplied by the number of persons or legal entities that comprise ownership of that joint operation (see 7 CFR part 1400). When a joint operation consisting of two or more members enters into an EQIP contract, the EQIP contract with the joint operation may receive funding of up to $900,000. Without a contract limit, joint operations could receive very large payments under an EQIP contract.

To address concerns related to large contracts with joint operations, NRCS in 2009 imposed a regulatory contract limit that corresponded with the EQIP payment limit. The 2009 interim rule did not adjust the contract limit for joint operations, and this system was maintained in the EQIP regulation through the 2014 Farm Bill. The $450,000 limit does not, therefore, represent a change to EQIP brought about in the 2019 interim rule.

To clarify, the overall program payment limitation may not be waived. No member of a joint operation may receive more than $450,000 in payment through EQIP for program years 2019 through 2023. But, when a joint operation consisting of two or more members enters into an EQIP contract, the EQIP contract with the joint operation may receive funding of up to $900,000. EQIP is using this flexibility to help streamline contract administration for these types of arrangements. Unlike the Conservation Stewardship Program (CSP), EQIP does not require enrollment of the entire operation. Each operation may receive multiple contracts for EQIP; therefore, the purpose of contract limits in EQIP differs from that in CSP.

No change is being made to the regulation in response to these issues.Contract Requirements

Comment: NRCS received comment recommending provisions for NRCS to incorporate into the EQIP contracts with producers, including requiring participants to report EQIP environmental outcomes to NRCS; ensuring that the eligibility of irrigation districts for EQIP contracts does not alter the annual funding allocation to States; strengthening support for best grazing management practices; limiting contracts to only 1 year; and requiring consideration as to how irrigation projects and practices could inadvertently negatively impact wildlife habitats and wetlands and increase water consumption by bringing additional ***land*** into production or converting ***land*** to more water-intensive crops.

Response: NRCS provides an assessment of resource concerns, including impacts to wildlife and water conservation, before a practice or activity is implemented, and determines any potential effects and expected environmental outcomes through the ranking process prior to approving EQIP contracts. In accordance with statutory limitations, NRCS does not provide supplemental allocations to States for WME projects. Contract terms are up to 10 years with the actual term determined by the producer and agreed to by NRCS. No change is being made to the regulation in response to this issue.Contracts With Water Management EntitiesAdjusted Gross Income and Payment Limitation Waiver

Comment: NRCS received comment related to AGI and payment limitation waiver criteria with respect to contracts with WMEs, including: General support for the $900,000 payment limit; support for increasing the payment limitation amount to over $900,000 as long as it adheres to specific, narrow cases allowed by statute; and support for increasing the payment limit to at least 10 times the individual limit (over $4.5 million) to address large-scale irrigation infrastructure projects. Other comment suggested waiver criteria, such as if the contract addressed multiple natural resource concerns outlined in statute, service to multiple farm operations, or benefitted historically underserved producers. Some comment expressed a desire that individual producers maintain access to funds within State EQIP allocations, either by maintaining the $900,000 payment limit, reducing it to the standard $450,000, by establishing a separate national allocation pool for WME projects or continuing to fund WMEs thorough RCPP. Other comment recommended separating the AGI waiver and payment limitation waiver.

Response: NRCS appreciates the diverse array of views. When a WME establishes through its program application that it deserves an AGI waiver using the criteria established in the interim rule (and retained in this final rule), it also establishes that it needs an increased contract limit. The contract limit of $900,000 is an appropriate size to draw a distinction between EQIP and other programs that may protect watersheds, such as RCPP or Watershed Operation Assistance under public law 83-566. No change is being made to the regulation in response to this issue.***Land*** Eligibility Criteria

Comment: NRCS received comment expressing general support for contracts with WMEs; recommending expanding the definition of adjacent ***land*** to include ***lands*** that create a direct connection between the infrastructure under the control of a WME and the producer's ***land*** (i.e , any ***land*** over which the WME holds an easement); limiting the scope of adjacent ***land*** to ***land*** that abuts an EQIP-eligible farm or ranch and is necessary for the practice or system being implemented by the WME; limiting recipients of EQIP funds to existing ***agricultural*** producers; and, ensuring that EQIP contracts do not enable water spreading, increase consumptive use, or put new ***land*** into ***agricultural*** production.

Response: The term “adjacent” is not defined in the interim rule or in this final rule. However, the adjacent ***land*** must meet several criteria in order to be eligible for enrollment in a contract with a WME, including that it must be “necessary to support the installation of a conservation practice or system on eligible ***land***. ” This supports an expansive interpretation of “adjacent” while ensuring that the adjacent ***land***'s enrollment supports the installation of a practice or system on eligible ***land***. No change is being made to the regulation in response to this issue.Other

Comment: NRCS received comment supporting the expansion of EQIP eligibility to WMEs, including ***land*** grant—mercedes, and recommended streamlined processes, clarification on eligibility, and guidance for WMEs on application.

Response: Streamlining and clarification will be addressed through additional outreach and communication to stakeholders. No change is being made to the regulation in response to this issue. The regulation in § 1466.6, “Program requirements,” includes additional criteria for WME eligibility, consistent with statutory direction, to ensure water conservation projects typical of ***land*** grant—mercedes can be considered for assistance.DefinitionsEligible ***Land***

Comment: NRCS received comment recommending including reference to wildlife under the definition for eligible ***land*** to incentivize stewardship of ***land*** managed for wildlife and expanding the definition of associated ***agricultural*** ***lands*** to include neighboring properties as eligible ***lands*** to both support ***agriculture*** and wildlife habitat.

Response: NRCS appreciates the interest in EQIP from wildlife and conservation stakeholders. The purpose of EQIP is to provide financial and technical assistance to ***agricultural*** producers on eligible ***agricultural*** and nonindustrial private ***forest*** ***land***. No change is being made to the regulation in response to this issue.High-Priority Area

Comment: NRCS received comment on the definition of high-priority areas, including recommending how to conduct a robust consultation process with the State technical committees and other stakeholders, selecting areas that cover broad and diverse areas of ***agricultural*** production and resource concerns, and also selecting areas based on a narrower, prioritized implementation approach.

Response: NRCS will continue to work cooperatively with State technical committees through the local working group process to select high-priority areas consistent with national, State, and local priorities. No change is being made to the regulation in response to this issue.Priority Resource Concern

Comment: NRCS received comment supporting the local role of the State in setting priority resource concerns, including wildlife practices and high-priority practices.

Response: NRCS will continue to work cooperatively with State technical committees to select priority resource concerns consistent with national, State, and local priorities. No change is being made to the regulation in response to this issue.Soil Testing

Comment: NRCS received comment that supported identifying appropriate soil health testing protocols, requiring the protocols in all EQIP contracts related to soil health, and quantifying the environmental outcomes of EQIP contracts on soil health.

Response: NRCS appreciates the attention that the public has given to soil health. NRCS continues to develop activities designed around soil health and soil testing, which are likely to receive recognition in local, State, or national priorities for ranking or other purposes. No change is being made to the regulation in response to this issue.Water Management Entities

Comment: NRCS received comment recommending that the definition of “water management entity” include mutual ditch, irrigation, and canal companies as “similar entities” due to their similarities to acequias in their purpose, size, legal status, and organizational structure. Comment also supported limiting EQIP funding for WMEs to contracts where the water users are farmers and ranchers.

Response: NRCS will keep the current definition of WME in § 1466.3, since this definition does not exclude ditch and related companies. Ditch and related companies may be eligible WMEs if they are a semipublic organization with the purpose of assisting private ***agricultural*** producers manage water distribution or conservation systems. No change is being made to the regulation in response to this issue.Eligibility

Comment: NRCS received comment recommending EQIP eligibility language reflect grazing rights on public ***lands*** better, make entities that do not have direct control of the ***land*** and members of Internal Revenue Code (IRC) Section 501(d) religious organizations eligible for participation, and expand eligibility for On-farm Trials to organizations that conduct business related to conservation on ***agricultural*** ***lands***.

Response: Control of ***land*** is a necessary requirement for participant eligibility. The participant must be able to implement the requirements of the EQIP contract, which is demonstrated through control of the ***land***.

Regarding publicly-owned ***land***, NRCS considers whether the ***land*** is within the applicant's control (in other words, that the applicant can implement the terms of the EQIP contract), whether the ***land*** is a working component of the producer's ***agricultural*** or forestry operation (for example, that the producer uses the ***land*** for grazing), and whether conservation practices to be implemented on the public ***land*** are necessary and will contribute to an improvement in the identified resource concern. If all three criteria are met, the ***land*** may be eligible.

Religious organizations are not excluded from eligibility. A legal entity organized under IRC Section 501(d) meets the definition of legal entity in § 1466.3 provided it owns ***land*** or an ***agricultural*** commodity, product, or livestock or produces an ***agricultural*** commodity, product, or livestock.

An eligible entity for the purposes of On-farm Trials includes a third-party private entity, the primary business of which is related to ***agriculture***. This includes organizations that conduct business related to conservation on ***agricultural*** ***lands***.

No change is being made to the regulation in response to this issue.Environmental Assessment

Comment: NRCS received comment related to the Programmatic Environmental Assessment (EA). Comment asserted: The current “no action” alternative is not a legally permissible outcome; the Programmatic EA must indicate which decisions are discretionary or mandatory; for discretionary decisions, NRCS must list at least two legally permissible alternatives; and because the Programmatic EA is insufficient, the Finding of No Significant Impact (FONSI) is also insufficient.

Comment also indicated that data collection is a key input to assessing environmental impact, suggesting that NRCS incentivize producer participation in third-party data collection services to track environmental benefits of conservation practices.

Response: NRCS prepares its programmatic National Environmental Policy Act (NEPA) documents to provide broad-scale analyses to which site-specific program actions may tier, when appropriate, for purposes of complying with NEPA. NEPA does not require Federal agencies to consider alternatives that have substantially similar consequences; rather, it is clearly intended to help agencies avoid significant adverse impacts. The “no action” alternative describes continuation of EQIP under its previous regulations. NEPA regulations require analysis of a no action alternative for comparative reasons. Conservation activities associated with each EQIP contract undergo additional site-specific environmental review and analysis designed to avoid, minimize, rectify, reduce, eliminate, or compensate for any potential adverse impacts. No change is being made to the regulation in response to this issue.EQIP Plan of Operations—Comprehensive Nutrient Management Plan

Comment: NRCS received comment about progressive implementation of a CNMP, asserting that the interim rule only requires development of a CNMP and does not require progressive implementation and thus is contrary to the intent of Congress.

Response: NRCS understands these comments to suggest that the interim rule is ambiguous regarding CNMP implementation. This rule revises the regulation to add clarity. From a practical standpoint, a producer implementing EQIP-funded conservation practices consistent with CNMP is progressively implementing CNMP. However, some EQIP contracts are for development of CNMP as a conservation activity plan only. There are no practices to implement progressively under these contracts other than the plan itself. In addition, this rule clarifies that CNMP will address all “applicable” natural resources since natural resource issues are site-specific. In this manner, NRCS hopes to avoid any confusion about the scope of CNMP while maintaining core aspects that have been in the CNMP definition since 2003.Fund Allocations

Comment: NRCS received comment recommending that NRCS address the funding allocation for wildlife conservation practices, including that NRCS: Ensure the 10 percent allocation is a “floor” and not a “ceiling” for wildlife practice funding; set the 10 percent allocations at the State rather than national level; make a narrower list of practices that count toward the 10 percent allocation or including State partners in determining which practices should count in that State; and exclude EQIP contracts from the 10 percent allocation that involve either the Working ***Lands*** for Wildlife model or interagency cooperation with the U.S Fish and Wildlife Service. Comment also expressed a desire for increased collaboration with State and local partners for ***targeting*** wildlife habitat and conservation.

Other comment addressed the funding allocation for livestock practices, including disapproval of the statutory change from 60 percent to 50 percent, opinion that the 50 percent mandate was far too high, and request about how the national mandate is implemented on a State-by-State basis.

Comment also addressed other fund allocation topics as follows:

Concern over whether NRCS was making equitable allocations to States by citing a 2017 U.S Government Accountability Office report suggesting that NRCS was using historical allocation data rather than seeking to optimize environmental benefits. Recommendation to create a national initiative for ***targeted*** funding for small-scale operations based on existing State-level initiatives. Concern that allocations of funds to WMEs would take conservation dollars away from producers, so they requested that NRCS add language ensuring that producers would be the ultimate beneficiaries of EQIP funding for contracts with WMEs. Note that Congress did not want contracts with irrigation districts to adjust State funding allocations. Suggestion that contracts with WMEs should increase allocations for western States. Request that NRCS link funding allocations to accountability mechanisms so that activities with limited conservation benefits are not funded.

Response: NRCS will consider these comments in its allocation process. The breadth and depth of these comments indicate the importance of fund allocations to EQIP stakeholders and partners. EQIP implementation, including the allocation of funding, is complex in nature because the statute provides for multiple goals and requirements. All statutory goals must be addressed even though some desired outcomes are difficult or impossible to quantify given current information availability. Through local input, combined with the use of the Conservation Effect Assessment Project (CEAP) and other important data, USDA seeks to enable program managers and leaders to achieve the most effective and efficient program outcomes across the entire range of statutory goals.

State technical committees and local work groups, with the knowledge and expertise of their members, also provide additional sources of data and information. Their membership includes leaders in ***agriculture***, conservation, producers, and other stakeholders and their input provides a means of ensuring EQIP allocations are made according to the resource concern, ***targeted*** to the local conditions, and relevant to and contributing to national resource priorities. These State and local sources provide valuable information and data on environmental concerns not otherwise available, thus giving allocation decisions far more depth and granularity. The State technical committee regulation and standard operating procedures address this process and thus no change is being made to the EQIP regulation in response to this issue.General

Comment: NRCS received comment requesting a modification to how the changes made by the 2018 Farm Bill appear in the interim rule preamble.

Response: The interim rule preamble provides a summary and is not intended to represent a comprehensive description of the 2018 Farm Bill changes. NRCS encourages reviewers to read the 2018 Farm Bill if additional perspective is sought. No change is being made to the regulation in response to this issue.Incentive Contracts—Selection Criteria

Comment: NRCS received comment recommending NRCS modify the incentive contract selection criteria, giving priority to applications aiming to make the participant eligible for CSP at the end of the contract period.

Response: Incentive contracts are designed to serve as a bridge between EQIP and CSP. State technical committees and other local stakeholders designate priority resource concerns and high-priority areas and assist in determining priority resource concerns for CSP. The final rule maintains language in the interim rule to maximize local control over what EQIP practices are best suited for the applicant to transition to CSP. No change is being made to the regulation in response to this issue.National Priorities

Comment: NRCS received comment recommending the addition of soil health, climate resilience, and drought resiliency to the list of national priorities in § 1466.4(a), indicating that Congress made soil testing and soil health planning qualified activities for EQIP support in the 2018 Farm Bill, and that Congress spoke to the need to focus on climate resilience by making addressing weather variability and drought resilience new purposes for EQIP.

Response: Rather than increasing the number of national priorities from 8 to 10, this rule adds concepts of soil health and climate resiliency to existing national priorities. In particular NRCS incorporates concepts of climate resiliency through the addition of the language “increased resilience against drought and weather volatility” in § 1466.4(a)(4) and incorporates “improvement of soil health” in § 1466.4(a)(6).Outreach Activities

Comment: NRCS received comment recommending a variety of different actions with respect to its outreach activities, including: Requesting a focus on the conservation benefits of wildlife practices; ***targeting*** diverse farming operations; additional outreach at the local level; adding information on advance payment options in outreach to historically underserved producers to increase EQIP participation; and using USDA and other data to inform producers of the potential economic impact of adopting conservation practices. Comment recommended that NRCS track and provide annual information to the public on the results of the allocations for wildlife practices and the use of native plants. Other comment offered general support for NRCS activities.

Response: NRCS is committed to providing high-quality service across the Nation. Outreach strategies and efforts are in place at the national, State, and local levels, with those at the State and local level tailored to the needs of the specific area. In addition, ***targeted*** outreach efforts are underway for historically underserved producers and Tribes. In the regulation, § 1466.5 contains special outreach authorization for historically underserved producers and a paragraph including outreach and documentation to historically underserved producers pertaining to advance payments. Regarding economic impacts, NRCS considers estimated economic impact in its conservation planning process, including in the development of conservation practice standards. The 2018 Farm Bill also requires the Secretary to identify available data sets within USDA that link the use of conservation practices to farm and ranch profitability (including crop yields, soil health, and other risk-related factors).

NRCS tracks EQIP investment and performance. In addition to the 2018 Farm Bill's emphasis on reporting EQIP outcomes, the agency has an interest in understanding the impact of the statutory increase of the wildlife allocation from 5 to 10 percent. Regarding publicly available reports, the Soil and Water Resources Conservation Act (RCA) provides broad natural resource strategic assessment and planning authority for USDA. Information about NRCS's conservation programs at the State, regional, and national level, is available on the RCA interactive data viewer ([*https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/ida/*](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/ida/)).

No changes have been made to the regulation in response to these comments.Payment Limits

Comment: NRCS received comment related to payment limits, including opposition to the increased payment limit for participants in the organic initiative, request for ***removal*** of the $200,000 payment limit for incentive contracts, and support for keeping the aggregate payment limit of $450,000.

Response: NRCS provides financial and technical assistance, through the National Organic Initiative, to help organic or transitioning-to-organic producers. In the interim rule, in § 1466.24, NRCS updated the payment limitations for organic production from annual limits to an aggregate limit from FY 2019 through 2023, as required by the 2018 Farm Bill. Economic analysis indicates little impact as organic initiative contracts are usually well below the multiyear payment limit of $80,000 previously set by the 2014 Farm Bill. In the past, organic participants who exceed the organic initiative payment limit use other EQIP funding mechanisms. With the increased limit, more organic applicants will be able to make use of the organic initiative and consequently need only compete with other organic operations for funding.

The 2018 Farm Bill's introduction of EQIP incentive contracts provides a new option for participation. In § 1466.44 of the interim rule NRCS established criteria for incentive payments, including establishing a regulatory $200,000 payment limit similar to CSP, and ensuring that incentive contracts support a participant's ability to transition to CSP eligibility. While there were no comments submitted that opposed the $200,00 payment limit in this section, NRCS may consider setting a contract limit on EQIP incentive contracts in the future.

No change is being made to the regulation in response to this issue.Payment Rates

Comment: NRCS received comment on the topic of payment rates, including adding the cost of third-party measurement of environmental benefits of adopted practices to payment rates as well as soil testing and data collection costs associated with using emerging sustainability tools and platforms and emerging ecosystem markets; using additional financial incentives (for example, through increased foregone income payments or higher cost-share percentages for high-priority practices) to meet the funding goal for wildlife practices; concern that payments received by participants may exceed the actual costs associated with the practice; and recommending that States, not regions, set payment rates, as project costs can vary widely from State to State.

Response: NRCS follows a methodical approach and will consider each comment in developing payment schedules. The 2018 Farm Bill authorized increased payment rates for certain high-priority practices and for practices that address source water protection. Further, States can designate high-priority practices that will be eligible for higher payment rate at the State level. Policy requires soliciting input from State technical committees and the posting of payment schedules on a public website. In addition, as NRCS develops the functionality of digital tools, such as the Conservation Assessment and Ranking Tool (CART), the process of determining payment rate alignment with statutory factors will be refined. NRCS incorporates all statutory payment factors into regulations and ensures that payment rates are consistent between EQIP and CSP. No change is being made to the regulation in response to this issue.Ranking

Comment: NRCS received comment recommending criteria changes to ranking and the weighting of ranking factors including that: Ranking focus on the net benefit to stream flows; preference be given to operators who have demonstrated “best practices” (with a focus on nonpoint source pollution); accountability mechanisms be built to ensure practices are achieving the maximum benefit; States prioritize practices addressing multiple resource concerns; and priority for EQIP enrollment be provided to ***land*** transitioned through the CRP Transition Incentive Program (CRP-TIP) (see 16 U.S.C 3835(f)(1)(E)).

Response: NRCS will continue to work cooperatively with its State and local partners to develop ranking criteria that fit national, State, and local priorities. These priorities may include net benefit to stream flows, nonpoint source pollution, the feasibility of requiring accountability mechanisms in contract implementation, or multiplicity of conservation benefits. However, NRCS is not requiring these specific ranking factors in every situation.

State Conservationists, in consultation with State technical committees, determine how many extra points to provide CRP-TIP in ranking. NRCS is committed to protecting CRP-TIP ***land*** in transition to a covered farmer or rancher and has incorporated this statutory priority in this final rule by adding language to §§ 1466.1 and 1466.20(b). No other changes are made to the regulation in response to this issue.Paperwork Reduction Act and Effective Date

In general, the Administrative Procedure Act (APA) (5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are—

To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review.

Consistent with the use of the authority under 5 U.S.C 808 related to Congressional review for the immediate effect date of the interim rule, this rule is also effective on the date of publication in the Federal Register.Executive Orders 12866, 13563, 13771, and 13777

Executive Order 12866, “Regulatory Planning and Review,” and Executive Order 13563, “Improving Regulation and Regulatory Review,” direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, reducing costs, harmonizing rules, and promoting flexibility. The requirements in Executive Orders 12866 and 13573 for the analysis of costs and benefits apply to rules that are determined to be significant. Executive Order 13777, “Enforcing the Regulatory Reform Agenda,” established a Federal policy to alleviate unnecessary regulatory burdens on the American people.

The Office of Management and Budget (OMB) designated this rule as economically significant under Executive Order 12866, and therefore, OMB has reviewed this rule. The costs and benefits of this rule are summarized below in the next section of this rule. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/).

Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs,” requires that, to manage the private costs required to comply with Federal regulations for every new significant or economically significant regulation issued, the new costs must be offset by the savings from deregulatory actions. This rule involves transfer payments and is not required to comply with Executive Order 13771.

In general response to the requirements of Executive Order 13777, USDA created a Regulatory Reform Task Force, and USDA agencies were directed to ***remove*** barriers, reduce burdens, and provide better customer service both as part of the regulatory reform of existing regulations and as an on-going approach. NRCS reviews regulations and makes changes to improve any provision that was determined to be outdated, unnecessary, or ineffective.Cost Benefit Analysis

Most of this rule's impacts consist of transfer payments to producers for completed conservation practices under EQIP contracts. There are also costs and benefits, which are described after a discussion of the transfers. The 2018 Farm Bill increases EQIP funding over 2014 Farm Bill funding by 15 percent on average to $1.84 billion per year. From FY 2014 through 2018, EQIP was authorized at $8.0 billion, but annual funding restrictions resulted in actual authority being $7.51 billion, for an annual average amount of $1.50 billion. In contrast, the authorized level for EQIP for FY 2019 through 2023 is $9.18 billion (assuming future funding is set at authorized amounts). Additionally, EQIP funds remain available until expended, meaning that any unobligated balance at the end of a fiscal year is available for obligation in the subsequent year.

NRCS recognizes that a participant incurs costs in gaining access to EQIP. These costs are in addition to the participant's share of the cost of implementing conservation activities under EQIP. NRCS estimates the total cost of accessing the program over 5 years to be $17.7 million. The cost to participants of implementing conservation practices over 5 years is estimated at $4.46 billion and total transfers (NRCS funds) over 5 years are estimated at $9.18 billion. Given a 3 percent discount rate, this translates into a projected annualized real cost to producers for implementing conservation practices of $855.10 million and projected annualized real transfers of $1.76 billion (Table 1). In addition, participants incur $3.5 million in access costs in nominal terms.Table 1—Annual Estimated Costs, Benefits, and Transfers Category Annual estimateParticipant costs: Access a $3,549,676.Implementation b 855,100,000.Benefits Qualitative.Transfers c $1,760,000,000.

The costs associated with this rule consist of the administrative costs of applying for EQIP funding and are described in the full regulatory impact analysis. The benefits of this rule are the environmental improvements that are due to the increased conservation practices over and above those that farmers privately undertake. Conservation practices funded through EQIP will continue to: Contribute to improvements in soil health and reductions in water and wind erosion on cropland, pasture and rangeland; reduce nutrient losses to streams, rivers, lakes and estuaries; increase wildlife habitat; and provide other environmental benefits. Further, continued implementation of practices which treat and manage animal waste through EQIP will directly contribute to improvements in water quality and improvements in air quality (such as reduced risk of algal blooms or reduction in methane ***emissions***, respectively). NRCS estimates that the expenditures, from both public and private sources, of implementing EQIP conservation practices will be $13.6 billion dollars (FY 2019 through 2023), assuming a historical average participant cost of 40 percent and a technical assistance share of 27 percent.

Changes in funding levels for EQIP livestock and wildlife practices will alter to a minor extent the types of conservation practices that are funded. From FY 2014 through 2018, wildlife practices accounted for 7.6 percent of EQIP funds through wildlife and landscape initiatives and 16 designated wildlife conservation practices. The 2.4 percent increase in funding for wildlife to meet the new 10 percent level will likely occur through greater support for existing wildlife initiatives and may ***target*** additional wildlife habitat development efforts through new initiatives. With respect to livestock, over 60 percent of EQIP funds went to livestock-related practices during FY 2014 through 2018, but the 2018 Farm Bill reduced this ***target*** to 50 percent for each of fiscal years 2019 through 2023. With greater EQIP funding overall, the amount of funding being provided for the implementation of livestock conservation practices should not change significantly.

To address increasing demands on the nation's water supply, the 2018 Farm Bill expands EQIP eligibility to WMEs like irrigation districts, ground water management districts, and acequias, along with providing the Secretary with the authority to waive AGI and payment limits to encourage continued efforts in ***agricultural*** water conservation. In some states, particularly in the West, these WMEs may increase competition for funding and enhance conservation benefits per dollar spent. The impacts, however, on the allocation of EQIP funding will be limited. The 2018 Farm Bill directs NRCS to maintain current funding allocations to states, limiting the impact nationally. Also, NRCS in the interim rule established a payment limit of $900,000 on all contracts with WMEs.

The 2018 Farm Bill establishes conservation incentive contracts to address up to three priority resource concerns for each ***land*** use within a given watershed, or other region, or area. Contracts will range from a minimum of 5 years to up to 10 years in length and provide an annual payment and incentive practice payments. NRCS has established a payment limit of $200,000 to align with CSP. The impact of these new conservation incentive contracts is uncertain, particularly regarding benefits per dollar. Overall, given the current demand for regular enrollment in EQIP, and the currently uncertain impacts that conservation incentive contracts will have, the aggregate benefits from these new conservation incentive contracts may be limited.

Increasing the payment limit for participants in the organic initiative to $140,000 over the period FY 2019 through 2023, will likely have little impact on EQIP performance. This is because existing organic initiative contracts are usually well below the existing multi-year payment limit of $80,000 set by 2014 Farm Bill. Currently, organic participants who exceed the organic initiative payment limit use other EQIP funding mechanisms. The increase in the organic initiative limit to $140,000 may attract producers who have higher organic practice costs or perhaps larger operations, and EQIP participants may make greater use of the organic initiative and designated funding pool.Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because this rule is exempt from notice and comment rulemaking requirements of the APA and no other law requires that a proposed rule be published for this rulemaking initiative.Environmental Review

The environmental impacts of this rule have been considered in a manner consistent with the provisions of NEPA (42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR 1500 through 1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). NRCS conducted an analysis of the EQIP interim rule, which determined there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR 1508.1(l)). The 2018 Farm Bill requires minor changes to NRCS conservation programs, and there are no changes to the basic structure of the programs. The analysis has determined there will not be a significant impact to the human environment and as a result, an EIS is not required to be prepared (40 CFR 1508.1(l)). While OMB has designated this rule as “economically significant” under Executive Order 12866, “. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement” (40 CFR 1502.16(b)), when not interrelated to natural or physical environmental effects. The EA and FONSI were available for review and comment for 30 days from the date of publication of the interim rule in the Federal Register. NRCS considered this input and updated the EA and FONSI with information relevant to environmental concerns and bearing on the proposed action.Executive Order 12372

Executive Order 12372, “Intergovernmental Review of Federal Programs,” requires consultation with State and local officials that would be directly affected by proposed Federal financial assistance. The objectives of the Executive Order are to foster an intergovernmental partnership and a strengthened Federalism, by relying on State and local processes for State and local government coordination and review of proposed Federal financial assistance and direct Federal development. For reasons specified in the final rule-related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the program and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988

This rule has been reviewed under Executive Order 12988, “Civil Justice Reform. ” This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted.Executive Order 13132

This rule has been reviewed under Executive Order 13132, “Federalism. ” The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175

This rule has been reviewed in accordance with the requirements of Executive Order 13175, “Consultation and Coordination with Indian Tribal Governments. ” Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a Government-to-Government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes.

The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not, to their knowledge, have Tribal implication that require Tribal consultation under Executive Order 13175. Tribal consultation for this rule was included in the two 2018 Farm Bill Tribal consultations held on May 1, 2019, at the National Museum of the American Indian, in Washington, DC, and on June 26-28, 2019, in Sparks, NV. For the May 1, Tribal consultation, the portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title II session. There were no specific comments from Tribes on the EQIP rule during the Tribal consultation. If a Tribe requests consultation, NRCS will work with OTR to ensure meaningful consultation is provided where changes, additions, and modifications identified here in this rule are not expressly mandated by legislation. OTR has determined that Tribal consultation for this rule is not required at this time.

Separate from Tribal consultation, communication, and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests. Additionally, NRCS held several sessions with Indian Tribes and Tribal entities across the country in FY 2019 to describe the 2018 Farm Bill changes to NRCS conservation programs, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access. NRCS will continue to conduct these sessions with Indian Tribes and Tribal entities.Unfunded Mandates

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal Governments or the private sector. Agencies generally must prepare a written statement, including cost-benefits analysis, for proposed and final rules with Federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local or Tribal Governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no Federal mandates, as defined under Title II of UMRA, for State, local, and Tribal Governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs

The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies:

10.912—Environmental Quality Incentives Program.E-Government Act Compliance

NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to Government information and services, and for other purposes.List of Subjects in 7 CFR Part 1466

Administrative practice and procedure, Animal welfare, Natural resources, Soil conservation, Water resources.

Accordingly, for the reasons stated above, the interim rule amending 7 CFR part 1466, which was published at 84 FR 69272 on December 17, 2019, is adopted as final with the following changes:Part 1466 Environmental Quality Incentives ProgramRegulatory Text

1. The authority citation for part 1466 continues to read as follows:Authority:

15 U.S.C 714b and 714c; and 16 U.S.C 3839aa-3839-8.

2. Amend § 1466.1 by revising paragraphs (a)(2) through (4) to read as follows:§ 1466.1 Applicability.

(a) \* \* \*

(2) Through EQIP, NRCS provides technical and financial assistance to eligible ***agricultural*** producers, including nonindustrial private ***forest*** (NIPF) landowners and Indian Tribes, to help implement conservation practices that address resource concerns related to organic production; soil, water, and air quality; wildlife habitat; nutrient management associated with crops and livestock; pest management; ground and surface water conservation; irrigation management; drought resiliency measures; adapting to and mitigating against increasing weather volatility; energy conservation; and related resource concerns.

(3) EQIP's financial and technical assistance helps:

(i) Producers comply with environmental regulations and enhance ***agricultural*** and ***forested*** ***lands*** in a cost-effective and environmentally beneficial manner; and

(ii) To the maximum extent practicable, avoid the need for resource and regulatory programs.

(4) The purposes of EQIP are achieved by planning and implementing conservation practices on eligible ***land*** to address identified, new, or expected resource concerns, including such resource concerns related to ***lands*** enrolled under a Conservation Reserve Program contract that are transitioning into production as specified in 16 U.S.C 3835(f).

\* \* \* \* \*

3. Amend § 1466.3 by revising the definition for “Comprehensive nutrient management plan (CNMP)” to read as follows:§ 1466.3 Definitions.

\* \* \* \* \*

Comprehensive nutrient management plan (CNMP) means a conservation plan that is specifically for an AFO. A CNMP identifies conservation practices and management activities that, when implemented as part of a conservation system, will manage sufficient quantities of manure, waste water, or organic by-products associated with a waste management facility. A CNMP incorporates practices to use animal manure and organic by-products as a beneficial resource while protecting all applicable natural resources including water and air quality associated with an AFO. A CNMP is developed to assist an AFO owner or operator in meeting all applicable local, Tribal, State, and Federal water quality goals or regulations. For nutrient-impaired stream segments or water bodies, additional management activities or conservation practices may be required by local, Tribal, State, or Federal water quality goals or regulations.

\* \* \* \* \*

4. Amend § 1466.4 by revising paragraph (a) to read as follows:§ 1466.4 National priorities.

(a) The national priorities in paragraphs (a)(1) through (8) of this section, consistent with statutory resources concerns, include soil quality, water quality and quantity, plants, energy, wildlife habitat, air quality, increased weather volatility, and related natural resource concerns, that may be used in EQIP implementation are:

(1) Reductions of nonpoint source pollution, such as nutrients, sediment, pesticides, or excess salinity in impaired watersheds consistent with total maximum daily loads (TMDL) where available;

(2) The reduction of ground and surface water contamination;

(3) The reduction of contamination from ***agricultural*** sources, such as animal feeding operations;

(4) Conservation of ground and surface water resources, including improvement of irrigation efficiency and increased resilience against drought and weather volatility;

(5) Reduction of ***emissions***, such as particulate matter, nitrogen oxides, volatile organic compounds, and ozone precursors and depleters that contribute to air quality impairment violations of the National Ambient Air Quality Standards;

(6) Reduction in soil erosion and sedimentation from unacceptable levels and improvement of soil health on eligible ***land***;

(7) Promotion of at-risk species habitat conservation including development and improvement of wildlife habitat; and

(8) Energy conservation to help save fuel, improve efficiency of water use, maintain production, and protect soil and water resources by more efficiently using fertilizers and pesticides.

\* \* \* \* \*

5. Amend § 1466.6 by revising paragraph (d)(1) to read as follows:§ 1466.6 Program requirements.

\* \* \* \* \*

(d) \* \* \*

(1) Notwithstanding paragraphs (b) and (c) of this section, NRCS may enter into an EQIP contract with a water management entity provided the criteria in paragraphs (d)(1)(i), (ii), and (iii) of this section can be met:

(i) The entity is a public or semipublic agency or organization,

(ii) Its purpose is to assist private ***agricultural*** producers manage water distribution or conservation systems, and

(iii) The water conservation or irrigation practices support a water conservation project under § 1466.20(c) that will effectively conserve water, provide fish and wildlife habitat, or provide for drought-related environmental mitigation, as determined by the Chief.

\* \* \* \* \*

6. Amend § 1466.7 by revising paragraph (d) to read as follows:§ 1466.7 EQIP plan of operations.

\* \* \* \* \*

(d) If an EQIP plan of operations includes an animal waste storage or treatment facility to be implemented on an AFO, the participant must agree to:

(1) Develop a CNMP by the end of the contract period; and

(2) Implement any applicable conservation practices in the EQIP plan of operation consistent with an approved CNMP.

\* \* \* \* \*

7. Amend § 1466.20 as follows:

a. In paragraph (b)(2)(viii), ***remove*** the word “and”;

b. Add paragraph (b)(2)(ix); and

c. Redesignate paragraph (b)(2)(xi) as paragraph (b)(2)(x).

The addition reads as follows:§ 1466.20 Application for contracts and selecting applications.

\* \* \* \* \*

(b) \* \* \*

(2) \* \* \*

(ix) The ***land*** is enrolled under a CRP contract transitioning to a covered farmer or rancher as specified in 16 U.S.C 3835(f); and

\* \* \* \* \*

8. Amend § 1466.31 by revising paragraph (a) to read as follows:§ 1466.31 Purpose and scope.

(a) The purpose of Conservation Innovation Grants (CIG) is to stimulate the development and adoption of innovative conservation approaches and technologies, including field research, while leveraging Federal investment in environmental enhancement and protection in conjunction with ***agricultural*** production. Notwithstanding any limitation of this part, NRCS administers CIG in accordance with this subpart. Unless otherwise provided for in this subpart, grants under CIG are subject to the provisions of 2 CFR part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

\* \* \* \* \*

9. Amend § 1466.32 by redesignating paragraphs (c) and (d) as paragraphs (d) and (e), respectively, and by adding a new paragraph (c) to read as follows:§ 1466.32 Conservation innovation grant funding.

\* \* \* \* \*

(c) Authority to reduce matching requirement. The Chief may reduce the matching requirements of paragraphs (b)(1) and (2) of this section, provided that the applicant is:

(1) An historically underserved producer;

(2) A community-based organization comprised of, representing, or exclusively working with historically underserved producers on a CIG project;

(3) Developing an innovative conservation approach or technology specifically ***targeting*** historically underserved producers' unique needs and limitations; or

(4) An 1890 or 1994 ***land*** grant institution (7 U.S.C 3222 et seq.), Hispanic-serving institution (20 U.S.C 1101a), or other minority-serving institution, such as an historically Black college or university (20 U.S.C 1061), a tribally controlled college or university (25 U.S.C 1801), or Asian American and Pacific Islander-serving institution (20 U.S.C 1059g).

\* \* \* \* \*Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2020-23437 Filed 10-23-20; 8:45 am]BILLING CODE 3410-16-P

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**End of Document**



[***Federal Register: SES Positions That Were Career Reserved During CY 2020 Pages 21490 - 21631 [FR DOC #2021-08389]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62H2-9KX1-F0YC-N3HN-00000-00&context=1516831)

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**Body**

Washington: Office of the Federal Register has issued the following notice:Office of Personnel Management-----------------------------------------------------------------------SES Positions That Were Career Reserved During CY 2020; NoticeFederal Register / Vol. 86, No. 76 / Thursday, April 22, 2021 / Notices[[Page 21490]]-----------------------------------------------------------------------OFFICE OF PERSONNEL MANAGEMENTSES Positions That Were Career Reserved During CY 2020AGENCY: Office of Personnel Management (OPM).ACTION: Notice.-----------------------------------------------------------------------SUMMARY: This gives notice of all positions in the Senior Executive Service (SES) that were career reserved during calendar year 2020.FOR FURTHER INFORMATION CONTACT: Julia Alford, Senior Executive Resources Services, Senior Executive Services and Performance Management, Employee Services, 202-606-2246.SUPPLEMENTARY INFORMATION: Below is a list of titles of SES positions that were career reserved at any time during calendar year 2020, regardless of whether those positions were still career reserved as of December 31, 2020. Section 3132(b) (4) of title 5, United States Code, requires that the head of each agency publish such lists by March 1 of the following year. The Office of Personnel Management is publishing a consolidated list for all agencies.------------------------------------------------------------------------ Agency name Organization name Position title------------------------------------------------------------------------ADMINISTRATIVE CONFERENCE OF ADMINISTRATIVE DIRECTOR OF FINANCE THE UNITED STATES. CONFERENCE OF THE AND OPERATIONS. UNITED STATES. GENERAL COUNSEL. EXECUTIVE DIRECTOR.ADVISORY COUNCIL ON HISTORIC ADVISORY COUNCIL ON EXECUTIVE DIRECTOR. PRESERVATION. HISTORIC PRESERVATION.DEPARTMENT OF AGRICULTUREAGRICULTURAL RESEARCH MIDWEST AREA OFFICE. DIRECTOR, MIDWEST SERVICE. AREA. DIRECTOR, NATIONAL CENTER FOR ***AGRICULTURE*** UTILIZATION. ASSOCIATE DIRECTOR, MIDWEST AREA (2). NORTHEAST AREA DIRECTOR, EASTERN OFFICE. REGIONAL RESEARCH CENTER. DIRECTOR NORTHEAST AREA OFFICE. DIRECTOR, BELTSVILLE ***AGRICULTURAL*** RESEARCH CENTER. ASSOCIATE DIRECTOR, NORTHEAST AREA (2). OFFICE OF NATIONAL DEPUTY PROGRAMS. ADMINISTRATOR, NUTRITION,FOOD SAFETY AND QUALITY. DEPUTY ADMINISTRATOR, ANIMAL PRODUCTION AND PROTECTION. DEPUTY ADMINISTRATOR, CROP PRODUCTION AND PROTECTION. ASSOCIATE ADMINISTRATOR, NATIONAL PROGRAMS. DEPUTY ADMINISTRATOR FOR NATURAL RESOURCES AND SUSTAINABLE ***AGRICULTURAL*** SYSTEMS. PACIFIC WEST AREA ASSOCIATE DIRECTOR, OFFICE. PACIFIC WEST AREA (2). DIRECTOR, WESTERN REGIONAL RESEARCH CENTER. DIRECTOR, PACIFIC WEST AREA OFFICE. DIRECTOR, WESTERN HUMAN NUTRITION RESEARCH CENTER. PLAINS AREA OFFICE.. ASSOCIATE DIRECTOR, PLAINS AREA OFFICE (2). DIRECTOR, UNITED STATES MEAT ANIMAL RESEARCH CENTER. DIRECTOR, PLAINS AREA. SOUTHEAST AREA DIRECTOR, SOUTHERN OFFICE. REGIONAL RESEARCH CENTER. ASSOCIATE DIRECTOR, SOUTHEAST AREA (2). DIRECTOR, SOUTHEAST AREA.ANIMAL AND PLANT HEALTH PLANT PROTECTION AND EXECUTIVE DIRECTOR, INSPECTION SERVICE. QUARANTINE SERVICE. EASTERN REGION, PLANT PROTECTION AND QUARANTINE. EXECUTIVE DIRECTOR, POLICY MANAGEMENT. EXECUTIVE DIRECTOR, WESTERN REGION, PLANT PROTECTION AND QUARANTINE.[[Page 21491]] VETERINARY SERVICES. EXECUTIVE DIRECTOR, SCIENCE, TECHNOLOGY AND ANALYSIS SERVICE. EXECUTIVE DIRECTOR (STRATEGY AND POLICY). DIRECTOR, WESTERN REGION, VETERINARY SERVICES. ASSOCIATE DEPUTY ADMINISTRATOR, NATIONAL ANIMAL HEALTH POLICY PROGRAMS. EXECUTIVE DIRECTOR (DOMESTIC PROGRAMS).DEPARTMENTAL ADMINISTRATION. OFFICE OF ADVOCACY DIRECTOR, OFFICE OF AND OUTREACH. ADVOCACY AND OUTREACH. OFFICE OF HOMELAND DEPUTY DIRECTOR OF SECURITY AND HOMELAND SECURITY EMERGENCY AND EMERGENCY COORDINATION. COORDINATION. OFFICE OF HUMAN EXECUTIVE DIRECTOR, RESOURCES EXECUTIVE RESOURCES MANAGEMENT. MANAGEMENT DIVISION. OFFICE OF OPERATIONS DIRECTOR OFFICE OF OPERATIONS. DEPUTY DIRECTOR OF OPERATIONS. PROCUREMENT AND DIRECTOR, PROPERTY MANAGEMENT. CONTRACTING AND PROCUREMENT. DEPUTY DIRECTOR, OFFICE OF PROCUREMENT AND PROPERTY MANAGEMENT.***FOREST*** SERVICE.............. FIELD UNITS......... DIRECTOR, ***FOREST*** PRODUCTS LABORATORY (MADISON). DIRECTOR, SOUTHERN RESEARCH STATION (ASHEVILLE). DIRECTOR, ROCKY MOUNTAIN ***FOREST*** AND RANGE EXPERIMENT STATION (FORT COLLINS). DIRECTOR, PACIFIC SOUTHWEST ***FOREST*** AND RANGE EXPERIMENT STATION (VALLEJO). DIRECTOR, PACIFIC NORTHWEST RESEARCH STATION. DIRECTOR, NORTHERN RESEARCH STATION. NORTHEAST AREA DIRECTOR, STATE AND PRIVATE FORESTRY. INTERNATIONAL ***FOREST*** DIRECTOR SYSTEM. INTERNATIONAL INSTITUTE OF TROPICAL ***FOREST*** (RIO PIEDRAS). NATIONAL ***FOREST*** DIRECTOR, ***LANDS*** SYSTEM. MANAGEMENT STAFF. DIRECTOR, ENGINEERING. DIRECTOR, ***FOREST*** MANAGEMENT STAFF. DIRECTOR, RANGELAND MANAGEMENT. DIRECTOR, MINERALS AND GEOLOGY MANAGEMENT STAFF. DIRECTOR, WATER, FISH, WASTELAND, AIR AND RARE PLANTS. DIRECTOR, ECOSYSTEM MANAGEMENT COORDINATION. RESEARCH............ DIRECTOR, INVENTORY, MONITORING AND ASSESSMENT. DIRECTOR, SUSTAINABLE ***FOREST*** MANAGEMENT. DIRECTOR, RESOURCE USE SCIENCES. DIRECTOR, ENVIRONMENTAL SCIENCES. STATE AND PRIVATE SENIOR ADVISOR TO FORESTRY. THE DEPUTY CHIEF, STATE AND PRIVATE FORESTRY. DIRECTOR COOPERATIVE FORESTRY. DIRECTOR, ***FOREST*** HEALTH PROTECTION.NATIONAL INSTITUTE OF FOOD ECONOMIC RESEARCH DIRECTOR, MARKET AND AND ***AGRICULTURE***. SERVICE. TRADE ECONOMICS DIVISION. DIRECTOR, INFORMATION SERVICES DIVISION. DIRECTOR, RESOURCE AND RURAL ECONOMICS DIVISION. ADMINISTRATOR, ECONOMIC RESEARCH SERVICE.[[Page 21492]] ASSOCIATE ADMINISTRATOR, ECONOMIC RESEARCH SERVICE. DIRECTOR, FOOD ECONOMICS DIVISION. NATIONAL DIRECTOR, WESTERN ***AGRICULTURAL*** FIELD OPERATIONS. STATISTICS SERVICE. ASSOCIATE ADMINISTRATOR. ADMINISTRATOR, NATIONAL ***AGRICULTURAL*** STATISTICS SERVICE. DIRECTOR, NATIONAL OPERATIONS CENTER. DIRECTOR, EASTERN FIELD OPERATIONS. DIRECTOR, STATISTICS DIVISION. DIRECTOR, CENSUS AND SURVEY DIVISION. DIRECTOR, INFORMATION TECHNOLOGY DIVISION. DIRECTOR, METHODOLOGY DIVISION.OFFICE OF THE ASSISTANT DEPARTMENTAL DIRECTOR, OFFICE OF SECRETARY FOR ADMINISTRATION. SAFETY, SECURITY ADMINISTRATION. AND PROTECTION.OFFICE OF THE SECRETARY..... NATIONAL FINANCE DIRECTOR, FINANCIAL CENTER. SERVICES DIVISION. DIRECTOR, INFORMATION TECHNOLOGY MANAGEMENT DIVISION. DEPUTY DIRECTOR, NATIONAL FINANCE CENTER. NATIONAL INSTITUTE DEPUTY DIRECTOR, OF FOOD AND INSTITUTE OF FOOD ***AGRICULTURE***. SAFETY AND NUTRITION. DEPUTY DIRECTOR, OFFICE OF INFORMATION TECHNOLOGY. DEPUTY DIRECTOR, OFFICE OF GRANTS AND FINANCIAL MANAGEMENT. ASSISTANT DIRECTOR, INSTITUTE OF BIOENERGY, CLIMATE, AND ENVIRONMENT. OFFICE OF DEPUTY DIRECTOR, COMMUNICATIONS. CREATIVE DEVELOPMENT. OFFICE OF THE CHIEF DEPUTY CHIEF ECONOMIST. ECONOMIST. DIRECTOR, GLOBAL CHANGE PROGRAM OFFICE. DIRECTOR, OFFICE OF ENERGY POLICY AND NEW USES. CHAIRPERSON. DIRECTOR, OFFICE OF RISK ASSESSMENT AND COST-BENEFIT ANALYSIS. OFFICE OF THE CHIEF DEPUTY CHIEF FINANCIAL OFFICER. FINANCIAL OFFICER. ASSOCIATE CHIEF FINANCIAL OFFICER, FINANCIAL SYSTEMS PLANNING AND MANAGEMENT. ASSOCIATE CHIEF FINANCIAL OFFICER FOR FINANCIAL POLICY AND PLANNING. OFFICE OF THE CHIEF DEPUTY CHIEF INFORMATION OFFICER. INFORMATION OFFICER FOR OPERATIONS AND INFRASTRUCTURE. ASSOCIATE CHIEF INFORMATION OFFICER, INTERNATIONAL TECHNOLOGY SERVICES. OFFICE OF THE ASSOCIATE GENERAL GENERAL COUNSEL. COUNSEL, GENERAL LAW AND RESEARCH DIVISION. ASSISTANT GENERAL COUNSEL, NATURAL RESOURCES AND ENVIRONMENT DIVISION. DIRECTOR, OFFICE OF INFORMATION AFFAIRS. OFFICE OF THE UNDER DEPUTY ASSISTANT SECRETARY FOR FARM CHIEF INFORMATION PRODUCTION AND OFFICER. CONSERVATION. DIRECTOR, OFFICE OF GRANTS AND AGREEMENTS. OFFICE OF THE UNDER DEPUTY UNDER SECRETARY FOR FOOD SECRETARY FOR FOOD SAFETY. SAFETY.[[Page 21493]] OFFICE OF THE UNDER DIRECTOR OFFICE OF SECRETARY FOR THE USDA CHIEF RESEARCH, SCIENTIST. EDUCATION, AND ECONOMICS.OFFICE OF THE UNDER FOOD SAFETY AND EXECUTIVE ASSOCIATE SECRETARY FOR FOOD SAFETY. INSPECTION SERVICE. FOR REGULATORY OPERATIONS, OFFICE OF FIELD OPERATIONS. DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF INVESTIGATION, ENFORCEMENT AND AUDITING. ASSISTANT ADMINISTRATOR, OFFICE OF POLICY AND PROGRAM DEVELOPMENT. CHIEF OPERATING OFFICER. DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF POLICY AND PROGRAM DEVELOPMENT. ASSISTANT ADMINISTRATOR, OOEET. ASSISTANT ADMINISTRATOR, OFFICE OF INVESTIGATION, ENFORCEMENT AND AUDITING. UNITED STATES MANAGER FOR CODEX. DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF MANAGEMENT. EXECUTIVE ASSOCIATE FOR REGULATORY OPERATIONS, OFFICE OF FIELD OPERATIONS. EXECUTIVE ASSOCIATE FOR EMPLOYEE EXPERIENCE. DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF FIELD OPERATIONS. DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF PUBLIC HEALTH SCIENCE. ASSISTANT CHIEF INFORMATION OFFICER. INTERNATIONAL AFFAIRS LIAISON OFFICER. DEPUTY ADMINISTRATOR. ASSISTANT ADMINISTRATOR, OFFICE OF FIELD OPERATIONS. CHIEF FINANCIAL OFFICER. ASSISTANT ADMINISTRATOR, OFFICE OF MANAGEMENT. ASSISTANT ADMINISTRATOR, OFFICE OF PUBLIC AFFAIRS AND CONSUMER EDUCATION. ASSISTANT ADMINISTRATOR, OFFICE OF DATA INTEGRATION AND FOOD PROTECTION. DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF DATA INTEGRATION AND FOOD PROGRAM. EXECUTIVE ASSOCIATE FOR REGULATORY OPERATIONS, OFFICE OF FIELD OPERATIONS (2). EXECUTIVE ASSOCIATE FOR LABORATORY SERVICES, OFFICE OF PUBLIC HEALTH SCIENCE.OFFICE OF THE UNDER FOOD AND NUTRITION PROGRAM MANAGER SECRETARY FOR FOOD, SERVICE. (ASSOCIATE NUTRITION AND CONSUMER ADMINISTRATOR FOR SERVICES. REGIONAL OPERATIONS AND SUPPORT). CHIEF OPERATING OFFICER. PROGRAM MANAGER (DEPUTY ADMINISTRATOR FOR MANAGEMENT). FINANCIAL MANAGER.OFFICE OF THE UNDER ***AGRICULTURAL*** DEPUTY SECRETARY FOR MARKETING AND MARKETING SERVICE. ADMINISTRATOR, REGULATORY PROGRAMS. INFORMATION TECHNOLOGY SERVICES. ASSOCIATE ADMINISTRATOR. DEPUTY ADMINISTRATOR, SPECIALTY CROPS. DEPUTY ADMINISTRATOR, DAIRY PROGRAMS. DEPUTY ADMINISTRATOR, LIVESTOCK AND SEED PROGRAMS. DEPUTY ADMINISTRATOR, FAIR TRADE PRACTICES PROGRAM.[[Page 21494]] DEPUTY ADMINISTRATOR, COMPLIANCE AND ANALYSIS. DEPUTY ADMINISTRATOR FOR NATIONAL ORGANIC PROGRAMS. DEPUTY ADMINISTRATOR, COTTON AND TOBACCO PROGRAMS. DEPUTY ADMINISTRATOR, TRANSPORTATION AND MARKETING PROGRAMS. DEPUTY ADMINISTRATOR, SCIENCE AND TECHNOLOGY PROGRAMS. ANIMAL AND PLANT EXECUTIVE DIRECTOR, HEALTH INSPECTION DIAGNOSTICS AND SERVICE. BIOLOGICS. ASSOCIATE DEPUTY ADMINISTRATOR, SPRS. ASSOCIATE DEPUTY ADMINISTRATOR, VS. ASSOCIATE DEPUTY ADMINISTRATOR, NATIONAL IMPORT- EXPORT SERVICES. CHIEF ADVISOR (GOVERNMENT, ACADEMIA AND INDUSTRY PARTNERSHIP). CHIEF FINANCIAL OFFICER. ASSOCIATE DEPUTY ADMINISTRATOR FOR ANIMAL CARE. DIRECTOR, NATIONAL IMPORT EXPORT SERVICE. ASSISTANT CHIEF INFORMATION OFFICER. DIRECTOR, INVESTIGATIVE AND ENFORCEMENT SERVICES. DIRECTOR, NATIONAL WILDLIFE RESEARCH CENTER. HUMAN RESOURCES OFFICER. DEPUTY ADMINISTRATOR, BIOTECHNOLOGY REGULATORY PROGRAMS. DEPUTY ADMINISTRATOR FOR INTERNATIONAL SERVICES. DEPUTY ADMINISTRATOR, LEGISLATIVE AND PUBLIC AFFAIRS. ASSOCIATE DEPUTY ADMINISTRATOR, EMERGING AND INTERNATIONAL PROGRAMS. DIRECTOR, EASTERN REGION, WILDLIFE SERVICES. EXECUTIVE DIRECTOR, WESTERN REGION, WILDLIFE SERVICES. ASSOCIATE DEPUTY ADMINISTRATOR, VETERINARY SERVICES. DEPUTY ADMINISTRATOR FOR MARKETING AND REGULATORY PROGRAMS--BUSINESS SERVICES. ASSOCIATE DEPUTY ADMINISTRATOR FOR MARKETING AND REGULATORY PROGRAMS--BUSINESS SERVICES. DEPUTY ADMINISTRATOR, WILDLIFE SERVICES. DEPUTY ADMINISTRATOR, ANIMAL CARE. ASSOCIATE DEPUTY ADMINISTRATOR, WILDLIFE SERVICES. ASSISTANT DEPUTY ADMINISTRATOR, PLANT PROTECTION AND QUARANTINE. EXECUTIVE DIRECTOR, CENTER FOR PLANT HEALTH SCIENCE AND TECHNOLOGY. GRAIN INSPECTION, DIRECTOR FIELD PACKERS AND MANAGEMENT STOCKYARDS DIVISION. ADMINISTRATION.OFFICE OF THE UNDER ***AGRICULTURAL*** CHIEF FINANCIAL SECRETARY FOR RESEARCH, RESEARCH SERVICE. OFFICER. EDUCATION, AND ECONOMICS. ASSOCIATE DEPUTY ADMINISTRATOR FOR ADMINISTRATIVE AND FINANCIAL MANAGEMENT. PEST MANAGEMENT OFFICER. DEPUTY ADMINISTRATOR FOR ADMINISTRATIVE AND FINANCIAL MANAGEMENT.[[Page 21495]] ASSISTANT ADMINISTRATOR FOR TECHNOLOGY TRANSFER. ASSISTANT CHIEF INFORMATION OFFICER. ASSOCIATE ADMINISTRATOR, RESEARCH OPERATIONS AND MANAGEMENT.OFFICE OF THE UNDER RURAL BUSINESS DEPUTY SECRETARY FOR RURAL SERVICE. ADMINISTRATOR, DEVELOPMENT. ENERGY PROGRAMS. DEPUTY ADMINISTRATOR, BUSINESS PROGRAMS. RURAL HOUSING DIRECTOR, BUDGET SERVICE. DIVISION. DEPUTY ADMINISTRATOR, MULTI-FAMILY HOUSING. DEPUTY ADMINISTRATOR, CENTRALIZED SERVICING CENTER. DEPUTY ADMINISTRATOR FOR OPERATIONS AND MANAGEMENT. CHIEF FINANCIAL OFFICER. DIRECTOR, RURAL HOUSING SERVICE. DIRECTOR, HUMAN RESOURCES.OFFICE OF THE UNDER FARM SERVICE AGENCY. DIRECTOR, OFFICE OF SECRETARY FOR TRADE AND BUDGET AND FINANCE. FOREIGN ***AGRICULTURAL*** DEPUTY ADMINISTRATOR AFFAIRS. FOR FARM LOAN PROGRAMS. DIRECTOR, HUMAN RESOURCES DIVISION. DEPUTY DIRECTOR, OFFICE OF BUDGET AND FINANCE (2). ASSISTANT DEPUTY ADMINISTRATOR FARM PROGRAMS. DIRECTOR, BUSINESS AND PROGRAM INTEGRATION. FOREIGN ***AGRICULTURAL*** DEPUTY SERVICE. ADMINISTRATOR, OFFICE OF GLOBAL ANALYSIS. ASSOCIATE ADMINISTRATOR (CHIEF OPERATING OFFICER). RISK MANAGEMENT DEPUTY ADMINISTRATOR AGENCY. FOR INSURANCE SERVICES DIVISION. DEPUTY ADMINISTRATOR FOR PRODUCT MANAGEMENT.OFFICE OF UNDER SECRETARY ***FOREST*** SERVICE...... DEPUTY CHIEF, FOR NATURAL RESOURCES AND BUSINESS ENVIRONMENT. OPERATIONS. DIRECTOR, FIRE AND AVIATION MANAGEMENT. CHIEF FINANCIAL OFFICER. DIRECTOR, LAW ENFORCEMENT AND INVESTIGATIONS. DIRECTOR, ACQUISITION MANAGEMENT. ASSOCIATE DEPUTY CHIEF FOR BUSINESS OPERATIONS. ASSOCIATE DEPUTY CHIEF, RESEARCH AND DEVELOPMENT. NATURAL RESOURCES CHIEF PROCUREMENT CONSERVATION AND PROPERTY SERVICE. OFFICER. DEPUTY CHIEF FOR STRATEGIC PLANNING AND ACCOUNTABILITY. ASSOCIATE CHIEF FOR OPERATIONS/CHIEF OPERATING OFFICER. DIRECTOR, SOIL SCIENCE DIVISION. DIRECTOR, RESOURCE ECONOMICS, ANALYSIS AND POLICY DIVISION. SPECIAL ASSISTANT TO CHIEF. HUMAN RESOURCES OFFICER. DEPUTY CHIEF FOR PROGRAMS. DIRECTOR, FINANCIAL ASSISTANCE PROGRAMS DIVISION. REGIONAL CONSERVATIONIST (NORTHEAST). DIRECTOR, EASEMENT PROGRAMS DIVISION. DIRECTOR, CONSERVATION ENGINEERING DIVISION. DIRECTOR ECOLOGICAL SCIENCES DIVISION. CHIEF FINANCIAL OFFICER.[[Page 21496]] DEPARTMENT OF ***AGRICULTURE*** DEPARTMENT OF COUNSEL TO THE OFFICE OF THE INSPECTOR ***AGRICULTURE*** OFFICE INSPECTOR GENERAL. GENERAL. OF THE INSPECTOR DEPUTY INSPECTOR GENERAL. GENERAL.OFFICE OF INSPECTOR GENERAL. ASSISTANT INSPECTOR DEPUTY ASSISTANT GENERAL FOR AUDIT. INSPECTOR GENERAL FOR AUDIT. ASSISTANT INSPECTOR GENERAL FOR OFFICE OF DATA SCIENCES. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT. ASSISTANT INSPECTOR GENERAL FOR AUDIT. ASSISTANT INSPECTOR ASSISTANT INSPECTOR GENERAL FOR GENERAL FOR INVESTIGATIONS. INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. ASSISTANT INSPECTOR ASSISTANT INSPECTOR GENERAL FOR GENERAL FOR MANAGEMENT. MANAGEMENT.AMERICAN BATTLE MONUMENTS COMMISSIONAMERICAN BATTLE MONUMENTS DIRECTOR, OVERSEAS CHIEF OPERATING COMMISSION. OPERATIONS. OFFICER. EXECUTIVE DIRECTOR.. DEPUTY SECRETARY.ARCHITECTURAL AND ARCHITECTURAL AND DIRECTOR OFFICE OF TRANSPORTATION BARRIERS TRANSPORTATION TECHNICAL AND COMPLIANCE BOARD. BARRIERS COMPLIANCE INFORMATION BOARD. SERVICES. EXECUTIVE DIRECTOR.UNITED STATES AGENCY FOR UNITED STATES AGENCY CHIEF INFORMATION GLOBAL MEDIA. FOR GLOBAL MEDIA. OFFICER/DIRECTOR OF INFORMATION TECHNOLOGY OPERATIONS. DEPUTY DIRECTOR FOR OPERATIONS. DIRECTOR OF MANAGEMENT SERVICES. CHIEF FINANCIAL OFFICER. EXECUTIVE DIRECTOR.DEPARTMENT OF COMMERCEALASKA REGION............... CLIMATE PREDICTION DIRECTOR, CLIMATE CENTER. PREDICTION CENTER. NATIONAL CENTERS FOR DIRECTOR, CENTRAL ENVIRONMENTAL OPERATIONS. PREDICTION CENTRAL OPERATIONS. STORM PREDICTION DIRECTOR, STORM CENTER. PREDICTION CENTER. TROPICAL PREDICTION DIRECTOR, NATIONAL CENTER. HURRICANE CENTER.ASSISTANT SECRETARY FOR DEPUTY ASSISTANT SENIOR DIRECTOR. ENFORCEMENT AND COMPLIANCE. SECRETARY FOR SENIOR DIRECTOR, AD/ ANTIDUMPING DUTY/ CVD ENFORCEMENT COUNTERVAILING DUTY OFFICE VII. OPERATIONS (AD/CVD). ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR AD/CVD OPERATIONS.ASSISTANT SECRETARY FOR DEPUTY ASSISTANT DIRECTOR, OFFICE OF INDUSTRY AND ANALYSIS. SECRETARY FOR STANDARDS AND TRADE, POLICY AND INVESTMENT POLICY. ANALYSIS.BUREAU OF ECONOMIC ANALYSIS. ASSOCIATE DIRECTOR ASSOCIATE DIRECTOR FOR INDUSTRY FOR INDUSTRY ACCOUNTS. ACCOUNTS. ASSOCIATE DIRECTOR CHIEF, BALANCE OF FOR INTERNATIONAL PAYMENTS DIVISION. ECONOMICS. CHIEF DIRECT INVESTMENT DIVISION. ASSOCIATE DIRECTOR FOR INTERNATIONAL ECONOMICS. ASSOCIATE DIRECTOR ASSOCIATE DIRECTOR FOR REGIONAL FOR REGIONAL ECONOMICS. ECONOMICS. BUREAU OF ECONOMIC CHIEF NATIONAL ANALYSIS. INCOME AND WEALTH DIVISION. ASSOCIATE DIRECTOR FOR NATIONAL ECONOMIC ACCOUNTS. OFFICE OF THE CHIEF ECONOMIST. DIRECTOR. CHIEF INFORMATION OFFICER. CHIEF INNOVATION OFFICER. CHIEF FINANCIAL OFFICER AND CHIEF OF ADMINISTRATIVE SERVICES. DEPUTY DIRECTOR, BUREAU OF ECONOMIC ANALYSIS. DIRECTOR, BUREAU OF ECONOMIC ANALYSIS. CHIEF ADMINISTRATIVE OFFICER.[[Page 21497]] BUREAU OF INDUSTRY AND OFFICE OF THE DEPUTY ASSISTANT SECURITY. ASSISTANT SECRETARY SECRETARY FOR FOR EXPORT EXPORT ENFORCEMENT. ENFORCEMENT. DEPUTY DIRECTOR, OFFICE OF EXPORT ENFORCEMENT. DIRECTOR, OFFICE OF EXPORT ENFORCEMENT. DIRECTOR, OFFICE OF ENFORCEMENT ANALYSIS.BUREAU OF THE CENSUS........ ASSOCIATE DIRECTOR CHIEF FINANCIAL FOR ADMINISTRATION OFFICER. AND CHIEF FINANCIAL CHIEF, FINANCE OFFICER. DIVISION. CHIEF, HUMAN RESOURCES DIVISION. DEPUTY CHIEF FINANCIAL OFFICER. CHIEF, BUDGET DIVISION. CHIEF, ACQUISITION DIVISION. CHIEF ADMINISTRATIVE OFFICER. ASSOCIATE DIRECTOR CHIEF, ECONOMIC FOR ECONOMIC REIMBURSABLE PROGRAMS. SURVEYS DIVISION. CHIEF, ECONOMIC INDICATORS DIVISION. CHIEF, ECONOMIC MANAGEMENT DIVISION. ASSOCIATE DIRECTOR FOR ECONOMIC PROGRAMS. CHIEF, ECONOMY-WIDE STATISTICS DIVISION. CHIEF, ECONOMIC STATISTICAL METHODS AND RESEARCH DIVISION. ASSISTANT DIRECTOR FOR ECONOMIC PROGRAMS. CHIEF, ECONOMIC APPLICATIONS DIVISION. ASSOCIATE DIRECTOR ASSISTANT DIRECTOR FOR FIELD FOR FIELD OPERATIONS. OPERATIONS. CHIEF, OFFICE OF SURVEY AND CENSUS ANALYTICS. ASSOCIATE DIRECTOR FOR FIELD OPERATIONS. CHIEF, FIELD DIVISION. CHIEF NATIONAL PROCESSING CENTER. ASSOCIATE DIRECTOR CHIEF TECHNOLOGY FOR INFORMATION OFFICER. TECHNOLOGY AND CHIEF, COMPUTER CHIEF INFORMATION SERVICES DIVISION. OFFICER. CHIEF INFORMATION OFFICER. CHIEF, APPLICATION DEVELOPMENT AND SERVICES DIVISION. DEPUTY CHIEF INFORMATION OFFICER. CHIEF INFORMATION SECURITY OFFICER. OFFICE OF THE SENIOR ADVISOR FOR DIRECTOR. PROJECT MANAGEMENT. ASSOCIATE DIRECTOR FOR PERFORMANCE IMPROVEMENT. CHIEF, OFFICE OF PROGRAM, PERFORMANCE, AND STAKEHOLDER INTEGRATION. DEPUTY CHIEF, OFFICE OF PROGRAM, PERFORMANCE, AND STAKEHOLDER INTEGRATION.DEPARTMENT OF COMMERCE...... BUREAU OF INDUSTRY CHIEF INFORMATION AND SECURITY. OFFICER. CHIEF FINANCIAL OFFICER AND DIRECTOR OF ADMINISTRATION. ECONOMICS AND CHIEF FINANCIAL STATISTICS OFFICER AND ADMINISTRATION. DIRECTOR FOR ADMINISTRATION. DIRECTOR FOR POLICY AND PLANNING. MINORITY BUSINESS ASSOCIATE DIRECTOR DEVELOPMENT AGENCY. FOR MANAGEMENT. NATIONAL OCEANIC AND SENIOR ADVISOR. ATMOSPHERIC ADMINISTRATION. NATIONAL TECHNICAL DEPUTY DIRECTOR, INFORMATION SERVICE. NATIONAL TECHNICAL INFORMATION SERVICE. OFFICE OF THE DEPUTY ASSISTANT INSPECTOR GENERAL. INSPECTOR GENERAL FOR ECONOMIC AND STATISTICAL PROGRAM ASSESSMENT. OFFICE OF THE DIRECTOR OFFICE OF SECRETARY. SMALL AND DISADVANTAGED BUSINESS UTILIZATION.[[Page 21498]] PATENT AND TRADEMARK DIRECTOR OF THE OFFICE. OFFICE OF PETITIONS. TRADEMARK GROUP DIRECTOR FOR INFORMATION TECHNOLOGY. CHIEF CORPORATE COMMUNICATIONS OFFICER.DIRECTOR GENERAL OF THE DEPUTY ASSISTANT EXECUTIVE DIRECTOR UNITED STATES AND FOREIGN SECRETARY FOR CHINA. FOR CHINA. COMMERCIAL SERVICE AND ASSISTANT SECRETARY FOR GLOBAL MARKETS.ECONOMIC DEVELOPMENT OFFICE OF THE DEPUTY CHIEF FINANCIAL ADMINISTRATION. ASSISTANT SECRETARY. OFFICER AND CHIEF ADMINISTRATIVE OFFICER.ECONOMICS AND STATISTICS ASSOCIATE DIRECTOR SENIOR ADVOCATE FOR ADMINISTRATION. FOR DECENNIAL RESPONSE SECURITY CENSUS. AND DATA INTEGRITY. ASSISTANT DIRECTOR FOR DECENNIAL CENSUS PROGRAMS (SYSTEMS AND CONTRACTS). CHIEF, DECENNIAL INFORMATION TECHNOLOGY DIVISION. CHIEF, DECENNIAL STATISTICAL STUDIES DIVISION. CHIEF, DECENNIAL CONTRACTS EXECUTION OFFICE. CHIEF, AMERICAN COMMUNITY SURVEY OFFICE. CHIEF DECENNIAL MANAGEMENT DIVISION. CHIEF, GEOGRAPHY DIVISION. ASSOCIATE DIRECTOR FOR DECENNIAL CENSUS. CHIEF, DECENNIAL COMMUNICATIONS AND STAKEHOLDER RELATIONSHIPS. ASSISTANT DIRECTOR FOR DECENNIAL CENSUS PROGRAMS (OPERATIONS AND SCHEDULE MANAGEMENT). ASSOCIATE DIRECTOR CHIEF, POPULATION FOR DEMOGRAPHIC DIVISION. PROGRAMS. ASSISTANT DIRECTOR FOR DEMOGRAPHIC PROGRAMS. CHIEF, DEMOGRAPHIC STATISTICAL METHODS DIVISION. CHIEF, SOCIAL, ECONOMIC, AND HOUSING STATISTICS DIVISION. CHIEF DEMOGRAPHIC SURVEYS DIVISION. ASSOCIATE DIRECTOR FOR DEMOGRAPHIC PROGRAMS. ASSOCIATE DIRECTOR CHIEF, CENTER FOR FOR RESEARCH AND ECONOMIC STUDIES METHODOLOGY. AND CHIEF ECONOMIST. ASSOCIATE DIRECTOR FOR RESEARCH AND METHODOLOGY. ASSISTANT DIRECTOR FOR RESEARCH AND METHODOLOGY. CHIEF, CENTER FOR SURVEY MEASUREMENT. CHIEF, CENTER FOR ENTERPRISE DISSEMINATION. CHIEF, CENTER FOR ADAPTIVE DESIGN. CHIEF STATISTICAL RESEARCH DIVISION.ENVIRONMENTAL RESEARCH ATLANTIC OCEAN AND DIRECTOR, ATLANTIC LABORATORIES. METEOROLOGY OCEANOGRAPHIC AND LABORATORY. METEOROLOGICAL GEOPHYSICAL FLUID DIRECTOR, OFFICE OF DYNAMICS LABORATORY. GEOPHYSICAL FLUID DYNAMICS LABORATORY. GREAT LAKE DIRECTOR, OFFICE OF ENVIRONMENTAL GREAT LAKES RESEARCH LABORATORY. ENVIRONMENTAL RESEARCH LABORATORY. PACIFIC MARINE DIRECTOR, OFFICE OF ENVIRONMENTAL PACIFIC MARINE RESEARCH LABORATORY. ENVIRONMENTAL LABORATORY.NATIONAL INSTITUTE OF BOULDER SITE BOULDER LABORATORIES STANDARDS AND TECHNOLOGY. MANAGEMENT OFFICE. SITE MANAGER. CENTER FOR NANOSCALE DIRECTOR, CENTER FOR SCIENCE AND NANOSCALE SCIENCE TECHNOLOGY. AND TECHNOLOGY. DEPUTY DIRECTOR, CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY.[[Page 21499]] ENGINEERING DIRECTOR, LABORATORY. ENGINEERING LABORATORY. DIRECTOR, SMART GRID AND CYBER-PHYSICAL SYSTEMS PROGRAM OFFICE. DEPUTY DIRECTOR ENGINEERING LABORATORY. HOLLINGS DIRECTOR, MANUFACTURING MANUFACTURING EXTENSION EXTENSION PARTNERSHIP PROGRAM. PARTNERSHIP PROGRAMS. DEPUTY DIRECTOR, MANUFACTURING EXTENSION PARTNERSHIP PROGRAM. INFORMATION DEPUTY DIRECTOR, TECHNOLOGY INFORMATION LABORATORY. TECHNOLOGY LABORATORY. DIRECTOR, INFORMATION TECHNOLOGY LABORATORY. MATERIAL MEASUREMENT DIRECTOR, MATERIAL LABORATORY. MEASUREMENT LABORATORY. NATIONAL INSTITUTE DEPUTY DIRECTOR, OF STANDARDS AND NATIONAL INSTITUTE TECHNOLOGY CENTER OF STANDARDS AND FOR NEUTRON TECHNOLOGY CENTER RESEARCH. FOR NEUTRON RESEARCH. DIRECTOR, NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY CENTER FOR NEUTRON RESEARCH. OFFICE OF DIRECTOR, OFFICE OF ACQUISITION AND ACQUISITION AND AGREEMENTS AGREEMENTS MANAGEMENT. MANAGEMENT. OFFICE OF FACILITIES CHIEF FACILITIES AND PROPERTY MANAGEMENT OFFICER. MANAGEMENT. OFFICE OF FINANCIAL CHIEF FINANCIAL RESOURCE MANAGEMENT. OFFICER FOR NIST AND NTIS. CHIEF FINANCIAL OFFICER FOR NIST. OFFICE OF INFORMATION SYSTEMS MANAGEMENT. CHIEF INFORMATION OFFICER FOR NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY.. OFFICE OF SAFETY, CHIEF SAFETY HEALTH AND OFFICER. ENVIRONMENT. OFFICE OF THE UNDER CHIEF OF STAFF FOR SECRETARY OF NATIONAL INSTITUTE COMMERCE FOR FOR STANDARDS AND STANDARDS AND TECHNOLOGY. TECHNOLOGY. CHIEF SCIENTIST. ASSOCIATE DIRECTOR FOR INNOVATION AND INDUSTRY SERVICES. ASSOCIATE DIRECTOR FOR MANAGEMENT RESOURCES. ASSOCIATE DIRECTOR FOR LABORATORY PROGRAMS. DIRECTOR, COMMUNICATIONS TECHNOLOGY LABORATORY. DIRECTOR, ADVANCED MANUFACTURING PROGRAM OFFICE. SENIOR SCIENCE ADVISOR. PHYSICAL MEASUREMENT DIRECTOR, PHYSICAL LABORATORY. MEASUREMENT LABORATORY. DEPUTY DIRECTOR FOR MEASUREMENT SCIENCE. DEPUTY DIRECTOR, PHYSICAL MEASUREMENT LABORATORY. SPECIAL PROGRAMS DEPUTY DIRECTOR, OFFICE. SPECIAL PROGRAMS OFFICE. DIRECTOR, SPECIAL PROGRAMS OFFICE. STANDARDS DIRECTOR, STANDARDS COORDINATION OFFICE. COORDINATION OFFICE.NATIONAL MARINE FISHERIES OFFICE OF SCIENCE DIRECTOR OFFICE OF SERVICE. AND TECHNOLOGY. SCIENCE AND TECHNOLOGY.[[Page 21500]] REGIONAL OFFICES.... SCIENCE AND RESEARCH DIRECTOR NORTHEAST REGION. SCIENCE AND RESEARCH DIRECTOR, SOUTHEAST REGION. SCIENCE AND RESEARCH DIRECTOR, ALASKA REGION. SCIENCE AND RESEARCH DIRECTOR, NORTHWEST REGION. SCIENCE AND RESEARCH DIRECTOR, PACIFIC ISLAND REGION. SCIENCE AND RESEARCH DIRECTOR SOUTHWEST REGION.NATIONAL OCEAN SERVICE...... CENTER FOR DIRECTOR, CENTER FOR OPERATIONAL OPERATIONAL OCEANOGRAPHIC OCEANOGRAPHIC PRODUCTS AND PRODUCTS AND SERVICES. SERVICES. NATIONAL OCEANIC AND DIRECTOR, NATIONAL ATMOSPHERIC CENTERS FOR COASTAL ADMINISTRATION OCEAN SCIENCE. COASTAL SERVICES CENTER. OFFICE OF NATIONAL DIRECTOR, OFFICE OF GEODETIC SURVEY. NATIONAL GEODETIC SURVEY. OFFICE OF RESPONSE DIRECTOR, OFFICE OF AND RESTORATION. RESPONSE AND RESTORATION.NATIONAL OCEANIC AND NATIONAL CENTERS FOR DIRECTOR, NATIONAL ATMOSPHERIC ADMINISTRATION. ENVIRONMENTAL CENTERS FOR PREDICTION. ENVIRONMENTAL PREDICTION. DIRECTOR, WEATHER PREDICTION CENTER. DIRECTOR, OCEAN PREDICTION CENTER. DIRECTOR, ENVIRONMENTAL MODELING CENTER. DIRECTOR, AVIATION WEATHER CENTER. DIRECTOR, SPACE WEATHER PREDICTION CENTER. OFFICE OF ASSISTANT SYSTEM PROGRAM ADMINISTRATOR DIRECTOR FOR GOES-R SATELLITE, DATA PROGRAM. INFORMATION SERVICE. DEPUTY ASSISTANT ADMINISTRATOR FOR SYSTEMS. DIRECTOR, JOINT POLAR SATELLITE SYSTEMS. DIRECTOR, NATIONAL CENTER FOR ENVIRONMENTAL INFORMATION. DEPUTY DIRECTOR, NATIONAL CENTER FOR ENVIRONMENTAL INFORMATION. CHIEF FINANCIAL OFFICER/CHIEF ADMINISTRATIVE OFFICER. ASSISTANT CHIEF INFORMATION OFFICER FOR NESDIS. DIRECTOR, OFFICE OF SYSTEMS ARCHITECTURE AND ADVANCED PLANNING. DIRECTOR SATELLITE GROUND SERVICES. DIRECTOR, OFFICE OF PROJECTS, PARTNERSHIPS AND ANALYSIS. OFFICE OF ASSISTANT CHIEF FINANCIAL ADMINISTRATOR, OFFICER/CHIEF OCEAN AND ADMINISTRATIVE ATMOSPHERIC OFFICER. RESEARCH. DEPUTY ASSISTANT ADMINISTRATOR FOR SCIENCE. DIRECTOR, OFFICE OF WEATHER PROGRAMS. OFFICE OF EDUCATION DIRECTOR, OFFICE OF AND SUSTAINABLE EDUCATION. DEVELOPMENT. OFFICE OF HABITAT DIRECTOR, OFFICE OF CONSERVATION. HABITAT CONSERVATION. OFFICE OF HIGH- DEPUTY CHIEF PERFORMANCE INFORMATION COMPUTING AND OFFICER. COMMUNICATIONS. CHIEF INFORMATION OFFICER AND DIRECTOR FOR HIGH PERFORMANCE COMPUTING AND COMMUNICATIONS. CHIEF DATA OFFICER (2). OFFICE OF MARINE AND DEPUTY ASSISTANT AVIATION OPERATIONS. ADMINISTRATOR FOR PROGRAMS AND ADMINISTRATION. OFFICE OF OCEANIC DIRECTOR, OFFICE OF EXPLORATION AND OCEAN EXPLORATION RESEARCH. AND RESEARCH.[[Page 21501]] OFFICE OF RESEARCH DIRECTOR, CENTER FOR AND APPLICATIONS. SATELLITE APPLICATIONS AND RESEARCH. OFFICE OF SATELLITE DEPUTY DIRECTOR, AND PRODUCT OFFICE OF SATELLITE OPERATIONS. AND PRODUCT OPERATIONS. OFFICE OF THE CHIEF FINANCIAL ASSISTANT OFFICER/CHIEF ADMINISTRATOR FOR ADMINISTRATOR WEATHER SERVICES. OFFICER. DIRECTOR, OFFICE OF ORGANIZATIONAL EXCELLENCE. CHIEF ENGINEER. CHIEF OPERATING OFFICER. DIRECTOR, OFFICE OF OBSERVATIONS. DIRECTOR, OFFICE OF SCIENCE AND TECHNOLOGY INTEGRATION. DIRECTOR, OFFICE OF FACILITIES. DIRECTOR, ANALYZE, FORECAST AND SUPPORT OFFICE. DIRECTOR, OFFICE OF CENTRAL PROCESSING. OFFICE OF ORGANIZATIONAL EXCELLENCE. DIRECTOR, OFFICE OF PLANNING AND PROGRAMMING FOR SERVICE DELIVERY. DIRECTOR, OFFICE OF DISSEMINATION. DIRECTOR, OFFICE OF WATER PREDICTION. DEPUTY DIRECTOR, OFFICE OF WATER PREDICTION. OFFICE OF UNDER DIRECTOR, FINANCE SECRETARY. OFFICE/COMPTROLLER. DIRECTOR, BUDGET OFFICE. DEPUTY DIRECTOR, ACQUISITION AND GRANTS OFFICE. CHIEF ADMINISTRATIVE OFFICER. DEPUTY DIRECTOR FOR WORKFORCE MANAGEMENT. DIRECTOR, ACQUISITION AND GRANTS OFFICE. DIRECTOR, PROGRAM EVALUATION, PLANNING AND RISK MANAGEMENT OFFICE. CHIEF FINANCIAL OFFICER. DIRECTOR FOR WORKFORCE MANAGEMENT.NATIONAL TELECOMMUNICATIONS FIRST RESPONDER CHIEF PROCUREMENT AND INFORMATION NETWORK AUTHORITY. OFFICER. ADMINISTRATION. CHIEF INFORMATION OFFICER, FIRST RESPONDER NETWORK AUTHORITY. CHIEF TECHNOLOGY OFFICER, FIRST RESPONDER NETWORK AUTHORITY. CHIEF FINANCIAL OFFICER, FIRST RESPONDER NETWORK AUTHORITY. CHIEF ADMINISTRATIVE OFFICER, FIRST RESPONDER NETWORK AUTHORITY. INSTITUTE FOR ASSOCIATE TELECOMMUNICATION ADMINISTRATOR FOR SCIENCES. TELECOMMUNICATION SCIENCES AND DIRECTOR, INSTITUTE FOR TELECOMMUNICATION SCIENCES. OFFICE OF ASSOCIATE INTERNATIONAL ADMINISTRATOR, AFFAIRS. OFFICE OF INTERNATIONAL AFFAIRS. OFFICE OF THE CHIEF INFORMATION ASSISTANT SECRETARY OFFICER AND DEPUTY FOR COMMUNICATIONS DIRECTOR FOR POLICY AND INFORMATION. COORDINATION AND MANAGEMENT. CHIEF DIGITAL OFFICER. CHIEF FINANCIAL OFFICER AND DIRECTOR OF ADMINISTRATION.OFFICE--FEDERAL COORDINATOR-- ALASKA REGION....... DIRECTOR, ALASKA METEOROLOGY. REGION. CENTRAL REGION...... DIRECTOR, CENTRAL REGION. EASTERN REGION...... DIRECTOR, EASTERN REGION. SOUTHERN REGION..... DIRECTOR, SOUTHERN REGION. WESTERN REGION...... DIRECTOR, WESTERN REGION.[[Page 21502]] OFFICE OF ASSISTANT NATIONAL MARINE CHIEF FINANCIAL ADMINISTRATOR FOR FISHERIES. FISHERIES SERVICE. OFFICER/CHIEF ADMINISTRATIVE OFFICER. DEPUTY ASSISTANT ADMINISTRATOR FOR OPERATIONS. DIRECTOR, OFFICE OF ENFORCEMENT. DIRECTOR OFFICE OF SUSTAINABLE FISHERIES. DIRECTOR, SCIENTIFIC PROGRAMS AND CHIEF SCIENCE ADVISOR.OFFICE OF ASSISTANT NATIONAL OCEAN DEPUTY ASSISTANT ADMINISTRATOR OCEAN SERVICE. ADMINISTRATOR FOR SERVICES AND COASTAL ZONE OCEAN SERVICE AND MANAGEMENT. COASTAL ZONE MANAGEMENT. DIRECTOR, INTEGRATED OCEAN OBSERVING SYSTEM.. DIRECTOR, OFFICE OF COASTAL MANAGEMENT.. CHIEF FINANCIAL OFFICER/CHIEF ADMINISTRATIVE OFFICER..OFFICE OF ASSISTANT EARTH SYSTEM DIRECTOR, PHYSICAL ADMINISTRATOR, OCEAN AND RESEARCH LABORATORY. SCIENCE DIVISION. ATMOSPHERIC RESEARCH. DIRECTOR, GLOBAL SYSTEMS DIVISION. DIRECTOR, GLOBAL MONITORING DIVISION. DIRECTOR, CHEMICAL SCIENCE DIVISION. OFFICE OF NATIONAL DIRECTOR NATIONAL SEVERE STORMS SEVERE STORMS LABORATORY. LABORATORY.OFFICE OF OCEANIC AND CLIMATE PROGRAM DIRECTOR, CLIMATE ATMOSPHERIC RESEARCH. OFFICE. PROGRAM OFFICE.OFFICE OF OCEANIC NATIONAL SEA GRANT DIRECTOR, NATIONAL EXPLORATION AND RESEARCH. COLLEGE PROGRAM. SEA GRANT COLLEGE PROGRAM.OFFICE OF OPERATIONAL NATIONAL DATA BUOY DIRECTOR, NATIONAL SYSTEMS. CENTER. DATA BUOY CENTER. RADAR OPERATIONS DIRECTOR, RADAR CENTER. OPERATIONS CENTER.OFFICE OF SCIENCE AND METEOROLOGICAL DIRECTOR, TECHNOLOGY. DEVELOPMENT METEOROLOGICAL LABORATORY. DEVELOPMENT LABORATORY.OFFICE OF THE ASSISTANT OFFICE OF THE CHIEF ASSISTANT CHIEF ADMINISTRATOR FOR WEATHER INFORMATION OFFICER. INFORMATION OFFICER SERVICES. FOR WEATHER SERVICE.OFFICE OF THE CHIEF OFFICE OF THE DEPUTY DEPUTY ASSISTANT FINANCIAL OFFICER AND ASSISTANT SECRETARY SECRETARY FOR ASSISTANT SECRETARY FOR FOR RESOURCE RESOURCE ADMINISTRATION. MANAGEMENT. MANAGEMENT. OFFICE OF THE DEPUTY DIRECTOR, FINANCIAL CHIEF FINANCIAL REPORTING AND OFFICER FOR INTERNAL CONTROLS. FINANCIAL DEPUTY DIRECTOR, MANAGEMENT. OFFICE OF FINANCIAL MANAGEMENT SYSTEMS. DIRECTOR, OS FINANCIAL MANAGEMENT. DIRECTOR FOR FINANCIAL MANAGEMENT AND DEPUTY CHIEF FINANCIAL OFFICER.OFFICE OF THE COMMISSIONER GROUP DIRECTORS..... GROUP DIRECTOR (3). FOR PATENTS. GROUP DIRECTOR-- 2900. GROUP DIRECTOR--2100 (3). GROUP DIRECTOR--1600 (3) GROUP DIRECTOR--3600 (5). GROUP DIRECTOR--2600 (4). GROUP DIRECTOR--1700 (2). GROUP DIRECTOR--3700 (4). GROUP DIRECTOR--2400 (3). GROUP DIRECTOR--2800 (4).OFFICE OF THE DEPUTY OFFICE OF DEPUTY FOR ASSISTANT SECRETARY FOR ACQUISITION ACQUISITION PROGRAM ADMINISTRATION. MANAGEMENT. MANAGEMENT. DIRECTOR, OFFICE OF ACQUISITION MANAGEMENT. DEPUTY FOR PROCUREMENT MANAGEMENT, POLICY AND PERFORMANCE EXCELLENCE. OFFICE OF FACILITIES DIRECTOR FOR AND ENVIRONMENTAL FACILITIES AND QUALITY. ENVIRONMENTAL QUALITY. DEPUTY DIRECTOR FOR FACILITIES AND ENVIRONMENTAL QUALITY. DIRECTOR OF FACILITIES AND ENVIRONMENTAL QUALITY.[[Page 21503]] OFFICE OF HUMAN DEPUTY DIRECTOR FOR RESOURCES HUMAN RESOURCES MANAGEMENT. MANAGEMENT AND DEPUTY CHIEF HUMAN CAPITAL OFFICER. DIRECTOR FOR HUMAN RESOURCES MANAGEMENT AND CHIEF HUMAN CAPITAL OFFICER. DIRECTOR, HUMAN CAPITAL CLIENT SERVICES. OFFICE OF SECURITY.. DIRECTOR, OFFICE OF SECURITY. DEPUTY DIRECTOR, OFFICE OF SECURITY.OFFICE OF THE DEPUTY OFFICE OF BUDGET.... DIRECTOR OF THE ASSISTANT SECRETARY FOR OFFICE OF BUDGET. RESOURCE MANAGEMENT.OFFICE OF THE DEPUTY OFFICE OF THE CHIEF DIRECTOR OF SECRETARY. INFORMATION OFFICER. CYBERSECURITY AND CHIEF INFORMATION SECURITY OFFICER. DEPUTY CHIEF INFORMATION OFFICER FOR SOLUTIONS AND SERVICE DELIVERY. DEPUTY CHIEF INFORMATION OFFICER FOR POLICY AND BUSINESS MANAGEMENT.OFFICE OF THE INSPECTOR OFFICE OF COUNSEL TO COUNSEL TO THE GENERAL. THE INSPECTOR INSPECTOR GENERAL. GENERAL. OFFICE OF ASSISTANT INSPECTOR INSPECTIONS AND GENERAL FOR PROGRAM EVALUATION. INSPECTIONS AND PROGRAM EVALUATION. OFFICE OF INSPECTOR ASSISTANT INSPECTOR GENERAL. GENERAL FOR ADMINISTRATION. ASSISTANT INSPECTOR GENERAL FOR SYSTEMS EVALUATION. OFFICE OF ASSISTANT INSPECTOR INVESTIGATIONS. GENERAL FOR INVESTIGATIONS.OFFICE OF THE SECRETARY..... OFFICE OF THE CHIEF DIRECTOR FOR FINANCIAL OFFICER ADMINISTRATIVE AND ASSISTANT PROGRAMS. SECRETARY FOR DEPUTY DIRECTOR, ADMINISTRATION. OFFICE OF BUDGET. OFFICE OF THE DEPUTY DIRECTOR, HUMAN SECRETARY. RESOURCES SERVICES, ENTERPRISE SERVICES. DEPUTY DIRECTOR FOR PLANNING, IMPLEMENTATION, AND STAKEHOLDER RELATIONS. DIRECTOR OF ACQUISITION SERVICES. CHIEF FINANCIAL OFFICER AND DIRECTOR OF ADMINISTRATION. DEPUTY DIRECTOR FOR ENTERPRISE SERVICES FOR OPERATIONS. OFFICE OF THE CHIEF, ETHICS GENERAL COUNSEL. DIVISION. DIRECTOR OF ADMINISTRATIVE OPERATIONS. CHIEF, CONTRACT LAW DIVISION.OFFICE OF THE UNDER OFFICE OF THE DEPUTY DEPUTY CHIEF SECRETARY. UNDER SECRETARY. FINANCIAL AND ADMINISTRATIVE OFFICER. DEPUTY CHIEF INFORMATION OFFICER. CHIEF FINANCIAL AND ADMINISTRATIVE OFFICER.OFFICE OF THE UNDER BALDRIDGE DIRECTOR, BALDRIGE SECRETARY OF COMMERCE FOR PERFORMANCE PERFORMANCE STANDARDS AND TECHNOLOGY. EXCELLENCE PROGRAM. EXCELLENCE PROGRAM.PATENT AND TRADEMARK OFFICE. OFFICE OF POLICY AND DEPUTY CHIEF POLICY INTERNATIONAL OFFICER. AFFAIRS. DEPUTY CHIEF POLICY OFFICER FOR OPERATIONS. DIRECTOR, GOVERNMENTAL AFFAIRS. OFFICE OF THE CHIEF DIRECTOR, OFFICE OF ADMINISTRATIVE ADMINISTRATIVE OFFICER. SERVICES. DEPUTY CHIEF ADMINISTRATIVE OFFICER (2). DIRECTOR, HUMAN CAPITAL MANAGEMENT.[[Page 21504]] OFFICE OF THE CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER. DIRECTOR, OFFICE OF PROCUREMENT. DIRECTOR, OFFICE OF PLANNING AND BUDGET. DIRECTOR, OFFICE OF FINANCE. DEPUTY CHIEF FINANCIAL OFFICER. OFFICE OF THE CHIEF CHIEF TECHNOLOGY INFORMATION OFFICER. OFFICER. DIRECTOR OF ORGANIZATIONAL POLICY AND GOVERNANCE. DIRECTOR, OFFICE OF INFRASTRUCTURE ENGINEERING AND OPERATIONS. DIRECTOR, OFFICE OF PROGRAM ADMINISTRATION ORGANIZATION. DIRECTOR, OFFICE OF INFORMATION MANAGEMENT SERVICES. DIRECTOR, APPLICATION ENGINEERING AND DEVELOPMENT. DEPUTY CHIEF INFORMATION OFFICER. OFFICE OF THE DIRECTOR, OFFICE OF COMMISSIONER FOR PATENT QUALITY PATENTS. ASSURANCE. DEPUTY COMMISSIONER FOR PATENT OPERATIONS. ASSOCIATE COMMISSIONER INTERNATIONAL PATENT COOPERATION. ASSOCIATE COMMISSIONER FOR PATENT QUALITY. ASSOCIATE COMMISSIONER FOR INNOVATION AND DEVELOPMENT. PATENT EXAMINING GROUP DIRECTOR. DIRECTOR, OFFICE OF PATENT LEGAL ADMINISTRATION. DIRECTOR, OFFICE OF CENTRAL REEXAMINATION UNIT. ASSOCIATE COMMISSIONER FOR PATENT INFORMATION MANAGEMENT. DEPUTY COMMISSIONER FOR PATENT ADMINISTRATION. ASSISTANT DEPUTY COMMISSIONER FOR PATENTS OPERATIONS (5). DEPUTY COMMISSIONER FOR INTERNATIONAL PATENT COOPERATION. SENIOR ADVISOR FOR PATENTS. DEPUTY DIRECTOR, PATENT TRAINING ACADEMY. CHIEF PATENT ACADEMIC OFFICER. DEPUTY COMMISSIONER FOR PATENT EXAMINATION POLICY. DEPUTY COMMISSIONER FOR PATENT QUALITY. OFFICE OF THE DEPUTY COMMISSIONER COMMISSIONER FOR FOR TRADEMARK TRADEMARKS. OPERATIONS. DEPUTY COMMISSIONER FOR TRADEMARK ADMINISTRATION. DEPUTY COMMISSIONER FOR TRADEMARK EXAMINATION POLICY. GROUP DIRECTOR, TRADEMARK LAW OFFICES (4). OFFICE OF THE DEPUTY GENERAL GENERAL COUNSEL. COUNSEL FOR ENROLLMENT AND DISCIPLINE. DEPUTY SOLICITOR AND ASSISTANT GENERAL COUNSEL FOR INTELLECTUAL PROPERTY LAW. DEPUTY GENERAL COUNSEL FOR INTELLECTUAL PROPERTY LAW AND SOLICITOR. DEPUTY GENERAL COUNSEL FOR GENERAL LAW.[[Page 21505]] OFFICE OF THE UNDER VICE CHIEF SECRETARY. ADMINISTRATIVE PATENT JUDGE (4). DEPUTY CHIEF ADMINISTRATIVE TRADEMARK JUDGE. REGIONAL DIRECTOR-- DENVER. DIRECTOR, OFFICE OF EQUAL EMPLOYMENT OPPORTUNITY AND DIVERSITY. CHIEF ADMINISTRATIVE PATENT JUDGE. REGIONAL DIRECTOR-- SAN JOSE. VICE CHIEF ADMINISTRATIVE PATENT JUDGE FOR STRATEGY. CHIEF ADMINISTRATIVE TRADEMARK JUDGE. PATENT TRIAL AND APPEAL BOARD EXECUTIVE. REGIONAL DIRECTOR-- DALLAS. REGIONAL DIRECTOR-- DETROIT. DEPUTY CHIEF ADMINISTRATIVE PATENT JUDGE.DEPARTMENT OF COMMERCE OFFICE OF INSPECTOR DEPUTY INSPECTOR OFFICE OF THE INSPECTOR GENERAL. GENERAL. GENERAL.OFFICE OF AUDIT AND OFFICE OF AUDIT..... ASSISTANT INSPECTOR EVALUATION. GENERAL FOR AUDIT. OFFICE OF ECONOMIC ASSISTANT INSPECTOR AND STATISTICAL GENERAL FOR PROGRAM ASSESSMENT. ECONOMIC AND STATISTICAL PROGRAM ASSESSMENT.OFFICE OF INSPECTOR GENERAL. IMMEDIATE OFFICE.... CHIEF OF STAFF. OFFICE OF AUDIT AND ASSISTANT INSPECTOR EVALUATION. GENERAL FOR AUDITS. PRINCIPAL ASSISTANT INSPECTOR GENERAL FOR AUDIT AND EVALUATION. ASSISTANT INSPECTOR GENERAL FOR AUDIT AND EVALUATION. ASSISTANT INSPECTOR GENERAL FOR ACQUISITION AND SPECIAL PROGRAM AUDITS. OFFICE OF COUNSEL... COUNSEL TO THE INSPECTOR GENERAL. OFFICE OF ASSISTANT INSPECTOR INVESTIGATIONS. GENERAL FOR INVESTIGATIONS.COMMITTEE FOR PURCHASE FROM COMMITTEE FOR EXECUTIVE DIRECTOR. PEOPLE WHO ARE BLIND OR PURCHASE FROM SEVERELY. PEOPLE WHO ARE BLIND OR SEVERELY DISABLED.CONSUMER PRODUCT SAFETY COMMISSION.CONSUMER PRODUCT SAFETY OFFICE OF EXECUTIVE DEPUTY EXECUTIVE COMMISSION. DIRECTOR. DIRECTOR FOR OPERATIONS SUPPORT. ASSISTANT EXECUTIVE DIRECTOR FOR COMPLIANCE AND FIELD OPERATIONS. ASSISTANT EXECUTIVE DIRECTOR FOR INFORMATION AND TECHNICAL SERVICES.OFFICE OF EXECUTIVE DIRECTOR OFFICE OF HAZARD DEPUTY ASSISTANT IDENTIFICATION AND EXECUTIVE DIRECTOR REDUCTION. FOR HAZARD IDENTIFICATION AND REDUCTION (2). ASSOCIATE EXECUTIVE DIRECTOR FOR EPIDEMIOLOGY. ASSOCIATE EXECUTIVE DIRECTOR FOR ECONOMIC ANALYSIS. ASSOCIATE EXECUTIVE DIRECTOR FOR ENGINEERING SCIENCES. ASSISTANT EXECUTIVE DIRECTOR FOR HAZARD IDENTIFICATION AND REDUCTION. OFFICE OF IMPORT DIRECTOR, OFFICE OF SURVEILLANCE. IMPORT SURVEILLANCE. DIRECTOR, OFFICE OF IMPORT SURVEILLANCE.[[Page 21506]] COURT SERVICES AND OFFENDER COURT SERVICES AND DEPUTY DIRECTOR. SUPERVISION AGENCY FOR THE OFFENDER ASSOCIATE DIRECTOR DISTRICT OF COLUMBIA. SUPERVISION AGENCY FOR RESEARCH AND FOR THE DISTRICT OF EVALUATION. COLUMBIA. ASSOCIATE DIRECTOR FOR ADMINISTRATION. CHIEF INFORMATION OFFICER (2). ASSOCIATE DIRECTOR FOR COMMUNITY SUPERVISION. ASSOCIATE DIRECTOR FOR COMMUNITY JUSTICE PROGRAMS. PROGRAM ANALYST OFFICER. ASSOCIATE DIRECTOR, LEGISLATIVE, INTERGOVERNMENTAL AND PUBLIC AFFAIRS. MANAGEMENT AND PROGRAM ANALYSIS OFFICER CHIEF OF STAFF. ASSOCIATE DIRECTOR FOR HUMAN RESOURCES.COURT SERVICES AND OFFENDER PRETRIAL SERVICES ASSISTANT DIRECTOR SUPERVISION AGENCY FOR THE AGENCY. FOR DEFENDANT DISTRICT OF COLUMBIA. ENGAGEMENT AND SYSTEMS SUPPORT. ASSISTANT DIRECTOR FOR MANAGEMENT AND ADMINISTRATION. DIRECTOR.OFFICE OF THE SECRETARY OF DEFENSEOFFICE OF THE CHIEF PENTAGON FORCE EXECUTIVE DIRECTOR, MANAGEMENT OFFICER. PROTECTION AGENCY. SECURITY INTEGRATION AND TECHNOLOGY. DIRECTOR, PENTAGON FORCE PROTECTION AGENCY. PRINCIPAL DEPUTY DIRECTOR, PENTAGON FORCE PROTECTION AGENCY. DIRECTOR, LAW ENFORCEMENT. WASHINGTON DIRECTOR, HUMAN HEADQUARTERS RESOURCES SERVICES. DIRECTORATE. DIRECTOR, ACQUISITION DIRECTORATE. DIRECTOR, FACILITIES SERVICES DIRECTORATE. DEPUTY DIRECTOR FACILITIES SERVICES DIRECTORATE. INSPECTOR GENERAL NGB. EXECUTIVE DIRECTOR, ACQUISITION/HCA NGB. DIRECTOR, POLICY, PLANS AND REQUIREMENTS. DEPUTY DIRECTOR, HUMAN RESOURCES DIRECTORATE.OFFICE OF THE DEPARTMENT OF DEFENSE INFORMATION WORKFORCE MANAGEMENT DEFENSE CHIEF INFORMATION SYSTEMS AGENCY. EXECUTIVE. OFFICER. SERVICES EXECUTIVE. VICE PROCUREMENT SERVICES EXECUTIVE/ DEPUTY CHIEF, DEFENSE INFORMATION TECHNOLOGY CONTRACTING ORGANIZATION. DIRECTOR, DEFENSE SPECTRUM. PROCUREMENT SERVICES EXECUTIVE AND HEAD OF CONTRACTING ACTIVITY. DIRECTOR, CENTER FOR OPERATIONS. EXECUTIVE DEPUTY DIRECTOR. VICE DIRECTOR, DEVELOPMENT AND BUSINESS CENTER. NATIONAL LEADERSHIP COMMAND CAPABILITIES EXECUTIVE. OPERATIONS EXECUTIVE. SERVICES EXECUTIVE. CHIEF FINANCIAL OFFICER/ COMPTROLLER. DIRECTOR, DEVELOPMENT AND BUSINESS. CYBERSECURITY RISK MANAGEMENT AND AUTHORIZING OFFICIAL EXECUTIVE (2). DEPUTY DIRECTOR, JOINT SERVICE PROVIDER. DIRECTOR, CENTER FOR OPERATIONS.[[Page 21507]] NBIS EXECUTIVE. VICE DIRECTOR, CENTER FOR OPERATIONS. SERVICES DEVELOPMENT EXECUTIVE. DEPUTY CHIEF FINANCIAL OFFICER/ DEPUTY COMPTROLLER.OFFICE OF THE SECRETARY..... OFFICE OF THE JOINT VICE DIRECTOR C4 CHIEFS OF STAFF. CYBER. VICE DIRECTOR, MANPOWER AND PERSONNEL. EXECUTIVE DIRECTOR. VICE DEPUTY DIRECTOR REGIONAL OPERATIONS AND FORCE MANAGEMENT. VICE DIRECTOR JOINT FORCE DEVELOPMENT AND DESIGN INTEGRATION. OFFICE OF THE UNDER DEPUTY DIRECTOR, SECRETARY OF ENTERPRISE DEFENSE INFORMATION. (ACQUISITION, TECHNOLOGY, AND LOGISTICS).OFFICE OF THE SECRETARY OF OFFICE OF INSPECTOR DIRECTOR, DEFENSE DEFENSE. GENERAL. CRIMINAL INVESTIGATIVE SERVICE--ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. ASSISTANT INSPECTOR GENERAL, DEFENSE FINANCIAL AUDITING SERVICE. PRINCIPAL DEPUTY INSPECTOR GENERAL. DEPUTY DIRECTOR, DEFENSE CRIMINAL INVESTIGATIVE SERVICE. ASSISTANT INSPECTOR GENERAL FOR READINESS AND OPERATIONS SUPPORT. OFFICE OF THE CHIEF DIRECTOR, PLANNING, MANAGEMENT OFFICER. PERFORMANCE AND ASSESSMENT DIRECTORATE. DIRECTOR OF ADMINISTRATION AND ORGANIZATIONAL POLICY. DIRECTOR, OVERSIGHT AND COMPLIANCE. DOD SENIOR INTELLIGENCE OVERSIGHT OFFICIAL AND DEPUTY DIRECTOR OVERSIGHT AND COMPLIANCE. DIRECTOR POLICY AND DECISION SUPPORT. OFFICE OF THE JFHQ-DODIN DEPARTMENT OF EXECUTIVE. DEFENSE CHIEF INFORMATION OFFICER. OFFICE OF THE DEPUTY DIRECTOR FOR DIRECTOR, NAVAL WARFARE OPERATIONAL TEST DEPUTY DIRECTOR FOR AND EVALUATION. LIVE FIRE TEST AND EVALUATION. OFFICE OF THE DIRECTOR, OFFICE OF GENERAL COUNSEL. LITIGATION. DIRECTOR DEFENSE OFFICE OF HEARINGS AND APPEALS. OFFICE OF THE UNDER DIRECTOR, SUPPLY SECRETARY OF CHAIN RISK DEFENSE MANAGEMENT. (ACQUISITION AND CHIEF INFORMATION SUSTAINMENT). SECURITY OFFICER A AND S. DASD (PLATFORM AND WEAPON PORTFOLIO MANAGEMENT). DIRECTOR, PRICING AND CONTRACTING. DIRECTOR, SPACE AND MISSILE DEFENSE. DIRECTOR FOR CONTRACTING BUSINESS. DIRECTOR FOR ADMINISTRATION. OFFICE OF THE UNDER DEPUTY CHIEF SECRETARY OF FINANCIAL OFFICER. DEFENSE (COMPTROLLER). OFFICE OF THE UNDER DIRECTOR, C5 SECRETARY OF INTELLIGENCE, DEFENSE (RESEARCH SURVEILLANCE, AND ENGINEERING). RECONNAISSANCE, AND ELECTRONIC WARFARE. DIRECTOR, SCIENCE AND TECHNOLOGY. DIRECTOR, DEFENSE MICROELECTRONICS.[[Page 21508]] OFFICE OF THE UNDER DEFENSE CONTRACT EXECUTIVE DIRECTOR, SECRETARY OF DEFENSE MANAGEMENT AGENCY. INFORMATION (ACQUISITION AND TECHNOLOGY AND SUSTAINMENT). CHIEF INFORMATION OFFICER. EXECUTIVE DIRECTOR, TECHNICAL DEPUTY DIRECTOR EXECUTIVE DIRECTOR, COST AND PRICING EXECUTIVE DIRECTOR TOTAL FORCE DEPUTY GENERAL COUNSEL. EXECUTIVE DIRECTOR, PORTFOLIO MANAGEMENT AND BUSINESS INTEGRATION. EXECUTIVE DIRECTOR, CONTRACTS. DEPUTY DIRECTOR, DEFENSE CONTRACT MANAGEMENT AGENCY. GENERAL COUNSEL. EXECUTIVE DIRECTOR, FINANCIAL AND BUSINESS OPERATIONS AND COMPTROLLER. EXECUTIVE DIRECTOR, QUALITY. DEFENSE LOGISTICS DIRECTOR, DLA AGENCY (DLA). FINANCE. EXECUTIVE DIRECTOR, SUPPORT--POLICY AND STRATEGIC PROGRAMS. DEPUTY DIRECTOR, DLA INFORMATION. DEPUTY DIRECTOR, DLA ACQUISITION. PROGRAM EXECUTIVE OFFICER, DEFENSE LOGISTICS AGENCY INFORMATION. DEPUTY DIRECTOR DLA LOGISTICS. DEPUTY COMMANDER, DLA ENERGY. EXECUTIVE DIRECTOR, TROOP SUPPORT CONTRACTING AND ACQUISITION. EXECUTIVE DIRECTOR, CONTRACTING AND ACQUISITION MANAGEMENT. EXECUTIVE DIRECTOR OPERATIONS AND SUSTAINMENT. EXECUTIVE DIRECTOR, MISSION SUPPORT DIRECTORATE. CHIEF OF STAFF. VICE DIRECTOR, DEFENSE LOGISTICS. DIRECTOR, DLA ACQUISITION (J-7). DIRECTOR, DLA DISPOSITION SERVICES. DEPUTY GENERAL COUNSEL, DLA. DEPUTY COMMANDER, DLA DISTRIBUTION. DEPUTY DIRECTOR, DLA FINANCE. EXECUTIVE DIRECTOR, AVIATION CONTRACTING AND ACQUISITION. DIRECTOR, DLA INFORMATION OPERATION. DIRECTOR, DLA HUMAN RESOURCES. DEPUTY COMMANDER, DLA ***LAND*** AND MARITIME. DEPUTY COMMANDER, DLA AVIATION. DEPUTY COMMANDER, DEFENSE SUPPLY CENTER PHILADELPHIA. GENERAL COUNSEL. DEFENSE THREAT DIRECTOR, PLANS AND REDUCTION AGENCY. TRAINING, JIDO. DIRECTOR, COOPERATIVE THREAT REDUCTION DEPARTMENT. DEPUTY DIRECTOR JOINT IMPROVISED THREAT DEFEAT ORGANIZATION. DIRECTOR, OPERATIONS AND INTEGRATION DIRECTORATE. DIRECTOR, ACQUISITION, CONTRACTS AND LOGISTICS. GENERAL COUNSEL. DIRECTOR TREATIES AND PARTNERSHIPS DEPARTMENT. DIRECTOR, INTELLIGENCE, PLANS AND RESOURCE INTEGRATION DIRECTORATE. DIRECTOR, COMBATANT COMMAND.[[Page 21509]] DIRECTOR, CHEMICAL AND BIOLOGICAL TECHNOLOGIES DEPARTMENT. DIRECTOR, ACQUISITION, FINANCE AND LOGISTICS DIRECTORATE. DIRECTOR INFORMATION INTEGRATION AND TECHNOLOGY SERVICES CHIEF/CIO. DIRECTOR, RESEARCH AND DEVELOPMENT DIRECTORATE. DIRECTOR, NUCLEAR TECHNOLOGIES. DIRECTOR, COUNTER WEAPONS OF MASS DESTRUCTION TECHNOLOGIES. DIRECTOR, BASIC AND APPLIED SCIENCES DEPARTMENT. OFFICE OF THE PRINCIPAL DEPUTY, ASSISTANT SECRETARY ACQUISITION OF DEFENSE RESOURCES AND (ACQUISITION). ANALYSIS. DIRECTOR, CONTRACT POLICY. DEPUTY DIRECTOR, DEFENSE ACQUISITION REGULATIONS SYSTEM. PRINCIPAL DIRECTOR, DEFENSE PRICING AND CONTRACTING. DIRECTOR, AIR PLATFORMS AND WEAPONS. DIRECTOR, NUCLEAR COMMAND, CONTROL, AND COMMUNICATIONS. DIRECTOR, COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS/ISR. PRINCIPAL DEPUTY DIRECTOR, ENTERPRISE INFORMATION. DIRECTOR, STRATEGIC SYSTEMS AND TREATY COMPLIANCE. DEPUTY DIRECTOR, NAVAL WARFARE. OFFICE OF THE DEPUTY ASSISTANT ASSISTANT SECRETARY SECRETARY OF OF DEFENSE DEFENSE (NUCLEAR (NUCLEAR, CHEMICAL MATTERS). AND BIOLOGICAL DEFENSE PROGRAMS).OFFICE OF THE UNDER DEFENSE CONTRACT ASSISTANT DIRECTOR, SECRETARY OF DEFENSE AUDIT AGENCY. HUMAN CAPITAL AND (COMPTROLLER). RESOURCE MANAGEMENT. ASSISTANT DIRECTOR, POLICY AND PLANS. CORPORATE AUDIT DIRECTOR (A). CORPORATE AUDIT DIRECTOR (B). CORPORATE AUDIT DIRECTOR (C). CORPORATE AUDIT DIRECTOR (D). REGIONAL DIRECTOR, EASTERN. REGIONAL DIRECTOR, CENTRAL. REGIONAL DIRECTOR, WESTERN. DIRECTOR, FIELD DETACHMENT. >DIRECTOR, DEFENSE CONTRACT AUDIT. DEPUTY REGIONAL DIRECTOR EASTERN. DEPUTY REGIONAL DIRECTOR, CENTRAL. DEPUTY REGIONAL DIRECTOR, WESTERN. ASSISTANT DIRECTOR, INTEGRITY AND QUALITY ASSURANCE. ASSISTANT DIRECTOR, OPERATIONS. DEPUTY DIRECTOR.OFFICE OF THE UNDER DEFENSE HEALTH GENERAL COUNSEL FOR SECRETARY OF DEFENSE AGENCY. DEFENSE HEALTH (PERSONNEL AND READINESS). AGENCY. DEFENSE HUMAN DEPUTY DIRECTOR, RESOURCES ACTIVITY. DEFENSE HUMAN RESOURCES ACTIVITY.OFFICE OF THE UNDER DEFENSE ADVANCED DIRECTOR, STRATEGIC SECRETARY OF DEFENSE RESEARCH PROJECTS RESOURCES. (RESEARCH AND ENGINEERING). AGENCY. GENERAL COUNSEL. DIRECTOR, CONTRACTS MANAGEMENT. DIRECTOR, MISSION SERVICES OFFICE.[[Page 21510]] MISSILE DEFENSE CHIEF ENGINEER. AGENCY. DIRECTOR FOR ADVANCED TECHNOLOGY. DIRECTOR FOR INTERNATIONAL AFFAIRS. DEPUTY FOR ENGINEERING. DEPUTY PROGRAM MANAGER FOR ASSESSMENT AND INTEGRATIONS, BMDS. PROGRAM DIRECTOR FOR BATTLE MANAGEMENT, COMMAND AND CONTROL. DIRECTOR FOR OPERATIONS. DEPUTY PROGRAM DIRECTOR, BC. DIRECTOR FOR ACQUISITION. DEPUTY PROGRAM DIRECTOR, AEGIS BALLISTIC MISSILE DEFENSE. PROGRAM DIRECTOR, GROUND-BASED MIDCOURSE DEFENSE. PROGRAM DIRECTOR, ***TARGETS*** AND COUNTERMEASURES. DIRECTOR FOR SYSTEMS ENGINEERING AND INTEGRATION. DIRECTOR, CONTRACTING.DEPARTMENT OF THE AIR FORCE DEPARTMENT OF THE EXECUTIVE DIRECTOR, AIR FORCE. AIR NATIONAL GUARD. EXECUTIVE DIRECTOR. DEPUTY DIRECTOR LEGISLATIVE LIAISON. DIRECTOR OF COMMUNICATIONS. DIRECTOR, INSTALLATION, LOGISTICS AND MISSION SUPPORT. DIRECTOR, HEADQUARTERS AIR FORCE INFORMATION MANAGEMENT. DEPUTY DIRECTOR OF POLICY, PROGRAMS AND STRATEGY, INTERNATIONAL AFFAIRS. DIRECTOR, CIVILIAN FORCE MANAGEMENT. DEPUTY DIRECTOR OF LOGISTICS. DIRECTOR OF POLICY, PROGRAMS AND STRATEGY, INTERNATIONAL AFFAIRS. DEPUTY DIRECTOR, STRATEGIC PLANNING. DEPUTY DIRECTOR, SECURITY, SPECIAL PROGRAM OVERSIGHT, AND INFORMATION PROTECTION. DIRECTOR, SPACE SECURITY AND DEFENSE PROGRAM. DIRECTOR, CYBER CAPABILITIES AND COMPLIANCE. DEPUTY DIRECTOR, CIVILIAN FORCE MANAGEMENT, HUMAN RESOURCE SPECIALIST. DIRECTOR, DIVERSITY AND INCLUSION. CHIEF INFORMATION SECURITY OFFICER (CISO). AIR FORCE PROGRAM EXECUTIVE OFFICER FOR COMBAT AND MISSION SUPPORT. DEPUTY DIRECTOR OF LOGISTICS. DEPUTY DIRECTOR, SECURITY FORCES. DEPUTY DIRECTOR, INFORMATION DOMINANCE. DIRECTOR, LOGISTICS, ENGINEERING AND FORCE PROTECTION. DEPUTY DIRECTOR OF OPERATIONS. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR PROGRAMS. DEPUTY ASSISTANT SECRETARY (LOGISTICS). CHIEF INFORMATION OFFICER AND DEPUTY DIRECTOR, PLANS AND INTEGRATION. DIRECTOR, DIVERSITY AND INCLUSION.[[Page 21511]] DEPUTY DIRECTOR, STRATEGY, CONCEPTS AND ASSESSMENTS.AIR FORCE MATERIEL COMMAND.. AERONAUTICAL SYSTEMS PROGRAM EXECUTIVE CENTER. OFFICER, MOBILITY AIRCRAFT. PROGRAM EXECUTIVE OFFICER FOR AGILE COMBAT SUPPORT. EXECUTIVE DIRECTOR, AIR FORCE LIFE CYCLE MANAGEMENT CENTER. AIR FORCE FLIGHT EXECUTIVE DIRECTOR, TEST CENTER. AIR FORCE TEST CENTER. AIR FORCE MATERIEL DIRECTOR, AIR FORCE COMMAND LAW OFFICE. MATERIEL COMMAND LAW OFFICE. COMMAND COUNSEL. AIR FORCE OFFICE OF DIRECTOR AIR FORCE SCIENTIFIC RESEARCH. OFFICE OF SCIENTIFIC RESEARCH. AIR FORCE RESEARCH DIRECTOR, AEROSPACE LABORATORY. SYSTEMS. DIRECTOR, STRATEGIC DEVELOPMENT AND PLANNING. DIRECTOR, PLANS AND PROGRAMS. DIRECTOR, MATERIALS AND MANUFACTURING. AIR LOGISTICS DIRECTOR OF CENTER, OGDEN. CONTRACTING. DIRECTOR, ENGINEERING AND TECHNICAL MANAGEMENT. AIR LOGISTICS DIRECTOR OF CENTER, OKLAHOMA CONTRACTING. CITY. DIRECTOR OF ENGINEERING AND TECHNICAL MANAGEMENT. DIRECTOR OF LOGISTICS, AIR FORCE SUSTAINMENT CENTER. DIRECTOR, 448TH SUPPLY CHAIN MANAGEMENT WING. AIR LOGISTICS DIRECTOR OF CENTER, WARNER CONTRACTING. ROBINS. CONTRACTING......... DIRECTOR, MILSATCOM DIRECTORATE. ELECTRONIC SYSTEMS DIRECTOR, CENTER. ENGINEERING AND TECHNICAL MANAGEMENT. PROGRAM EXECUTIVE OFFICER, BATTLE MANAGEMENT. ENGINEERING AND DIRECTOR, TECHNICAL ENGINEERING AND MANAGEMENT. TECHNICAL MANAGEMENT. FINANCIAL MANAGEMENT DEPUTY DIRECTOR, AND COMPTROLLER. FINANCIAL MANAGEMENT. LOGISTICS........... DEPUTY DIRECTOR, LOGISTICS, INSTALLATIONS AND MISSION SUPPORT.AIR FORCE RESEARCH DIRECTED ENERGY DIRECTOR, DIRECTED LABORATORY. DIRECTORATE. ENERGY. HUMAN EFFECTIVENESS DIRECTOR, HUMAN DIRECTORATE. EFFECTIVENESS DIRECTORATE. SENSORS DIRECTORATE. DIRECTOR SENSORS.AIR FORCE SPACE COMMAND..... SPACE AND MISSILE DIRECTOR, MILITARY SYSTEMS CENTER. SATELLITE COMMUNICATIONS DIRECTORATE. DIRECTOR, LAUNCH ENTERPRISE.AUDITOR GENERAL............. AIR FORCE AUDIT ASSISTANT AUDITOR AGENCY (FIELD GENERAL, OPERATING AGENCY). ACQUISITION, LOGISTICS AND FINANCIAL AUDITS. ASSISTANT AUDITOR GENERAL, OPERATIONS AND SUPPORT AUDITS.DEPARTMENT OF THE AIR FORCE. AIR COMBAT COMMAND.. DIRECTOR, ACQUISITION MANAGEMENT AND INTEGRATION CENTER. DEPUTY DIRECTOR OF LOGISTICS, ENGINEERING, AND FORCE PROTECTION. DEPUTY DIRECTOR, REQUIREMENTS. AIR EDUCATION AND DIRECTOR, LOGISTICS, TRAINING COMMAND. INSTALLATIONS AND MISSION SUPPORT. DIRECTOR, INTERNATIONAL TRAINING AND EDUCATION.[[Page 21512]] AIR FORCE MATERIEL DIRECTOR, COMMAND. ENGINEERING AND TECHNICAL MANAGEMENT. DIRECTOR OF ENGINEERING AND TECHNICAL MANAGEMENT, F-35 LIGHTNING II JOINT PROGRAM OFFICE. DIRECTOR FINANCIAL MANAGEMENT AND COMPTROLLER. DIRECTOR, AIR FORCE CIVIL ENGINEER CENTER. DIRECTOR, ENGINEERING AND TECHNICAL MANAGEMENT (3). DIRECTOR OF PROPULSION. DIRECTOR, 448TH SUPPLY CHAIN MANAGEMENT WING. DIRECTOR OF CONTRACTING. EXECUTIVE DIRECTOR, AIR FORCE MATERIEL COMMAND. DIRECTOR OF CONTRACTING. DIRECTOR, RESOURCES. EXECUTIVE DIRECTOR. DIRECTOR, HYBRID PRODUCT SUPPORT INTEGRATOR. DEPUTY DIRECTOR, AIR, SPACE AND CYBERSPACE OPERATIONS. EXECUTIVE DIRECTOR, AIR FORCE INSTALLATION AND MISSION SUPPORT CENTER. DIRECTOR OF LOGISTICS AND LOGISTICS SERVICES. EXECUTIVE DIRECTOR, AIR FORCE SUSTAINMENT CENTER. DIRECTOR, MANPOWER, PERSONNEL AND SERVICES. EXECUTIVE DIRECTOR, AIR FORCE NUCLEAR WEAPONS CENTER. DIRECTOR, FINANCIAL MANAGEMENT. PROGRAM EXECUTIVE OFFICER FOR BUSINESS ENTERPRISE SYSTEMS. DIRECTOR, INSTALLATION SUPPORT. DIRECTOR, NATIONAL MUSEUM OF THE UNITED STATES AIR FORCE. DIRECTOR OF CONTRACTING. DIRECTOR INSTALLATIONS. DEPUTY DIRECTOR, STRATEGIC PLANS, PROGRAMS, REQUIREMENTS AND ANALYSES. AIR FORCE RESERVE DIRECTOR OF STAFF. COMMAND. AIR FORCE SPACE EXECUTIVE DIRECTOR, COMMAND. AIR FORCE SPACE COMMAND. DIRECTOR OF CONTRACTING, SPACE AND MISSILE SYSTEMS CENTER (SMC). AIR FORCE SPECIAL DEPUTY CHIEF OPERATIONS COMMAND. FINANCIAL OFFICER. EXECUTIVE DIRECTOR AIR FORCE SPECIAL OPERATIONS COMMAND. AIR MOBILITY COMMAND DEPUTY DIRECTOR OR LOGISTICS. DEPUTY CHIEF OF DIRECTOR OF STAFF FOR INTELLIGENCE, INTELLIGENCE, SURVEILLANCE, AND SURVEILLANCE AND RECONNAISSANCE RECONNAISSANCE. INNOVATIONS AND UNMANNED AERIAL SYSTEMS TASK FORCE. JOINT STAFF......... DIRECTOR, JOINT INFORMATION OPERATIONS WARFARE CENTER. OFFICE OF ASSISTANT SECRETARY AIR FORCE FOR ACQUISITION.. DIRECTOR OF CONTRACTING (SPECIAL ACCESS PROGRAMS).. DIRECTOR OF CONTRACTING, AIR FORCE RAPID CAPABILITIES OFFICE.. DIRECTOR, INFORMATION DOMINANCE PROGRAMS.. ASSOCIATE DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE FOR SCIENCE, TECHNOLOGY AND ENGINEERING.[[Page 21513]] ASSOCIATE DEPUTY ASSISTANT SECRETARY (ACQUISITION INTEGRATION). DEPUTY ASSISTANT SECRETARY (SCIENCE, TECHNOLOGY AND ENGINEERING). DEPUTY ASSISTANT SECRETARY (ACQUISITION INTEGRATION). OFFICE OF ASSISTANT CHIEF INFORMATION SECRETARY AIR FORCE OFFICER. FOR FINANCIAL MANAGEMENT AND COMPTROLLER. OFFICE OF ASSISTANT DEPUTY ASSISTANT SECRETARY OF THE SECRETARY FOR AIR FORCE FOR RESERVE AFFAIRS. MANPOWER AND RESERVE AFFAIRS. OFFICE OF THE CHIEF DEPUTY DIRECTOR OF OF STAFF. STAFF, HEADQUARTERS UNITED STATES AIR FORCE. OFFICE OF THE EXECUTIVE DIRECTOR, INSPECTOR GENERAL. OFFICE OF SPECIAL INVESTIGATIONS. OFFICE OF THE DIRECTOR, AIR FORCE SECRETARY. RAPID CAPABILITIES OFFICE. DEPUTY DIRECTOR, AIR FORCE REVIEW BOARDS AGENCY. DEPUTY CHIEF MANAGEMENT OFFICER. DEPUTY DIRECTOR, AIR FORCE RAPID CAPABILITIES OFFICE. UNITED STATES DEPUTY DIRECTOR OF CENTRAL COMMAND. OPERATIONS INTERAGENCY ACTION GROUP. DEPUTY DIRECTOR OF LOGISTICS AND ENGINEERING. DIRECTOR OF RESOURCES, REQUIREMENTS, BUDGET AND ASSESSMENT. UNITED STATES DEPUTY COMMANDER, NORTHERN COMMAND. JOINT FORCES HEADQUARTERS--NATIO NAL CAPITAL REGION. DIRECTOR, PROGRAMS AND RESOURCES. NORTHCOM, DEPUTY DIRECTOR OF OPERATIONS FOR SPECIAL ACTIVITIES. DIRECTOR OF INTERAGENCY. DIRECTOR, JOINT EXERCISES AND TRAINING. UNITED STATES DIRECTOR AND CHIEF SPECIAL OPERATIONS INFOMATION OFFICER COMMAND. FOR SPECIAL OPERATIONS NETWORKS AND COMMUNICATIONS CENTER. CHIEF FINANCIAL OFFICER. DIRECTOR FOR ACQUISITION. DEPUTY DIRECTOR, CENTER FOR SPECIAL OPERATIONS ACQUISITION AND LOGISTICS. DEPUTY CHIEF OF STAFF. DIRECTOR COMMUNICATIONS SYSTEMS/CHIEF INFORMATION OFFICER (J6). DIRECTOR, COMMAND SUPPORT. DIRECTOR, PLANS, POLICY AND STRATEGY. PRESIDENT, JOINT SPECIAL OPERATIONS UNIVERSITY. UNITED STATES DIRECTOR, COMMAND, STRATEGIC COMMAND. CONTROL, COMMUNICATIONS AND COMPUTER SYSTEMS. DEPUTY DIRECTOR, PLANS AND POLICY, USSTRATCOM. DIRECTOR, GLOBAL INNOVATION STRATEGY CENTER. TECHNICAL DIRECTOR, JOINT WARFARE ANALYSIS CENTER. ASSOCIATE DIRECTOR CAPABILITY AND RESOURCE. DEPUTY DIRECTOR, CAPABILITY AND RESOURCE INTEGRATION. DIRECTOR, JOINT EXERCISES AND TRAINING.[[Page 21514]] DEPUTY DIRECTOR, CAPABILITY DEVELOPMENTAL GROUP COMMAND ACQUISITION EXEC. DEPUTY DIRECTOR, PLANS AND POLICY. DIRECTOR, CAPABILITY AND RESOURCE INTEGRATION, USSTRATCOM C2 FACILITY MANAGEMENT PMO. UNITED STATES DIRECTOR, PROGRAM TRANSPORTATION ANALYSIS AND COMMAND. FINANCIAL MANAGEMENT. EXECUTIVE DIRECTOR AND DEPUTY CHIEF INFORMATION OFFICER. DIRECTOR, ACQUISITION. DEPUTY DIRECTOR, ACQUISITION. EXECUTIVE DIRECTOR. DEPUTY DIRECTOR, STRATEGY, CAPABILITIES, POLICY AND LOGISTICS.DEPUTY CHIEF OF STAFF, OFFICE OF CIVIL DEPUTY DIRECTOR OF INSTALLATIONS AND LOGISTICS. ENGINEER. CIVIL ENGINEERS. OFFICE OF RESOURCES. DIRECTOR OF RESOURCE INTEGRATION.DEPUTY CHIEF OF STAFF, AIR FORCE PERSONNEL DIRECTOR OF PERSONNEL. CENTER (FIELD PERSONNEL OPERATING AGENCY). OPERATIONS. EXECUTIVE DIRECTOR, AIR FORCE PERSONNEL CENTER.OFFICE OF ASSISTANT DIRECTORATE OF SPACE ASSOCIATE ASSISTANT SECRETARY AIR FORCE FOR AND NUCLEAR CHIEF OF STAFF ACQUISITION. DETERRENCE. STRATEGIC DETERRENCE AND NUCLEAR INTEGRATION. DEPUTY ASSISTANT CHIEF OF STAFF, STRATEGIC DETERRENCE AND NUCLEAR INTEGRATION. OFFICE DEPUTY ASSOCIATE DEPUTY ASSISTANT SECRETARY ASSISTANT SECRETARY CONTRACTING. (CONTRACTING). OFFICE DEPUTY SPECIAL ASSISTANT TO ASSISTANT SECRETARY THE DEPUTY SCIENCE, TECHNOLOGY ASSISTANT SECRETARY AND ENGINEERING. SCIENCE, TECHNOLOGY AND ENGINEERING.OFFICE OF ASSISTANT OFFICE DEPUTY DIRECTOR, BUDGET SECRETARY AIR FORCE FOR ASSISTANT SECRETARY INVESTMENT. FINANCIAL MANAGEMENT AND BUDGET. ASSOCIATE DEPUTY COMPTROLLER. ASSISTANT SECRETARY FOR BUDGET. OFFICE DEPUTY ASSOCIATE DEPUTY ASSISTANT SECRETARY ASSISTANT SECRETARY COST AND ECONOMICS. (COST AND ECONOMICS). DEPUTY ASSISTANT SECRETARY (COST AND ECONOMICS). OFFICE DEPUTY ASSOCIATE DEPUTY ASSISTANT SECRETARY ASSISTANT SECRETARY FINANCIAL (FINANCIAL OPERATIONS. OPERATIONS). DEPUTY ASSISTANT SECRETARY (FINANCIAL OPERATIONS).OFFICE OF ASSISTANT AIR FORCE REVIEW DEPUTY FOR AIR FORCE SECRETARY OF THE AIR FORCE BOARDS AGENCY (AIR REVIEW BOARDS. FOR MANPOWER AND RESERVE FORCE REVIEW BOARDS AFFAIRS. AGENCY)--FIELD OPERATING AGENCY.OFFICE OF THE CHIEF OF STAFF AIR FORCE OFFICE OF DEPUTY CHIEF OF SAFETY AND AIR SAFETY. FORCE SAFETY CENTER (FIELD OPERATING AGENCY). AIR FORCE EXECUTIVE DIRECTOR, OPERATIONAL TEST AIR FORCE AND EVALUATION OPERATIONAL TEST CENTER (DIRECT AND EVALUATION REPORTING UNIT). CENTER. AIR FORCE STUDIES DIRECTOR, AIR FORCE AND ANALYSES AGENCY STUDIES AND (DIRECT REPORTING ANALYSES, UNIT (DRU)). ASSESSMENTS AND LESSONS LEARNED. PRINCIPLE DEPUTY DIRECTOR, STUDIES AND ANALYSES, ASSESSMENTS AND LESSONS LEARNED. DEPUTY CHIEF OF DIRECTOR OF WEATHER. STAFF, AIR AND ASSOCIATE DEPUTY SPACE OPERATIONS. CHIEF OF STAFF OPERATIONS, PLANS AND REQUIREMENTS. DEPUTY DIRECTOR, OPERATIONS AND READINESS. DEPUTY DIRECTOR OF OPERATIONAL REQUIREMENTS.[[Page 21515]] DEPUTY CHIEF OF ASSISTANT DEPUTY STAFF, PERSONNEL. CHIEF OF STAFF MANPOWER AND PERSONNEL. DIRECTOR FORCE DEVELOPMENT. DEPUTY DIRECTOR, MANPOWER, ORGANIZATION AND RESOURCES. DEPUTY DIRECTOR, MILITARY FORCE MANAGEMENT. DEPUTY DIRECTOR OF SERVICES. DIRECTOR, PLANS AND INTEGRATION. DEPUTY CHIEF OF DEPUTY DIRECTOR OF STAFF, PLANS AND STRATEGIC PLANNING. PROGRAMS. ASSOCIATE DEPUTY DIRECTOR FOR PROGRAMS. ASSISTANT DEPUTY CHIEF OF STAFF, STRATEGIC PLANS AND REQUIREMENTS. JUDGE ADVOCATE DIRECTOR, GENERAL. ADMINISTRATIVE LAW. TEST AND EVALUATION. DIRECTOR, TEST AND EVALUATION. DEPUTY DIRECTOR, TEST AND EVALUATION.OFFICE OF THE INSPECTOR AIR FORCE OFFICE OF EXECUTIVE DIRECTOR, GENERAL. SPECIAL DEFENSE CYBERCRIME INVESTIGATIONS CENTER. (FIELD OPERATING AGENCY).OFFICE OF THE SECRETARY..... AUDITOR GENERAL..... ASSISTANT AUDITOR GENERAL, FIELD OFFICES DIRECTORATE. AUDITOR GENERAL OF THE AIR FORCE. OFFICE OF DEPUTY ADMINISTRATIVE ADMINISTRATIVE ASSISTANT TO THE ASSISTANT. SECRETARY. ADMINISTRATIVE ASSISTANT. DIRECTOR, RESOURCES MANAGEMENT. DIRECTOR SECURITY, SPEC PRGM OVERSIGHT AND INFORMATION PROTECTION. OFFICE OF PUBLIC DEPUTY DIRECTOR, AFFAIRS. PUBLIC AFFAIRS. OFFICE OF SMALL AND DIRECTOR, OFFICE OF DISADVANTAGED SMALL AND BUSINESS DISADVANTAGED UTILIZATION. BUSINESS UTILIZATION. OFFICE OF THE UNDER ASSOCIATE DEPUTY SECRETARY. UNDER SECRETARY OF THE AIR FORCE (SPACE) AND DEPUTY DIRECTOR PRINCIPAL DEPARTMENT OF DEFENSE SPACE ADVISOR STAFF. DEPUTY DIRECTOR FOR BUSINESS TRANSFORMATION.DEPARTMENT OF THE ARMYAFC, COMBAT CAPABILITIES AFC, COMBAT DIRECTOR, ARMY DEVELOPMENT CMD, ARMY CAPABILITIES RESEARCH OFFICE. RESEARCH LABORATORY. DEVELOPMENT COMMAND, ARL, ARMY RESEARCH OFFICE.CHIEF INFORMATION OFFICER/G- OFFICE, CHIEF OF PRINCIPAL DEPUTY 6. PUBLIC AFFAIRS. CHIEF OF PUBLIC AFFAIRS.DEPARTMENT OF THE ARMY...... ARMY AUDIT AGENCY... DEPUTY AUDITOR GENERAL, MANPOWER AND TRAINING AUDITS. DEPUTY AUDITOR GENERAL, FINANCIAL MANAGEMENT AUDITS. PRINCIPAL DEPUTY AUDITOR GENERAL. DEPUTY AUDITOR GENERAL, ACQUISITION AND LOGISTICS AUDITS. THE AUDITOR GENERAL. DEPUTY AUDITOR GENERAL, INSTALLATION, ENERGY AND ENVIRONMENT AUDITS. CHIEF INFORMATION DIRECTOR, OFFICER/G-6. CYBERSECURITY. DIRECTOR OF ARCHITECTURE AND INFORMATION. DEPUTY CHIEF INFORMATION OFFICER/ G-6. PRINCIPAL DIRECTOR, POLICY AND RESOURCES/CFO, CIO/ G-6. HEADQUARTERS, UNITED DEPUTY CHIEF OF STATES ARMY, EUROPE. STAFF G-8. HEADQUARTERS, UNITED ASSISTANT CHIEF OF STATES ARMY, STAFF, G8. PACIFIC. JOINT SPECIAL EXECUTIVE DIRECTOR OPERATIONS COMMAND. FOR RESOURCES, SUPPORT, AND INTEGRATION. NATIONAL GUARD CHIEF FINANCIAL BUREAU. OFFICER.[[Page 21516]] OFFICE EXECUTIVE DIRECTOR, ADMINISTRATIVE UNITED STATES ARMY ASSISTANT TO THE HEADQUARTERS SECRETARY OF ARMY. SERVICES. ADMINISTRATIVE ASSISTANT TO THE SECRETARY OF THE ARMY. DEPUTY ADMINISTRATIVE ASSISTANT TO THE SECRETARY OF THE ARMY/DIRECTOR FOR SHARED SERVICES. OFFICE ASSISTANT CHIEF SYSTEMS SECRETARY ARMY ENGINEER, ASA(ALT). (ACQUISITION, EXECUTIVE DIRECTOR LOGISTICS AND FOR ACQUISITION TECHNOLOGY). SERVICES, ASA (ALT). >DEPUTY DIRECTOR, HYPERSONIC, DIRECTED ENERGY, SPACE AND RAPID ACQUISITION OFFICE. DEPUTY ASSISTANT SECRETARY OF THE ARMY FOR PLANS, PROGRAMS AND RESOURCES. DEPUTY ASSISTANT SECRETARY OF THE ARMY (POLICY AND PROCUREMENT). DEPUTY ASSISTANT SECRETARY FOR RESEARCH AND TECHNOLOGY/CHIEF SCIENTIST. DEPUTY ASSISTANT SECRETARY OF THE ARMY (ACQUISITION POLICY AND LOGISTICS). EXECUTIVE DIRECTOR, RAPID CAPABILITIES OFFICE. DIRECTOR FOR RESEARCH AND TECHNOLOGY. OFFICE ASSISTANT DEPUTY ASSISTANT SECRETARY ARMY SECRETARY OF THE (CIVIL WORKS). ARMY (MANAGEMENT AND BUDGET). OFFICE ASSISTANT DEPUTY ASSISTANT SECRETARY ARMY SECRETARY OF THE (FINANCIAL ARMY (COST AND MANAGEMENT AND ECONOMICS). COMPTROLLER). DEPUTY ASSISTANT SECRETARY OF THE ARMY (FINANCIAL OPERATIONS). DIRECTOR OF MANAGEMENT AND CONTROL. DIRECTOR, ARMY COST REVIEW BOARD. DEPUTY DIRECTOR AND SENIOR ADVISOR FOR ARMY BUDGET (DDSA (BUDGET)). DIRECTOR FOR ACCOUNTABILITY AND AUDIT READINESS. DIRECTOR, FINANCIAL INFORMATION MANAGEMENT. DIRECTOR, PROGRAMS AND STRATEGY. OFFICE ASSISTANT DEPUTY ASSISTANT SECRETARY ARMY SECRETARY OF THE (INSTALLATIONS, ARMY (ENVIRONMENT, ENERGY AND SAFETY AND ENVIRONMENT). OCCUPATIONAL HEALTH). DEPUTY ASSISTANT SECRETARY OF ARMY (STRATEGIC INTEGRATION). OFFICE ASSISTANT DEPUTY ASSISTANT SECRETARY ARMY SECRETARY OF THE (MANPOWER AND ARMY (MILITARY RESERVE AFFAIRS). PERSONNEL). DEPUTY TO THE ASSISTANT SECRETARY OF THE ARMY (MANPOWER AND RESERVE AFFAIRS). DEPUTY ASSISTANT SECRETARY OF ARMY FOR MARKETING/ DIRECTOR, ARMY MARKETING RESEARCH GROUP. DEPUTY ASSISTANT SECRETARY OF THE ARMY (DIVERSITY AND LEADERSHIP). DEPUTY ASSISTANT SECRETARY OF THE ARMY (CIVILIAN PERSONNEL). DEPUTY ASSISTANT SECRETARY OF THE ARMY (ARMY REVIEW BOARDS AGENCY). OFFICE OF THE DEPUTY CHIEF OF SURGEON GENERAL. STAFF, RESOURCES, INFRASTRUCTURE AND STRATEGY (G8/9).[[Page 21517]] OFFICE, DEPUTY CHIEF DIRECTOR FOR OF STAFF, G-4. MAINTENANCE POLICY, PROGRAMS AND PROCESSES. ASSISTANT DEPUTY CHIEF OF STAFF, G- 4. DIRECTOR FOR SUPPLY POLICY. DIRECTOR, LOGISTICS INFORMATION MANAGEMENT. DIRECTOR OF RESOURCE MANAGEMENT. OFFICE, DEPUTY CHIEF DIRECTOR, SHARP AND OF STAFF, G-1. ARMY RESILIENCY DIRECTORATE. DIRECTOR, CIVILIAN TALENT MANAGEMENT/ DEPUTY DIRECTOR ARMY TALENT MANAGEMENT TASK FORCE. DIRECTOR, TECHNOLOGY AND BUSINESS ARCHITECTURE INTEGRATION. DEPUTY DIRECTOR, CIVILIAN HUMAN RESOURCES AGENCY. ASSISTANT DEPUTY CHIEF OF STAFF, G- 1. DIRECTOR, CIVILIAN HUMAN RESOURCE AGENCY. DIRECTOR, PLANS AND RESOURCES. OFFICE, DEPUTY CHIEF DEPUTY DIRECTOR OF OF STAFF, G-3. TRAINING AND TTPEG CO-CHAIR. DEPUTY DIRECTOR FOR STRATEGY PLANS AND POLICY. ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS (G-3/5/ 7). DEPUTY DIRECTOR FOR FORCE MANAGEMENT. OFFICE, DEPUTY CHIEF DIRECTOR, RESOURCES/ OF STAFF, G-8. DEPUTY DIRECTOR, FORCE DEVELOPMENT. ASSISTANT DEPUTY CHIEF OF STAFF, G- 8. OFFICE, OFFICE, CHIEF INFORMATION DEPUTY CHIEF OF TECHNOLOGY OFFICER STAFF, G-9. (OACSIM). DIRECTOR OF RESOURCE INTEGRATION. DIRECTOR INSTALLATION SERVICES. DEPUTY ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT. UNITED STATES ARMY CHIEF FINANCIAL FUTURES COMMAND. OFFICER. DEPUTY CHIEF EXECUTIVE OFFICER. COMMAND INNOVATION OFFICER. CHIEF, HUMAN CAPITAL OFFICER. DIRECTOR, ARTIFICAL INTELLIGENT CAPABILITIES, AFC. UNITED STATES ARMY DEPUTY TO THE SPECIAL OPERATIONS COMMANDING GENERAL. COMMAND. UNITED STATES ARMY PRESIDENT, ARMY TRAINING AND LOGISTICS DOCTRINE COMMAND UNIVERSITY. (TRADOC). DIRECTOR OF TRANSFORMATION, CYBER CENTER OF EXCELLENCE. DEPUTY TO THE COMMANDING GENERAL, COMBINED ARMS SUPPORT COMMAND. DEPUTY CHIEF OF STAFF, G-3/5/7, TRADOC. DIRECTOR, UNITED STATES ARMY CENTER OF MILITARY HISTORY/ CHIEF OF MILITARY HISTORY. DEPUTY TO THE COMMANDING GENERAL. DEPUTY TO THE COMMANDING GENERAL MANEUVER SUPPORT/ DIRECTOR, CAPABILITIES DEVELOPMENT AND INTEGRATION. DEPUTY CHIEF OF STAFF, G6 (TRADOC). DEPUTY TO THE CG ARMY AVIATION CENTER OF EXCELLENCE/ DIRECTOR, CAPABILITIES DEVELOPMENT AND INTEGRATION. DEPUTY TO THE COMMANDING GENERAL, COMBINED ARMS CENTER.[[Page 21518]] ASSISTANT DEPUTY CHIEF OF STAFF, G- 3/5/7 AND DEPUTY G- 3/5 FOR OPS PLANS, TRADOC. DEPUTY CHIEF OF STAFF G-1/4 (PERSONNEL AND LOGISTICS). DEPUTY CHIEF OF STAFF G8, TRADOC. DEPUTY TO THE COMMANDING GENERAL, CYBER CENTER OF EXCELLENCE (CYBERCOE). DEPUTY TO THE COMMANDING GENERAL FIRES/DIRECTOR, CAPABILITIES, DEVELOPMENT AND INTEGRATION. UNITED STATES AFRICA DIRECTOR OF COMMAND. RESOURCES (J8), USAFRICOM. DIRECTOR OF RESOURCES (J1/J8), AFRICOM. DEPUTY DIRECTOR OF PROGRAM, (J5), USAFRICOM. FOREIGN POLICY ADVISOR FOR US AFRICA COMMAND. UNITED STATES ARMY DIRECTOR, RESEARCH CORPS OF ENGINEERS. AND DEVELOPMENT AND DIRECTOR, ENGINEERING RESEARCH AND DEVELOPMENT CENTER. DIRECTOR, INFORMATION TECHNOLOGY LABORATORY. CHIEF MILITARY PROGRAMS INTEGRATION DIVISION. DIRECTOR, REAL ESTATE. DIRECTOR FOR CORPORATE INFORMATION. DIRECTOR OF HUMAN RESOURCES. DIRECTOR OF RESOURCE MANAGEMENT. DIRECTOR OF CONTRACTING. DIRECTOR CONTINGENCY OPERATIONS/CHIEF, HOMELAND SECURITY OFFICE. UNITED STATES ARMY DEPUTY TO COMMANDER, CYBER COMMAND/ ARMY CYBER COMMAND/ SECOND ARMY. 2ND ARMY. DEPUTY TO COMMANDER/ SENIOR TECHNICAL DIRECTOR/CHIEF ENGINEER. DIRECTOR, TECHNICAL WARFARE CENTER, ARCYBER, ARCYBER. UNITED STATES ARMY DEPUTY CHIEF OF FORCES COMMAND. STAFF, G-1. ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS, G-3/5/ 7. ASSISTANT DEPUTY CHIEF OF STAFF FOR LOGISTICS. DEPUTY CHIEF OF STAFF FOR RESOURCE MANAGEMENT. ASSISTANT DEPUTY CHIEF OF STAFF, G- 6. UNITED STATES ARMY DIRECTOR, OPERATION MATERIEL COMMAND. & READINESS DIRECTORATE, G-3. ADCS, SUPPLY CHAIN MANAGEMENT, G3. DEPUTY CHIEF OF STAFF FOR CORPORATE INFORMATION/CHIEF INFORMATION OFFICER. ASSISTANT DEPUTY CHIEF OF STAFF, G-3/ 4 FOR LOGISTICS INTEGRATION. UNITED STATES ARMY DEPUTY TO THE NORTH. COMMANDING GENERAL, ARNORTH. UNITED STATES ARMY DIRECTOR, SPACE AND SPACE AND MISSILE MISSILE DEFENSE DEFENSE COMMAND. TECHNICAL CENTER. DIRECTOR CAPABILITY DEV INTEGRATION DIRECTORATE, SPACE AND MISSILE DEFENSE COMMAND. DIRECTOR, FUTURE WARFARE CENTER. DIRECTOR, PROGRAMS AND TECHNOLOGY. DEPUTY TO THE COMMANDER, UNITED STATES ARMY SPACE AND MISSILE DEFENSE COMMAND/ARMY FORCES STRATCOM.[[Page 21519]] UNITED STATES DIRECTOR, EUROPEAN COMMAND. INTERAGENCY PARTNERING, (J9). UNITED STATES FORCES DEPUTY DIRECTOR FOR KOREA. TRANSFORMATION AND RESTATIONING. DIRECTOR FOR FORCES, RESOURCES AND ASSESSMENTS (J8). UNITED STATES DIRECTOR, J8 SOUTHERN COMMAND. (RESOURCES AND ASSESSMENTS DIRECTORATE). DIRECTOR, EXERCISES AND COALITION AFFAIRS. DEPUTY DIRECTOR STRATEGY AND POLICY. DEPUTY DIRECTOR OF OPERATIONS, J3.OFFICE ASSISTANT SECRETARY ARMY ACQUISITION PROGRAM EXECUTIVE ARMY (ACQUISITION, EXECUTIVE. OFFICER SIMULATION, LOGISTICS AND TECHNOLOGY). TRAINING AND INSTRUMENTATION. DEPUTY PROGRAM EXECUTIVE OFFICER, COMMAND CONTROL AND COMMUNICATIONS TACTICAL. DEPUTY PROGRAM EXECUTIVE OFFICER FOR AVIATION. PROGRAM EXECUTIVE OFFICER ENTERPRISE INFORMATION SYSTEMS. DEPUTY PROGRAM EXECUTIVE OFFICER FOR SOLDIER. DEPUTY PROGRAM EXECUTIVE OFFICER, COMBAT SUPPORT AND COMBAT SERVICE SUPPORT. DEPUTY PROGRAM EXECUTIVE OFFICER GROUND COMBAT SYSTEMS. DEPUTY PROGRAM EXECUTIVE OFFICER (SIMULATION, TRAINING AND INSTRUMENTATION). DEPUTY JOINT PROGRAM EXECUTIVE OFFICER FOR CHEMICAL AND BIOLOGICAL DEFENSE. DEPUTY PROGRAM EXECUTIVE OFFICER, MISSILES AND SPACE. DEPUTY PROGRAM EXECUTIVE OFFICER, ENTERPRISE INFORMATION SYSTEMS. PROGRAM EXECUTIVE OFFICER COMBAT SUPPORT AND COMBAT SERVICE SUPPORT. DEPUTY PROGRAM EXECUTIVE OFFICER, INTELLIGENCE, ELECTRONIC WARFARE AND SENSORS. JOINT PEO FOR CHEMICAL AND BIOLOGICAL DEFENSE. PROGRAM EXECUTIVE OFFICER ASSEMBLED CHEMICAL WEAPONS ALTERNATIVE. DEPUTY JOINT PROGRAM EXECUTIVE OFFICER (ARMAMENT AND AMMUNITION).OFFICE ASSISTANT SECRETARY UNITED STATES ARMY DEPUTY TO THE ARMY (FINANCIAL MANAGEMENT FINANCIAL COMMANDER FOR AND COMPTROLLER). MANAGEMENT COMMAND. FINANCIAL MANAGEMENT OPERATIONS.OFFICE OF THE SECRETARY..... OFFICE OF THE PRINCIPAL DIRECTOR INSPECTOR GENERAL. TO THE INSPECTOR GENERAL (INSPECTIONS). UNITED STATES ARMY SUPERINTENDENT, NATIONAL MILITARY ARLINGTON NATIONAL CEMETERIES. CEMETERY. EXECUTIVE DIRECTOR OF THE ARMY NATIONAL CEMETERIES PROGRAM.OFFICE OF THE UNDER OFFICE DEPUTY UNDER ASSISTANT TO THE SECRETARY. SECRETARY OF ARMY. DUSA/DIRECTOR OF TEST AND EVALUATION. DIRECTOR CIVILIAN SENIOR LEADER MANAGEMENT OFFICE. OFFICE OF BUSINESS DEPUTY DIRECTOR, TRANSFORMATION. OFFICE OF BUSINESS TRANSFORMATION, OFFICE OF THE UNDER SECRETARY OF THE ARMY. DIRECTOR, OFFICE OF BUSINESS TRANSFORMATION.[[Page 21520]] OFFICE, CHIEF OF STAFF...... OFFICE, CHIEF ARMY ASSISTANT CHIEF OF RESERVE. THE ARMY RESERVE. DIRECTOR OF RESOURCE MANAGEMENT AND MATERIAL. UNITED STATES ARMY EXECUTIVE DIRECTOR-- TEST AND EVALUATION WHITE SANDS. COMMAND. EXECUTIVE DIRECTOR, OPERATIONAL TEST COMMAND. DIRECTOR, ARMY EVALUATION CENTER.OFFICE, DEPUTY CHIEF OF ARMY RESEARCH DIRECTOR, UNITED STAFF, G-1. INSTITUTE (DEPUTY STATES ARMY CHIEF OF STAFF FOR RESEARCH INSTITUTE PERSONNEL, FIELD AND CHIEF OPERATING AGENCY). PSYCHOLOGIST. OFFICE, DEPUTY CHIEF DEPUTY CHIEF OF STAFF, G-1 MARKETING OFFICER, (DEPUTY CHIEF OF ARMY ENTERPRISE STAFF FOR MARKETING OFFICE. PERSONNEL, FIELD OPERATING AGENCY).OFFICE, OFFICE, DEPUTY CHIEF UNITED STATES ARMY REGIONAL DIRECTOR OF STAFF , G-9. INSTALLATION (EUROPE). MANAGEMENT COMMAND. DIRECTOR, HUMAN RESOURCES (IMCOM). EXECUTIVE DPUTY TO COMMANDING GENERAL, IMCOM. DIRECTOR IMCOM SUPPORT (TRAINING). REGIONAL DIRECTOR (PACIFIC). DIRECTOR OF FACILITIES AND LOGISTICS. DIRECTOR, PLANS, OPERATIONS AND TRAINING, G-3/5/7, IMCOM. DIRECTOR IMCOM SUPPORT (READINESS). DIRECTOR IMCOM SUPPORT (SUSTAINMENT).UNITED STATES ARMY FUTURES AFC, CROSS DIRECTOR, ASSURED COMMAND. FUNCTIONAL TEAMS. PNT CROSS- FUNCTIONAL TEAM, SA. AFC, COMBAT DIRECTOR FOR CAPABILITIES AVIATION AND DEVELOPMENT CMD--US MISSILE RESEARCH, ARMY AVIATION AND DEVELOPMENT AND MISSILE CENTER. ENGINEERING CENTER. DIRECTOR FOR WEAPONS DEVELOPMENT AND INTEGRATION. DIRECTOR OF AVIATION ENGINEERING. DIRECTOR FOR SYSTEMS SIMULATION, SOFTWARE, AND INTEGRATION. AFC, COMBAT DIRECTOR, MUNITIONS CAPABILITIES ENGINEERING DEVELOPMENT CMD, TECHNOLOGY CENTER. ARMAMENTS CENTER. EXECUTIVE DIRECTOR, ENTERPRISE AND SYSTEMS INTEGRATION CENTER. EXECUTIVE DIRECTOR, WEAPONS AND SOFTWARE ENGINEER CENTER. DIRECTOR FOR ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING. AFC, COMBAT DIRECTOR, SENSORS CAPABILITIES AND ELECTRON DEVELOPMENT CMD, DEVICES ARMY RESEARCH DIRECTORATE. LABORATORY. DIRECTOR, HUMAN RESEARCH ENGINEERING DIRECTORATE, CCDC. DIRECTOR, SURVIVABILITY/ LETHALITY ANALYSIS DIRECTORATE. DIRECTOR, CCDC ARMY RESEARCH LABORATORY, CCDC. DIRECTOR WEAPONS AND MATERIALS RESEARCH DIRECTORATE. DIRECTOR, COMPUTATIONAL AND INFORMATION SCIENCE DIRECTORATE (2). DIRECTOR, SENSORS AND ELECTRON DEVICES DIRECTORATE, CCDC. AFC, COMBAT DIRECTOR, SPACE AND CAPABILITIES TERRESTRIAL DEVELOPMENT CMD, COMMITTEE C5ISR CENTER. DIRECTORATE. DIRECTOR, COMMUNICATIONS- ELECTRONICS RESEARCH, DEVELOPMENT AND ENGINEERING CENTER. DIRECTOR, COMMAND POWER AND INTEGRATION DIRECTORATE. DIRECTOR, NIGHT VISION/ ELECTROMAGNETICS SENSORS DIRECTORATE.[[Page 21521]] AFC, COMBAT DIRECTOR FOR CAPABILITIES PROGRAMS DEVELOPMENT CMD, INTEGRATION. CHEMICAL AND DIRECTOR, RESEARCH BIOLOGICAL CENTER. AND TECHNOLOGY DIRECTORATE, CBC, CCDC. DIRECTOR OPERATIONAL APPLICATIONS DIRECTORATE. DIRECTOR, ENGINEERING DIRECTORATE, CBC, CCDC. DIRECTOR, CHEMICAL AND BIOLOGICAL CENTER, CCDC. AFC, COMBAT DIRECTOR, CCDC DATA CAPABILITIES AND ANALYSIS DEVELOPMENT CMD, CENTER, CCDC. DATA ANALYSIS CENTER. AFC, COMBAT DIRECTOR FOR SYSTEMS CAPABILITIES INTEGRATION AND DEVELOPMENT CMD, ENGINEERING. GROUND VEHICLE DIRECTOR, CCDC SYSTEMS CENTER. GROUND VEHICLE SYSTEMS CENTER. DIRECTOR, RESEARCH, TECHNOLOGY DEVELOPMENT AND INTEGRATION. AFC, COMBAT DIRECTOR, NATICK CAPABILITIES SOLDIER RESEARCH DEVELOPMENT CMD, AND DEVELOPMENT SOLDIERS CENTER. ENGINEERING CENTER. AFC, COMBAT DEPUTY TO COMMANDING CAPABILITIES GENERAL, CCDC. DEVELOPMENT COMMAND. DIRECTOR, SCIENCE AND TECHNOLOGY INTEGRATION. AFC, FUTURES AND DEPUTY TO THE CONCEPTS CENTER, COMMANDING GENERAL, CAPABILITY MANEUVER CENTER OF DEVELOPMENT EXCELLENCE AND INTEGRATION DIRECTOR, DIRECTORATES. CAPABILITIES DEVELOPMENT AND INTEGRATION. AFC, FUTURES AND DIRECTOR OF CONCEPTS CENTER, OPERATIONS, TRAC THE RESEARCH AND ANALYSIS CENTER ANALYSIS CENTER. FORT LEAVENWORTH. DIRECTOR, THE TRAINING AND ANALYSIS CENTER, AFC. DIRECTOR OF FUTURES INTEGRATION, FCC. DIRECTOR OF OPERATIONS, TRAC, WSMR. AFC, FUTURES AND DIRECTOR FOR MAN CONCEPTS CENTER, PRINT DIRECTORATE. TRAC HUMAN SYSTEMS INTEGRATION. AFC, UNITED STATES PRINCIPAL ASSISTANT ARMY MEDICAL FOR ACQUISITION. RESEARCH AND MATERIEL COMMAND. UNITED STATES ARMY DEPUTY DIRECTOR/ FUTURES COMMAND-- CHIEF OF STAFF, FUTURES AND ARCIC. CONCEPTS CENTER.UNITED STATES ARMY CORPS OF COLD REGIONS DIRECTOR, COLD ENGINEERS. RESEARCH AND REGIONS RESEARCH ENGINEERING AND ENGINEERING LABORATORY HANOVER, LABORATORY. NEW HAMSHIRE. CONSTRUCTION DIRECTOR, ENGINEERING CONSTRUCTION RESEARCH LABORATORY ENGINEERING CHAMPAIGN, ILLINOIS. RESEARCH LABORATORIES. DIRECTORATE OF CIVIL CHIEF, OPERATIONS WORKS. DIVISION AND REGULATORY COMMUNITY OF PRACTICE. CHIEF, ENGINEERING AND CONSTRUCTION DIVISION. CHIEF, PLANNING AND POLICY DIVISION/ COMMUNITY OF PRACTICE. DIRECTOR OF CIVIL WORKS. CHIEF, PROGRAMS INTEGRATION DIVISION. DIRECTORATE OF CHIEF, ENVIRONMENTAL MILITARY PROGRAMS. COMMUNITY OF PRACTICE. CHIEF, INSTALLATION SUPPORT COMMUNITY OF PRACTICE. DIRECTOR OF MILITARY PROGRAMS. CHIEF, INTERAGENCY AND INTERNATIONAL SERVICES DIVISION. DIRECTORATE OF DEPUTY DIRECTOR OF RESEARCH AND RESEARCH AND DEVELOPMENT. DEVELOPMENT.[[Page 21522]] DIRECTORS OF REGIONAL BUSINESS ENGINEERING AND DIRECTOR (SOUTH TECHNICAL SERVICES. ATLANTIC DIVISION). REGIONAL BUSINESS DIRECTOR (NORTHWESTERN DIVISION). REGIONAL BUSINESS DIRECTOR (GREAT LAKES, OHIO RIVER DIVISION). REGIONAL BUSINESS DIRECTOR (NORTH ATLANTIC DIVISION). REGIONAL BUSINESS DIRECTOR (PACIFIC OCEAN DIVISION). REGIONAL BUSINESS DIRECTOR (SOUTHWESTERN DIVISION). REGIONAL BUSINESS DIRECTOR (SOUTH PACIFIC DIVISION). REGIONAL BUSINESS DIRECTOR, (MISSISSIPPI VALLEY DIVISION). DIRECTORS OF DIVISION PROGRAMS PROGRAMS MANAGEMENT. DIRECTOR (GREAT LAKE AND OHIO RIVER DIVISION). DIVISION PROGRAMS DIRECTOR (SOUTH PACIFIC DIVISION). DIVISION PROGRAMS DIRECTOR, TRANSATLANTIC DIVISION. DIVISION PROGRAMS DIRECTOR (NORTHWESTERN DIVISION). DIVISION PROGRAMS DIRECTOR (NORTH ATLANTIC DIVISION). DIVISION PROGRAMS DIRECTOR (SOUTH ATLANTIC DIVISION). DIVISION PROGRAMS DIRECTOR (MISSISSIPPI VALLEY DIV). DIVISION PROGRAMS DIRECTOR (PACIFIC OCEAN DIVISION). DIVISION PROGRAMS DIRECTOR (SOUTHWESTERN DIVISION). ENGINEER RESEARCH DIRECTOR, AND DEVELOPMENT ENVIRONMENTAL CENTER. LABORATORY. DEPUTY DIRECTOR ENGINEER RESEARCH AND DEVELOPMENT CENTER. DIRECTOR, COASTAL AND HYDRAULICS LABORATORY. DIRECTOR GEOTECHNICAL AND STRUCTURES LABORATORY. ENGINEER TOPOGRAPHIC DIRECTOR, ARMY LABORATORIES, GEOSPATIAL CENTER. CENTER OF ENGINEERS.UNITED STATES ARMY MATERIEL MILITARY SURFACE DEPUTY TO THE COMMAND. DEPLOYMENT COMMANDER, SURFACE DISTRIBUTION DEPLOYMENT AND COMMAND. DISTRIBUTION COMMAND. DIRECTOR, TRANSPORTATION ENGINEERING AGENCY/ DIRECTOR JOINT DISTRIBUTION PROCESS ANALYSIS CENTER. OFFICE OF DEPUTY EXECUTIVE DEPUTY TO COMMANDING GENERAL. THE COMMANDING GENERAL. OFFICE OF DEPUTY PRINCIPAL DEPUTY G-3 CHIEF OF STAFF FOR FOR OPERATIONS AND LOGISTICS AND LOGISTICS. OPERATIONS. OFFICE OF DEPUTY DEPUTY CHIEF OF CHIEF OF STAFF FOR STAFF FOR PERSONNEL. PERSONNEL. OFFICE OF THE DEPUTY ASSISTANT DEPUTY CHIEF OF STAFF FOR CHIEF OF STAFF FOR RESOURCE MANAGEMENT. RESOURCE MANAGEMENT, G-8/ EXECUTIVE DIRECTOR FOR BUSINESS. DEPUTY CHIEF OF STAFF FOR RESOURCE MANAGEMENT. TANK-AUTOMOTIVE AND DEPUTY TO THE ARMAMENTS COMMAND COMMANDER. (TANK-AUTOMOTIVE DIRECTOR INTEGRATED AND ARMAMENTS LOGISTICS SUPPORT COMMAND). CENTER. UNITED STATES ARMY DIRECTOR, SOFTWARE COMMUNICATIONS ENGINEERING ELECTRONICS COMMAND. DIRECTORATE. DEPUTY TO THE COMMANDING GENERAL, CECOM, LCMC. DIR, COMMUNICATIONS- ELECTRONICS LIFE CYCLE MGMT CMD LOGISTICS AND READINESS CENTER.[[Page 21523]] UNITED STATES ARMY EXECUTIVE DIRECTOR JOINT MUNITIONS FOR AMMUNITION. COMMAND. UNITED STATES ARMY DEPUTY TO THE AVIATION AND COMMANDER. MISSILE COMMAND DIRECTOR FOR TEST (ARMY MATERIEL MEASUREMENT COMMAND). DIAGNOSTIC EQUIPMENT ACTIVITY. ARMY AVIATION AND MISSILE COMMAND DIRECTOR, SPECIAL PROGRAMS (AVIATION). EXECUTIVE DIRECTOR, AVIATION AND MISSILE COMMAND LOGISTICS CENTER. UNITED STATES ARMY DEPUTY TO THE CONTRACTING COMMAND. COMMANDING GENERAL, ARMY CONTRACTING COMMAND. EXECUTIVE DIRECTOR ARMY CONTRACTING COMMAND--REDSTONE, AL. DEPUTY TO THE COMMANDER, UNITED STATES ARMY EXPEDITIONARY CONTRACTING COMMAND. DEPUTY TO THE COMMANDER, MISSION INSTALLATION CONTRACTING COMMAND. EXECUTIVE DIRECTOR, ACC-WARREN. EXECUTIVE DIRECTOR, ARMY CONTRACTING COMMAND--ABERDEEN. EXECUTIVE DIRECTOR ARMY CONTRACTING COMMAND--ROCK ISLAND. UNITED STATES ARMY DEPUTY TO THE SECURITY ASSISTANCE COMMANDING GENERAL. COMMAND. UNITED STATES ARMY EXECUTIVE DIRECTOR, SUSTAINMENT COMMAND. SUPPORT OPERATIONS. DEPUTY TO THE COMMANDER. EXECUTIVE DIRECTOR FOR LOGCAP.DEPARTMENT OF THE NAVYCHIEF OF NAVAL OPERATIONS... BUREAU OF MEDICINE DIRECTOR, BUSINESS AND SURGERY. OPERATIONS/ COMPTROLLER. EXECUTIVE DIRECTOR, BUREAU OF MEDICINE AND SURGERY. COMMANDER, NAVY DIRECTOR, TOTAL INSTALLATIONS FORCE MANPOWER. COMMAND. COMPTROLLER. DIRECTOR STRATEGY AND FUTURE REQUIREMENTS. DIRECTOR OF OPERATIONS. DEPUTY COMMANDER. COUNSEL, COMMANDER NAVY INSTALLATIONS COMMAND. COMMANDER, SUBMARINE EXECUTIVE DIRECTOR, FORCES. SUBMARINE FORCES. MILITARY SEALIFT DIRECTOR, MILITARY COMMAND. SEALIFT COMMAND MANPOWER AND PERSONNEL. DIRECTOR, SHIP MANAGEMENT. DIRECTOR, MARITIME OPERATIONS. EXECUTIVE DIRECTOR. NAVAL AIR SYSTEMS DIRECTOR, AIR ANTI- COMMAND SUBMARINE WARFARE, HEADQUARTERS. ASSAULT AND SPECIAL MISSION PROGRAMS CONTRACTS DEPARTMENT. DEPUTY COUNSEL, OFFICE OF COUNSEL. DIRECTOR, PROPULSION AND POWER. DIRECTOR, STRIKE WEAPONS, UNMANNED AVIATION, NAVAL AIR PROGRAMS CONTRACTS DEPARTMENT. DIRECTOR INDUSTRIAL OPERATIONS. DIRECTOR, MISSION ENGINEERING AND ANALYSIS. COUNSEL, NAVAL AIR SYSTEMS COMMAND. DIRECTOR, COST ESTIMATING AND ANALYSIS. DIRECTOR OF CONTRACTS, F-35 JSF. F-35 PRODUCT SUPPORT MANAGER. DIRECTOR, AIR VEHICLE ENGINEERING. ASSISTANT COMMANDER FOR CONTRACTS.[[Page 21524]] COMPTROLLER. DIRECTOR, SYSTEMS ENGINEERING DEPARTMENT. DIRECTOR, PRODUCT SUPPORT MANAGEMENT INTEGRATION. DIRECTOR, TACTICAL AIRCRAFT AND MISSILES CONTRACTS DEPARTMENT. DEPUTY ASSISTANT COMMANDER FOR RESEARCH AND ENGINEERING. DEPUTY COMMANDER, NAVAL AIR SYSTEMS COMMAND. DIRECTOR, SUSTAINMENT GROUP. DIRECTOR, ENGINEERING GROUP. ASSISTANT COMMANDER, CORPORATE OPERATIONS AND TOTAL FORCE. NAVAL METEOROLOGY TECHNICAL/DEPUTY AND OCEANOGRAPHY DIRECTOR. COMMUNICATIONS, STENNIS SPACE CENTER, MISSISSIPPI. NAVY CYBER FORCES... DEPUTY COMMANDER. OFFICE OF COMMANDER, DEPUTY CHIEF OF UNITED STATES FLEET STAFF, PERSONNEL FORCES COMMAND. DEVELOPMENT AND ALLOCATION. DIRECTOR, FLEET INSTALLATION AND ENVIRONMENT. ASSISTANT DEPUTY CHIEF OF STAFF, FLEET POLICY AND CAPABILITIES REQUIREMENTS. EXECUTIVE DIRECTOR, NAVY WARFARE DEVELOPMENT COMMAND. DIRECTOR, COMMAND, CONTROL, COMMUNICATIONS, COMPUTER, COMBAT SYSTEMS, INTELLIGENCE AND STRATEGIC/COMMAND INFORMATION OFFICER. EXECUTIVE DIRECTOR/ CHIEF OF STAFF. DEPUTY DIRECTOR, MARITIME OPERATIONS. DIRECTOR, COMMAND, CONTROL, COMMUNICATIONS, COMPUTER COMBAT SYSTEMS, INTELLIGENCE, SURVEILLANCE AND RECONNAISSANCE. OFFICE OF THE EXECUTIVE DIRECTOR, COMMANDER, UNITED NAVAL SURFACE STATES PACIFIC FORCES. FLEET. EXECUTIVE DIRECTOR, PACIFIC FLEET PLANS AND POLICY. EXECUTIVE DIRECTOR FOR COMMUNICATIONS AND INFORMATION SYSTEMS AND CHIEF INFORMATION OFFICER. EXECUTIVE DIRECTOR, NAVAL AIR FORCES. CHIEF OF STAFF. EXECUTIVE DIRECTOR, TOTAL FORCE MANAGEMENT. DEPUTY FOR NAVAL MINE AND ANTI- SUBMARINE WARFARE COMMAND. UNITED STATES FLEET EXECUTIVE DIRECTOR CYBER COMMAND/ AND CHIEF UNITED STATES TENTH INFORMATION FLEET. OFFICER.DEPARTMENT OF THE NAVY...... CHIEF OF NAVAL HEAD, CAMPAIGN OPERATIONS. ANALYSIS BRANCH. DIRECTOR NAVY STAFF. EXECUTIVE DIRECTOR, NAVAL SPECIAL WARFARE COMMAND. DIRECTOR, DIGITAL WARFARE OFFICE. DIRECTOR, FLEET READINESS. DEPUTY CHIEF OF NAVY RESERVE. DIRECTOR, SPECIAL PROGRAMS DIVISION (N89). DEPUTY DIRECTOR, NAVY CYBERSECURITY. DEPUTY COMMANDER. DIRECTOR OF STRATEGY. DIRECTOR, STRATEGIC MOBILITY AND COMBAT LOGISTICS DIVISION. ASSISTANT DEPUTY CHIEF OF NAVAL OPERATIONS, FLEET READINESS AND LOGISTICS.[[Page 21525]] DIRECTOR, TOTAL FORCE REQUIREMENTS, ANALYSIS AND DEVELOPMENT (N12/ N15). DIRECTOR NAVAL HISTORY AND HERITAGE COMMAND. DEPUTY DIRECTOR, PROGRAM DIVISION (N80B). DEPUTY DIRECTOR, AIR WARFARE ASSISTANT DEPUTY CHIEF OF NAVAL OPERATIONS (MANPOWER, PERSONNEL, TRAINING AND EDUCATION). DIRECTOR, CHIEF OF NAVAL OPERATIONS ENERGY AND ENVIRONMENTAL READINESS DIVISION. DEPUTY DIRECTOR, UNDERSEA WARFARE DIVISION. DEPUTY DIRECTOR SURFACE WARFARE DIVISION. DEPUTY DIRECTOR, EXPEDITIONARY WARFARE DIVISION. DEPUTY DIRECTOR, WARFARE INTEGRATION. ASSISTANT DEPUTY CHIEF OF NAVAL OPERATIONS FOR INFORMATION DOMINANCE (N2/N6). DEPUTY DIRECTOR ASSESSMENT DIVISION (N8 1B). ASSISTANT DEPUTY CHIEF OF NAVAL OPERATIONS, WARFARE SYSTEMS. DIRECTOR, COMMUNICATIONS AND NETWORK DIVISION (N2/N6F1). ASSISTANT DEPUTY CHIEF OF NAVAL OPERATIONS (RESOURCES, WARFARE REQUIREMENTS AND ASSESSMENTS) N8B. FINANCIAL MANAGER AND CHIEF RESOURCES OFFICER FOR MANPOWER, PERSONNEL, TRAINING AND EDUCATION. MARINE CORPS SYSTEMS ASSISTANT DEPUTY COMMAND. COMMANDANT FOR INFORMATION. DEPUTY TO THE COMMANDER FOR RESOURCE MANAGEMENT. CHIEF ENGINEER, MARINE CORPS SYSTEMS COMMAND. EXECUTIVE DIRECTOR. NAVAL FACILITIES DIRECTOR, NAVY CRANE ENGINEERING COMMAND. CENTER. DIRECTOR OF PUBLIC WORKS. EXECUTIVE DIRECTOR. DEPUTY COMMANDER, ACQUISITION. CHIEF ENGINEER. DIRECTOR OF ENVIRONMENT. DIRECTOR OF ASSET MANAGEMENT. ASSISTANT COMMANDER/ CHIEF MANAGEMENT OFFICER. COMPTROLLER COUNSEL, NAVAL FACILITIES ENGINEERING COMMAND. NAVAL INFORMATION DIRECTOR CORPORATE AND WARFARE SYSTEMS OPERATIONS/COMMAND COMMAND. INFORMATION OFFICER. EXECUTIVE DIRECTOR, FLEET READINESS DIRECTORATE. EXECUTIVE DIRECTOR. ASSISTANT CHIEF ENGINEER FOR CERTIFICATION AND MISSION ASSURANCE. ASSISTANT CHIEF ENGINEER FOR MISSION ARCHITECTURE AND SYSTEMS ENGINEERING. DIRECTOR, CONTRACTS. DIRECTOR, READINESS/ LOGISTICS DIRECTORATE. DEPUTY CHIEF ENGINEER.[[Page 21526]] NAVAL SEA SYSTEMS DEPUTY DIRECTOR, COMMAND. ADVANCED AIRCRAFT CARRIER SYSTEM DIVISION. DIRECTOR, FLEET READINESS DIVISION. EXECUTIVE DIRECTOR, SHIP DESIGN, AND ENGINEERING DIRECTORATE. DIRECTOR FOR AIRCRAFT CARRIER DESIGN AND SYSTEMS ENGINEERING. DEPUTY DIRECTOR, REACTOR REFUELING DIVISION. DIRECTOR, SURFACE SYSTEMS CONTRACTS DIVISION. HEAD, ADVANCED REACTOR BRANCH. ASSISTANT COMMANDER, SUPPLY CHAIN TECHNOLOGY AND SYSTEM INTEGRATION. DIVISION TECHNICAL DIRECTOR, NAVAL SURFACE WARFARE CENTER, PHILADELPHIA DIVISION. EXECUTIVE DIRECTOR FOR COMMANDER, NAVY REGIONAL MAINTENANCE CENTERS (CNRMC). DIRECTOR, FLEET SUPPORT CONTRACTS DIVISION. DIRECTOR, REACTOR MATERIALS DIVISION. DIRECTOR FOR MARINE ENGINEERING. DIVISION TECHNICAL DIRECTOR, NSWC CORONA DIVISION. DIRECTOR FOR SHIP INTEGRITY AND PERFORMANCE ENGINEERING. EXECUTIVE DIRECTOR NAVAL SURFACE AND UNDERSEA WARFARE CENTERS. DIVISION TECHNICAL DIRECTOR, NAVAL SURFACE WARFARE CENTER PORT HUENEME DIVISION. NUCLEAR ENGINEERING AND PLANNING MANAGER. DIRECTOR, INTEGRATED WARFARE SYSTEMS ENGINEERING GROUP. COUNSEL, NAVAL SEA SYSTEMS COMMAND. DIRECTOR FOR CONTRACTS. DIRECTOR, REACTOR MATERIALS DIVISION. DIRECTOR FOR SURFACE SHIP DESIGN AND SYSTEMS ENGINEERING. DIRECTOR, COST ENGINEERING AND INDUSTRIAL ANALYSIS. DIRECTOR, SHIPBUILDING CONTRACTS DIVISION. ASSISTANT DEPUTY COMMANDER FOR INDUSTRIAL OPERATIONS. DEPUTY FOR WEAPONS SAFETY. EXECUTIVE DIRECTOR FOR LOGISTICS MAINTENANCE AND INDUSTRIAL OPERATIONS DIRECTORATE. EXECUTIVE DIRECTOR, UNDERSEA WARFARE DIRECTORATE. DIRECTOR, REACTOR PLANT COMPONENTS AND AUXILIARY EQUIPMENT DIVISION. DIRECTOR, SURFACE SHIP SYSTEMS DIVISION. DIRECTOR, REACTOR SAFETY AND ANALYSIS DIVISION. DIRECTOR FOR SUBMARINE/ SUBMERSIBLE DESIGN AND SYSTEMS ENGINEERING. PROGRAM MANAGER FOR COMMISSIONED SUBMARINES. DIRECTOR, OFFICE OF RESOURCE MANAGEMENT. DIRECTOR, REACTOR REFUELING DIVISION.[[Page 21527]] DIRECTOR OF RADIOLOGICAL CONTROLS. EXECUTIVE DIRECTOR, UNDERSEA INTEGRATION (PEO SUB C). EXECUTIVE DIRECTOR, SURFACE WARFARE DIRECTORATE. DIRECTOR, NUCLEAR COMPONENTS DIVISION. EXECUTIVE DIRECTOR. DEPUTY COMMANDER, CORPORATE OPERATIONS DIRECTORATE. DEPUTY COMMANDER/ COMPTROLLER. NAVAL SUPPLY SYSTEMS ASSISTANT DEPUTY COMMAND COMMANDER FOR HEADQUARTERS. FINANCIAL MANAGEMENT. ASSISTANT COMMANDER FOR CONTRACTING MANAGEMENT. EXECUTIVE STRATEGIC INITIATIVES. ASSISTANT COMMANDER FOR SUPPLY CHAIN MANAGEMENT (SCM) POLICY AND PERFORMANCE. DEPUTY COMMANDER FOR FINANCIAL MANAGEMENT/ COMPTROLLER. COUNSEL, NAVAL SUPPLY SYSTEMS COMMAND. DEPUTY COMMANDER, CORPORATE OPERATIONS. EXECUTIVE DIRECTOR, OFFICE OF SPECIAL PROJECTS. VICE COMMANDER. OFFICE OF NAVAL DIRECTOR FOR RESEARCH. AEROSPACE SCIENCE RESEARCH DIVISION. DIRECTOR, OCEAN, ATMOSPHERE AND SPACE RESEARCH DIVISION. DIRECTOR, ELECTRONICS, SENSORS, AND NETWORKS RESEARCH DIVISION. DIRECTOR, SHIP SYSTEMS AND ENGINEERING DIVISION. DIRECTOR, MISSION SUPPORT. EXECUTIVE DIRECTOR. DIRECTOR, HUMAN AND BIOENGINEERED SYSTEMS DIVISION. DIRECTOR, CONTRACTS, GRANTS AND ACQUISITIONS. COMPTROLLER. HEAD, AIR WARFARE AND WEAPONS SCIENCE AND TECHNOLOGY DEPARTMENT. DIRECTOR, MATHEMATICS COMPUTER AND INFORMATION SCIENCES (MCIS) DIVISION. HEAD, COMMAND, CONTROL, COMMUNICATIONS, INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (C4ISR) SCIENCE AND TECHNOLOGY DEPARTMENT. HEAD MISSION CAPABLE PERSISTENT AND SURVIVABLE NAVAL PLATFORMS DEPARTMENT. NAVAL ACCELERATOR EXECUTIVE. PATENT COUNSEL OF THE NAVY. COUNSEL, OFFICE OF NAVAL RESEARCH. HEAD, WARFIGHTER PERFORMANCE SCIENCE AND TECHNOLOGY DEPARTMENT. HEAD, OCEAN, BATTLESPACE SENSING SCIENCE AND TECHNOLOGY DEPARTMENT. DIRECTOR, UNDERSEA WEAPONS AND NAVAL MATERIALS SCIENCE AND TECHNOLOGY DIVISION. OFFICE OF THE DEPUTY ASSISTANT FOR SECRETARY OF THE ADMINISTRATION. NAVY. DIRECTOR, SEXUAL ASSAULT PREVENTION AND RESPONSE.[[Page 21528]] UNITED STATES MARINE DEPUTY DIRECTOR, CORPS HEADQUARTERS MANPOWER PLANS AND OFFICE. POLICY DIVISION. ASSISTANT DEPUTY COMMANDANT FOR MANPOWER AND RESERVE AFFAIRS. EXECUTIVE DEPUTY, MARINE CORPS LOGISTICS COMMAND. DEPUTY COUNSEL FOR THE COMMANDANT OF THE MARINE CORPS. DIRECTOR PROGRAM ANALYSIS AND EVALUATION DIVISION. DIRECTOR PACIFIC DIVISION, PLANS, POLICIES AND OPERATIONS. ASSISTANT DEPUTY COMMANDANT FOR PLANS POLICIES AND OPERATIONS (SECURITY). EXECUTIVE DIRECTOR, MARINE FORCES COMMAND. DEPUTY ASSISTANT DEPUTY COMMANDANT, INSTALLATIONS AND LOGISTICS (FACILITIES). ASSISTANT DEPUTY COMMANDANT, INSTALLATIONS AND LOGISTICS (E- BUSINESS AND CONTRACTS). COUNSEL FOR THE COMMANDANT. ASSISTANT DEPUTY COMMANDANT, INSTALLATIONS AND LOGISTICS. ASSISTANT DEPUTY COMMANDANT FOR PROGRAMS AND RESOURCES/FISCAL DIRECTOR OF THE MARINE CORPS. ASSISTANT DEPUTY COMMANDANT FOR AVIATION (SUSTAINMENT). ASSISTANT DEPUTY COMMANDANT, RESOURCES (PERSONNEL AND READINESS).MARINE CORPS SYSTEMS COMMAND MARINE CORPS COMBAT EXECUTIVE DEPUTY DEVELOPMENT TRAINING AND COMMAND; QUANTICO, EDUCATION COMMAND. VIRGINIA. MARINE FORCES EXECUTIVE DIRECTOR, RESERVE, NEW MARINE FORCES ORLEANS, LA. RESERVE.NAVAL AIR SYSTEMS COMMAND NAVAL AIR WARFARE DEPUTY ASSISTANT HEADQUARTERS. CENTER AIRCRAFT COMMANDER FOR TEST DIVISION. AND EVALUATION/ EXECUTIVE DIRECTOR NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION/DIRECTOR, TEST AND EVALUATION NAWCAD. DIRECTOR, AIRCRAFT LAUNCH AND RECOVERY EQUIPMENT/SUPPORT EQUIPMENT. DIRECTOR, FLIGHT TEST ENGINEERING. DIRECTOR, BATTLESPACE SIMULATION. NAVAL AIR WARFARE DIRECTOR, HUMAN CENTER TRAINING SYSTEMS DEPARTMENT. SYSTEMS DIVISION. NAVAL AIR WARFARE DIRECTOR, RANGE CENTER WEAPONS DEPARTMENT. DIVISION, CHINA EXECUTIVE DIRECTOR, LAKE, CALIFORNIA. NAVAL AIR WARFARE CENTER WEAPONS DIVISION/DIRECTOR, RESEARCH ENGINEERING. DIRECTOR, WEAPONS AND ENERGETICS DEPARTMENT. DIRECTOR, AVIONICS, SENSORS AND ELECTRONIC WARFARE.NAVAL INFORMATION AND NAVAL INFORMATION COMPTROLLER/BUSINESS WARFARE SYSTEMS COMMAND. AND WARFARE SYSTEMS RESOURCE MANAGER. CENTER. DIRECTOR, SCIENCE AND TECHNOLOGY. EXECUTIVE DIRECTOR, PROGRAM EXECUTIVE OFFICE, ENTERPRISE INFORMATION SYSTEMS. EXECUTIVE DIRECTOR. COUNSEL, SPACE AND NAVAL WARFARE SYSTEMS COMMAND. NAVAL INFORMATION EXECUTIVE DIRECTOR. AND WARFARE SYSTEMS CENTER, CHARLESTON.[[Page 21529]] NAVAL SEA SYSTEMS COMMAND... NAVAL SHIPYARDS..... NUCLEAR ENGINEERING AND PLANNING MANAGER; PORTSMOUTH NAVAL SHIPYARD. NAVAL SHIPYARD NUCLEAR ENGINEERING AND PLANNING MANAGER, NORFOLK NAVAL SHIPYARD. NUCLEAR ENGINEERING AND PLANNING MANAGER, PUGET SOUND NAVAL SHIPYARD. NAVAL SURFACE DIVISION TECHNICAL WARFARE CENTER. DIRECTOR, NAVAL SURFACE WARFARE CENTER DAHLGREN DIVISION. NAVAL SURFACE DIVISION TECHNICAL WARFARE CENTER, DIRECTOR, NAVAL CARDEROCK DIVISION. SURFACE WARFARE CENTER, CARDEROCK DIVISION. NAVAL SURFACE DIVISION TECHNICAL WARFARE CENTER, DIRECTOR, NSWC CRANE DIVISION. CRANE DIVISION. NAVAL SURFACE DIVISION TECHNICAL WARFARE CENTER, DIRECTOR NAVAL DAHLGREN DIVISION. SURFACE WARFARE CENTER PANAMA CITY DIVISION. NAVAL SURFACE DIVISION TECHNICAL WARFARE CENTER, DIRECTOR, NAVAL INDIAN HEAD SURFACE WARFARE DIVISION. CENTER INDIAN HEAD EXPLOSIVE ORDINANCE DISPOSAL TECHNOLOGY DIVISION. NAVAL UNDERSEA DIVISION TECHNICAL WARFARE CENTER DIRECTOR, NAVAL DIVISION, KEYPORT, UNDERSEA WARFARE WASHINGTON. CENTER DIVISION KEYPORT. NAVAL UNDERSEA DIVISION TECHNICAL WARFARE CENTER DIRECTOR, NAVAL DIVISION, NEWPORT, UNDERSEA WARFARE RHODE ISLAND. CENTER DIVISION NEWPORT.NAVAL SUPPLY SYSTEMS COMMAND NAVY SUPPLY DIRECTOR OF FINANCE/ HEADQUARTERS. INFORMATION SYSTEMS COMPTROLLER. ACTIVITY. WEAPON SYSTEMS VICE COMMANDER, SUPPORT. NAVSUP WEAPON SYSTEMS SUPPORT.OFFICE OF NAVAL RESEARCH.... NAVAL RESEARCH ASSOCIATE DIRECTOR LABORATORY. OF RESEARCH FOR BUSINESS OPERATIONS. ASSOCIATE DIRECTOR OF RESEARCH FOR OCEAN AND ATMOSPHERIC SCIENCE AND TECHNOLOGY. ASSOCIATE DIRECTOR OF RESEARCH FOR SYSTEMS. SUPERINTENDENT, SPACE SYSTEMS DEVELOPMENT DEPARTMENT. DIRECTOR, RESOURCE MANAGEMENT. SUPERINTENDENT, OPTICAL SCIENCES DIVISION. SUPERINTENDANT, INFORMATION TECHNOLOGY DIVISION. SUPERINTENDENT CHEMISTRY DIVISION. DIRECTOR, NAVAL CENTER FOR SPACE TECHNOLOGY. SUPERINTENDENT, OCEAN SCIENCES DIVISION. SUPERINTENDENT, RADAR DIVISION. SUPERINTENDENT, MARINE METEOROLOGY DIVISION. SUPERINTENDENT, ACOUSTICS DIVISION. SUPERINTENDENT, SPACECRAFT ENGINEERING DEPARTMENT. SUPERINTENDENT, SPACE SCIENCES DIVISION. SUPERINTENDENT, PLASMA PHYSICS DIVISION. SUPERINTENDENT, ELECTRONICS SCIENCE AND TECHNOLOGY DIVISION. SUPERINTENDENT, REMOTE SENSING DIVISION. SUPERINTENDENT, CENTER FOR BIOMOLECULAR SCIENCE AND ENGINEERING. SUPERINTENDENT, MATERIAL SCIENCE AND TECHNOLOGY DIVISION. DIRECTOR OF RESEARCH.[[Page 21530]] ASSOCIATE DIRECTOR OF RESEARCH FOR MATERIAL SCIENCE AND COMPONENT TECHNOLOGY. SUPERINTENDENT, TACTICAL ELECTRONIC WARFARE DIVISION.OFFICE OF THE ASSISTANT OFFICE OF CIVILIAN DIRECTOR, HUMAN SECRETARY OF NAVY (MANPOWER HUMAN RESOURCES. RESOURCES AND RESERVE AFFAIRS). OPERATIONS. DIRECTOR, HUMAN RESOURCES SYSTEMS AND ANALYTICS. DEPUTY DIRECTOR, OFFICE OF CIVILIAN HUMAN RESOURCES. DIRECTOR, HUMAN RESOURCES POLICY AND PROGRAMS DEPARTMENT.OFFICE OF THE ASSISTANT PROGRAM EXECUTIVE DEPUTY PROGRAM SECRETARY OF THE NAVY OFFICERS. EXECUTIVE OFFICER (RESEARCH, DEVELOPMENT AND FOR UNMANNED ACQUISITION). AVIATION PROGRAMS. DIRECTOR, PRODUCTION DEPLOYMENT AND FLEET READINESS. EXECUTIVE DIRECTOR FOR COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS AND INTELLIGENCE (C4I). EXECUTIVE DIRECTOR, COMBATANTS, PROGRAM EXECUTIVE OFFICERS SHIPS. EXECUTIVE DIRECTOR, PROGRAM EXECUTIVE OFFICERS FOR AIRCRAFT CARRIERS. DEPUTY PROGRAM EXECUTIVE OFFICERS FOR STRIKE WEAPONS. DEPUTY PROGRAM EXECUTIVE OFFICERS FOR TACTICAL AIR PROGRAMS. EXECUTIVE DIRECTOR, PROGRAM EXECUTIVE OFFICERS FOR INTEGRATED WARFARE SYSTEMS. EXECUTIVE DIRECTOR, PROGRAM EXECUTIVE OFFICE SUBMARINES. DIRECTOR, DEVELOPMENT AND INTEGRATION. EXECUTIVE DIRECTOR, PROGRAM EXECUTIVE OFFICE, LITTORAL COMBAT SHIPS. PROGRAM EXECUTIVE OFFICER (ENTERPRISE INFORMATION SYSTEMS). EXECUTIVE DIRECTOR, PROGRAM EXECUTIVE OFFICE, COLUMBIA. DEPUTY PROGRAM EXECUTIVE OFFICERS AIR ASSAULT AND SPECIAL MISSION. EXECUTIVE DIRECTOR, AMPHIBIOUS, AUXILIARY AND SEALIFT SHIPS, PROGRAM EXECUTIVE OFFICERS SHIPS. STRATEGIC SYSTEMS HEAD, RESOURCES PROGRAMS. BRANCH (COMPTROLLER) AND DEPUTY DIRECTOR, PLANS AND PROGRAM DIVISION. BRANCH HEAD REENTRY SYSTEMS BRANCH. ASSISTANT FOR SYSTEMS INTEGRATION AND COMPATIBILITY. ASSISTANT FOR SHIPBOARD SYSTEMS. ASSISTANT FOR MISSILE PRODUCTION, ASSEMBLY AND OPERATIONS. ASSISTANT FOR MISSILE ENGINEERING SYSTEMS. DIRECTOR, PLANS AND PROGRAMS DIVISION. CHIEF ENGINEER. DIRECTOR, INTEGRATED NUCLEAR WEAPONS SAFETY AND SECURITY. TECHNICAL PLANS OFFICER. COUNSEL, STRATEGIC SYSTEMS PROGRAMS[[Page 21531]] OFFICE OF THE SECRETARY OF NAVAL CRIMINAL DIRECTOR, NAVAL THE NAVY. INVESTIGATIVE CRIMINAL SERVICE. INVESTIGATIVE SERVICE. CRIMINAL INVESTIGATOR, DEPUTY DIRECTOR OPERATIONAL SUPPORT. CRIMINAL INVESTIGATOR, EXECUTIVE ASSISTANT DIRECTOR FOR GLOBAL OPERATIONS. CRIMINAL INVESTIGATOR, EXECUTIVE ASSISTANT DIRECTOR FOR ATLANTIC OPERATIONS. CRIMINAL INVESTIGATOR, EXECUTIVE ASSISTANT DIRECTOR FOR PACIFIC OPERATIONS. CRIMINAL INVESTIGATOR, DEPUTY DIRECTOR, NAVAL CRIMINAL INVESTIGATIVE SERVICE. CRIMINAL INVESTIGATOR, EXECUTIVE ASSISTANT DIRECTOR FOR CRIMINAL OPERATIONS. OFFICE OF THE EXECUTIVE DIRECTOR ASSISTANT SECRETARY PUBLIC-PRIVATE OF NAVY (ENERGY, PARTNERSHIP INSTALLATIONS AND REVIEWS. ENVIRONMENT). DEPUTY ASSISTANT SECRETARY OF THE NAVY (ENVIRONMENT). DEPUTY ASSISTANT SECRETARY OF THE NAVY (INFRASTRUCTURE AND FACILITIES). PRINCIPAL DEPUTY ASSISTANT SECRETARY OF THE NAVY (ENERGY, INSTALLATIONS AND ENVIRONMENT). OFFICE OF THE DEPUTY ASSISTANT ASSISTANT SECRETARY SECRETARY OF THE OF NAVY (FINANCIAL NAVY FOR COST AND MANAGEMENT AND ECONOMICS. COMPTROLLER). ASSOCIATE DIRECTOR, OFFICE OF BUDGET/ FISCAL MANAGEMENT DIVISION. ASSISTANT GENERAL COUNSEL (FINANCIAL MANAGEMENT AND COMPTROLLER). DIRECTOR, INVESTMENT AND DEVELOPMENT DIVISION. DEPUTY ASSISTANT SECRETARY OF THE NAVY (FINANCIAL POLICY AND SYSTEMS). DIRECTOR, POLICY AND PROCEDURES. DASN FINANCIAL MANAGEMENT SYSTEMS. PRINCIPAL DEPUTY ASSISTANT SECRETARY OF THE NAVY FINANCIAL MANAGEMENT AND COMPTROLLER. DIRECTOR, PROGRAM/ BUDGET COORDINATION DIVISION. DEPUTY ASSISTANT SECRETARY OF THE NAVY FOR FINANCIAL OPERATIONS. DIRECTOR, CIVILIAN RESOURCES AND BUSINESS AFFAIRS DIVISION. DEPUTY DASN FINANCIAL MANAGEMENT SYSTEMS ( SYSTEMS TRANSFORMATION). OFFICE OF THE ASSISTANT GENERAL ASSISTANT SECRETARY COUNSEL (MANPOWER OF NAVY (MANPOWER AND RESERVE AND RESERVE AFFAIRS). AFFAIRS). DEPUTY ASSISTANT SECRETARY OF THE NAVY (MILITARY MANPOWER AND PERSONNEL). PRINCIPAL DEPUTY MANPOWER AND RESERVE AFFAIRS. DEPUTY ASSISTANT SECRETARY OF THE NAVY (CIVILIAN HUMAN RESOURCES).[[Page 21532]] OFFICE OF THE PEO FOR AVIATION ASSISTANT SECRETARY COMMON SYSTEMS AND OF THE NAVY COMMERCIAL (RESEARCH, SERVICES. DEVELOPMENT AND EXECUTIVE DIRECTOR, ACQUISITION). F-35, JOINT PROGRAM OFFICE. DEPUTY ASSISTANT SECRETARY OF THE NAVY (SHIPS). DEPUTY ASSISTANT SECRETARY OF THE NAVY FOR SUSTAINMENT. PROGRAM EXECUTIVE OFFICER, ***LAND*** SYSTEMS MARINE CORPS. CHIEF OF STAFF/ POLICY. PRINCIPAL CIVILIAN DEPUTY ASSISTANT SECRETARY OF THE NAVY (ACQUISITION WORKFORCE). DIRECTOR, TECHNOLOGY SECURITY AND COOPERATIVE PROGRAMS DIRECTORATE. DEPUTY ASSISTANT SECRETARY OF THE NAVY (AIR PROGRAMS). DEPUTY FOR TEST AND EVALUATION. DEPUTY ASSISTANT SECRETARY OF THE NAVY (COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS AND INTELLIGENCE) SPACE). DEPUTY ASSISTANT SECRETARY OF THE NAVY (RESEARCH, DEVELOPMENT, TEST AND EVALUATION). ASSISTANT GENERAL COUNSEL (RESEARCH, DEVELOPMENT AND ACQUISITION). EXECUTIVE DIRECTOR, DEPUTY ASSISTANT SECRETARY OF THE NAVY (ACQUISITION AND PROCUREMENT). DEPUTY ASSISTANT SECRETARY OF THE NAVY (MANAGEMENT AND BUDGET). EXECUTIVE DIRECTOR, NAVY INTERNATIONAL PROGRAMS OFFICE. OFFICE OF THE PRINCIPAL DEPUTY GENERAL COUNSEL. GENERAL COUNSEL. ASSOCIATE GENERAL COUNSEL (LITIGATION)/ DIRECTOR, NAVY LITIGATION OFFICE. SPECIAL COUNSEL FOR LITIGATION. ASSISTANT GENERAL COUNSEL (ACQUISITION INTEGRITY). DEPUTY GENERAL COUNSEL. ASSISTANT GENERAL COUNSEL (ENERGY, INSTALLATIONS, AND ENVIRONMENT). ASSISTANT GENERAL COUNSEL (INTELLIGENCE). COUNSEL, MILITARY SEALIFT COMMAND. DEPUTY COUNSEL NAVAL SEA SYSTEMS COMMAND. OFFICE OF THE NAVAL DEPUTY NAVAL INSPECTOR GENERAL. INSPECTOR GENERAL. DEPUTY INSPECTOR GENERAL OF THE MARINE CORPS. OFFICE OF THE UNDER DIRECTOR FOR SECRETARY OF THE BUSINESS REFORM AND NAVY. DIRECTOR, OFFICE OF THE CHIEF MANAGEMENT OFFICE. PRINCIPAL DIRECTOR DEPUTY UNDER SECRETARY OF THE NAVY (POLICY). SENIOR DIRECTOR FOR SECURITY AND INTELLIGENCE. SENIOR DIRECTOR, INTEGRATION SUPPORT DIRECTORATE.OFFICE OF THE UNDER OFFICE OF THE ASSISTANT AUDITOR SECRETARY OF THE NAVY. AUDITOR GENERAL. GENERAL FOR RESEARCH, DEVELOPMENT, ACQUISITION AND LOGISTICS AUDITS. ASSISTANT AUDITOR GENERAL FOR MANPOWER & RESERVE AFFAIRS. ASSISTANT AUDITOR GENERAL FOR FINANCIAL MANAGEMENT AND COMPTROLLER AUDITS. AUDITOR GENERAL OF THE NAVY.[[Page 21533]] UNITED STATES MARINE CORPS MARINE FORCES EXECUTIVE DIRECTOR, HEADQUARTERS OFFICE. PACIFIC, HAWAII. MARINE FORCES PACIFIC.OFFICE OF THE SECRETARY OF DEFENSEDEPUTY INSPECTOR GENERAL FOR FINANCIAL MANAGEMENT ASSISTANT INSPECTOR AUDITING. AND REPORTING. GENERAL FOR FINANCIAL MANAGEMENT AND REPORTING. OFFICE OF THE PRINCIPAL ASSISTANT PRINCIPAL DEPUTY INSPECTOR GENERAL INSPECTOR GENERAL FOR AUDITING. FOR AUDITING. READINESS, ASSISTANT INSPECTOR OPERATIONS AND GENERAL FOR SUPPORT. READINESS AND CYBER OPERATIONS.DEPUTY INSPECTOR GENERAL FOR DEFENSE CRIMINAL ASSISTANT INSPECTOR INVESTIGATIONS. INVESTIGATIVE GENERAL FOR SERVICE. INVESTIGATIONS/ INVESTIGATIVE OPERATIONS.OFFICE OF THE SECRETARY OF DEPUTY INSPECTOR DEPUTY INSPECTOR DEFENSE OFFICE OF THE GENERAL FOR GENERAL INSPECTOR GENERAL. ADMINISTRATIVE ADMINISTRATIVE INVESTIGATIONS. INVESTIGATIONS. DEPUTY INSPECTOR ASSISTANT INSPECTOR GENERAL FOR GENERAL FOR AUDITING. ACQUISITION AND SUSTAINMENT MANAGEMENT. DEPUTY INSPECTOR GENERAL FOR AUDITING. ASSISTANT INSPECTOR GENERAL FOR READINESS AND GLOBAL OPERATIONS. DEPUTY INSPECTOR ASSISTANT INSPECTOR GENERAL FOR GENERAL FOR SPACE, EVALUATIONS. INTELLIGENCE, ENGINEERING, AND OVERSIGHT. ASSISTANT INSPECTOR GENERAL FOR PROGRAM, COMBATANT COMMAND (COCOM), AND OVERSEAS CONTINGENCY OPERATIONS (OCO). DEPUTY INSPECTOR DEPUTY INSPECTOR GENERAL FOR GENERAL FOR INVESTIGATIONS. INVESTIGATIONS. DEPUTY DIRECTOR DEFENSE CRIMINAL INVESTIGATIVE SERVICE. OFFICE OF THE GENERAL COUNSEL. GENERAL COUNSEL. OFFICE OF THE DEPUTY INSPECTOR INSPECTOR GENERAL. GENERAL FOR OVERSEAS CONTINGENCY OPERATIONS. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS, INTERNAL OPERATIONS. DEPUTY INSPECTOR GENERAL FOR EVALUATIONS. ASSISTANT INSPECTOR GENERAL FOR DATA ANALYTICS. ASSISTANT INSPECTOR GENERAL FOR STRATEGIC PLANNING AND PERFORMANCE. PRINCIPAL DEPUTY INSPECTOR GENERAL. DEPUTY CHIEF OF STAFF.DEFENSE NUCLEAR FACILITIES SAFETY BOARD. DEFENSE NUCLEAR ASSOCIATE TECHNICAL FACILITIES SAFETY DIRECTOR FOR BOARD. NUCLEAR PROGRAMS AND ANALYSIS. DEPUTY TECHNICAL DIRECTOR. DEPUTY GENERAL COUNSEL. DEPUTY GENERAL MANAGER. ASSOCIATE TECHNICAL DIRECTOR FOR ENGINEERING PERFORMANCE. SPECIAL ASSISTANT TO THE CHAIRMAN. ASSOCIATE TECHNICAL DIRECTOR FOR NUCLEAR WEAPON PROGRAMS. ASSOCIATE TECHNICAL DIRECTOR FOR NUCLEAR MATERIALS PROCESSING AND STABILIZATION. TECHNICAL DIRECTOR.DEPARTMENT OF EDUCATIONOFFICE OF THE SECRETARY..... FEDERAL STUDENT AID. CHIEF FINANCIAL OFFICER. DIRECTOR, FINANCIAL MANAGEMENT SYSTEMS GROUP. INSTITUTE OF ASSOCIATE EDUCATION SCIENCES. COMMISSIONER, ASSESSMENTS DIVISION.[[Page 21534]] OFFICE FOR CIVIL ENFORCEMENT DIRECTOR RIGHTS. (3). DEPUTY ASSISTANT SECRETARY FOR ENFORCEMENT. ENFORCEMENT DIRECTOR. OFFICE OF FINANCIAL DEPUTY DIRECTOR OF OPERATIONS. HUMAN RESOURCES. DEPUTY ASSISTANT SECRETARY, SECURITY, FACILITIES AND LOGISTICAL SERVICES. DEPUTY ASSISTANT SECRETARY FOR ACQUISITION AND GRANTS ADMINISTRATION. CHAIRPERSON, EDUCATION APPEAL BOARD. DEPUTY ASSISTANT SECRETARY FOR HUMAN RESOURCES. OFFICE OF THE CHIEF DEPUTY CHIEF FINANCIAL OFFICER. FINANCIAL OFFICER, FINANCIAL MANAGEMENT. DIRECTOR, FINANCIAL IMPROVEMENT AND POST AUDIT OPERATIONS. DIRECTOR, CONTRACTS AND ACQUISITIONS MANAGEMENT. OFFICE OF THE CHIEF DIRECTOR, INFORMATION OFFICER. INFORMATION ASSURANCE SERVICES AND CHIEF INFORMATION SECURITY OFFICER. CHIEF INFORMATION OFFICER. OFFICE OF THE ASSISTANT GENERAL GENERAL COUNSEL. COUNSEL, DIVISION OF POSTSECONDARY EDUCATION. ASSISTANT GENERAL COUNSEL FOR BUSINESS AND ADMINISTRATION LAW. ASSISTANT GENERAL COUNSEL FOR EDUCATIONAL EQUITY.DEPARTMENT OF EDUCATION OFFICE OF THE INSPECTOR GENERALDEPARTMENT OF EDUCATION OFFICE OF THE DEPUTY ASSISTANT OFFICE OF THE INSPECTOR INSPECTOR GENERAL. INSPECTOR GENERAL GENERAL. FOR INFORMATION TECHNOLOGY AUDITS AND COMPUTER CRIME INVESTIGATIONS. COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT SERVICES. ASSISTANT INSPECTOR GENERAL FOR INFORMATION TECHNOLOGY AUDITS AND COMPUTER CRIME INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATION SERVICES. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT SERVICES. DEPUTY INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR AUDIT SERVICES. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATION SERVICES.DEPARTMENT OF ENERGY DEPARTMENT OF ENERGY ADA (OFFICE OF MATERIAL MANAGEMENT AND MINIMIZATION).ASSISTANT SECRETARY FOR BONNEVILLE POWER VICE PRESIDENT ELECTRICITY. ADMINISTRATION.. TRANSMISSION SYSTEM OPERATIONS. VICE PRESIDENT, ENERGY EFFICIENCY. GENERAL COUNSEL/ EXECUTIVE VICE PRESIDENT. EXECUTIVE VICE PRESIDENT, BUSINESS TRANSFORMATION. DIRECTOR, HUMAN RESOURCES SERVICE CENTER. SENIOR VICE PRESIDENT TRANSMISSION SERVICES. CHIEF OPERATING OFFICER. DEPUTY ADMINISTRATOR.[[Page 21535]] EXECUTIVE VICE PRESIDENT INFORMATION TECHNOLOGY AND CHIEF INFORMATION OFFICER. EXECUTIVE VICE PRESIDENT AND CHIEF FINANCIAL OFFICER. VICE PRESIDENT FOR GENERATION ASSET MANAGEMENT. VICE PRESIDENT, BULK MARKETING. VICE PRESIDENT, NORTHWEST REQUIREMENTS MARKETING. VICE PRESIDENT, TRANSMISSION MARKETING AND SALES. VICE PRESIDENT, PLANNING AND ASSET MANAGEMENT. VICE PRESIDENT FOR ENGINEERING AND TECHNICAL SERVICES. SENIOR VICE PRESIDENT FOR POWER SERVICES. VICE PRESIDENT FOR TRANSMISSION FIELD SERVICES. VICE PRESIDENT, ENVIRONMENT, FISH AND WILDLIFE. SOUTHWESTERN POWER DEPUTY ADMINISTRATION. ADMINISTRATOR, OFFICE OF POWER DELIVERY. WESTERN AREA POWER CHIEF INFORMATION ADMINISTRATION. OFFICER (2). CHIEF ADMINISTRATIVE OFFICER. DESERT SOUTHWEST REGIONAL MANAGER. REGIONAL MANAGER, SIERRA NEVADA REGION. REGIONAL MANAGER, UPPER GREAT PLAINS REGION. REGIONAL MANAGER, ROCKY MOUNTAIN REGION. GENERAL COUNSEL. CHIEF OPERATING OFFICER. ENVIRONMENTAL CHIEF COUNSEL. MANAGEMENT CONSOLIDATED BUSINESS CENTER. RICHLAND OPERATIONS CHIEF COUNSEL. OFFICE.DEPARTMENT OF ENERGY........ ADVANCED RESEARCH CHIEF COUNSEL. PROJECTS AGENCY-- ENERGY. ASSISTANT SECRETARY CHIEF OPERATING FOR ELECTRICITY. OFFICER. DEPUTY ASSISTANT SECRETARY, ENERGY RESILIENCE. ASSISTANT SECRETARY SENIOR ADVISOR. FOR ENERGY EFFICIENCY AND RENEWABLE ENERGY. ASSISTANT SECRETARY SENIOR PROJECT FOR ENVIRONMENTAL MANAGEMENT ADVISOR. MANAGEMENT. DEPUTY MANAGER, IDAHO CLEANUP PROJECT. SITE MANAGER, OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT. DIRECTOR FOR REGULATORY, INTERGOVERNMENTAL AND STAKEHOLDER ENGAGEMENT. MANAGER, IDAHO CLEANUP PROJECT. SENIOR ADVISOR. ASSISTANT SECRETARY DIRECTOR, OFFICE OF FOR FOSSIL ENERGY. RESEARCH. DEPUTY DIRECTOR AND CHIEF RESEARCH OFFICER. DIRECTOR FOR EXPLORATORY RESEARCH AND INNOVATION. DIRECTOR, OFFICE OF STRATEGIC PLANNING, ANALYSIS, AND ENGAGEMENT. CHIEF INFORMATION OFFICER AND CHIEF SECURITY OFFICER. CHIEF OPERATING OFFICER AND DIRECTOR FOR LABORATORY OPERATIONS. DEPUTY DIRECTOR, SCIENCE AND TECHNOLOGY STRATEGIC PLANS AND PROGRAMS. EXECUTIVE DIRECTOR, RESEARCH AND INNOVATION CENTER.[[Page 21536]] EXECUTIVE DIRECTOR, TECHNOLOGY DEVELOPMENT AND INTEGRATION AND CHIEF TECHNOLOGY OFFICER. EXECUTIVE DIRECTOR, FINANCE, ACQUISITION AND CHIEF FINANCIAL OFFICER. DEPUTY EXECUTIVE DIRECTOR, TECHNOLOGY DEVELOPMENT AND INTEGRATION. CHIEF COUNSEL. PROJECT MANAGER, STRATEGIC PETROLEUM RESERVE. ASSISTANT SECRETARY DEPUTY ASSISTANT FOR INTERNATIONAL SECRETARY FOR ASIA AFFAIRS. AND THE AMERICAS. DEPUTY ASSISTANT SECRETARY FOR EUROPE, EURASIA, AFRICA AND THE MIDDLE EAST. DIRECTOR FOR EUROPEAN AND EURASIAN AFFAIRS. SENIOR DIRECTOR FOR STRATEGIC INITIATIVES. SENIOR ADVISOR. ASSISTANT SECRETARY DIRECTOR OFF OF USED FOR NUCLEAR ENERGY. NUCLEAR FUEL DISPOSITION RESEARCH AND DEVELOPMENT. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR NUCLEAR REACTOR TECHNOLOGIES. DIRECTOR, OFFICE OF LIGHT WATER REACTOR DEPLOYMENT. ADVISOR. CHIEF OPERATING OFFICER. ASSOCIATE PRINCIPAL DEPUTY ASSISTANT SECRETARY, OFFICE OF NUCLEAR ENERGY. DEPUTY MANAGER FOR OPERATIONS SUPPORT. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR NUCLEAR INFRASTRUCTURE PROGRAMS. PROGRAM DIRECTOR, VERSATILE TEST REACTOR PROJECT. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR REACTOR FLEET AND ADVANCED REACTOR DEPLOYMENT. ASSOCIATE UNDER DIRECTOR, OFFICE OF SECRETARY FOR NUCLEAR SAFETY. ENVIRONMENT, DIRECTOR, OFFICE OF HEALTH, SAFETY AND ENVIRONMENTAL SECURITY. PROTECTION SUSTAINABILITY. DEPUTY ASSOCIATE UNDER SECRETARY FOR SECURITY. CHIEF OPERATING OFFICER. CHICAGO OFFICE...... DEPUTY MANAGER, CHICAGO OFFICE. MANAGER, CHICAGO OFFICE. IDAHO OPERATIONS MANAGER, IDAHO OFFICE. OPERATIONS OFFICE. CHIEF COUNSEL. DEPUTY MANAGER FOR NUCLEAR ENERGY. DEPUTY MANAGER FOR ADMINISTRATIVE SUPPORT, CHIEF FINANCIAL OFFICER. LOAN PROGRAMS OFFICE DIRECTOR, PORTFOLIO MANAGEMENT DIVISION. DIRECTOR, RISK MANAGEMENT. CHIEF COUNSEL. SENIOR ADVISOR (2). NATIONAL NUCLEAR ASSISTANT DEPUTY SECURITY ADMINISTRATOR, FOR ADMINISTRATION. GLOBAL MATERIAL SECURITY. DEPUTY ASSISTANT DEPUTY ADMINISTRATOR FOR STOCKPILE MANAGEMENT ASSOCIATE ASSISTANT DEPUTY ADMINISTRATOR, FOR GLOBAL MATERIAL SECURITY MANAGER, SANDIA FIELD OFFICE[[Page 21537]] MANAGER, LIVERMORE FIELD OFFICE. DEPUTY GENERAL COUNSEL FOR GENERAL LAW AND LITIGATION. DIRECTOR, REGULATORY AFFAIRS. DIRECTOR, MANAGEMENT AND ADMINISTRATION. DADA FOR PRODUCTION MODERNIZATION. ASSOCIATE ASSISTANT DEPUTY ADMINISTRATOR FOR MATERIAL MANAGEMENT AND MINIMIZATION. DIRECTOR, OFFICE OF EXPERIMENTAL SCIENCES. SENIOR ADVISOR DEPUTY ASSOCIATE ADMINISTRATOR FOR EMERGENCY MANAGEMENT AND PREPAREDNESS. ASSOCIATE PRINCIPAL DEPUTY ADMINISTRATOR. DEPUTY MANAGER, Y- 12. ASSOCIATE DEPUTY ADMINISTRATOR FOR SECURE TRANSPORTATION. PRINCIPAL ASSISTANT DEPUTY ADMINISTRATOR FOR ENTERPRISE CAPABILITIES. ADA FOR NONPROLIFERATION AND ARMS CONTROL. DADA FOR RESEARCH, TEST AND EVALUATION. DIRECTOR, OFFICE OF ASC AND INSTITUTIONAL RESEARCH AND DEVELOPMENT PROGRAMS. DEPUTY DIRECTOR, INSTRUMENTATION AND CONTROL DIVISION. DIRECTOR, OFFICE OF COST ESTIMATING AND PROGRAM EVALUATION. ASSISTANT DEPUTY ADMINISTRATOR FOR STRATEGIC PARTNERSHIP PROGRAMS. ASSOCIATE ADMINISTRATOR FOR INFORMATION MANAGEMENT AND CHIEF INFORMATION OFFICER. FEDERAL PROJECT DIRECTOR, CHEMISTRY AND METALLURGY RESEARCH REPLACEMENT FACILITY. DEPUTY ASSOCIATE ADMINISTRATOR FOR ENTERPRISE STEWARDSHIP. DIRECTOR, OFFICE OF NUCLEAR INCIDENT RESPONSE. DEPUTY ASSOCIATE ADMINISTRATOR FOR SAFETY. ASSOCIATE ADMINISTRATOR FOR SAFETY INFRASTRUCTURE AND OPERATIONS. PRINCIPAL DEPUTY ASSOCIATE ADMINISTRATOR FOR SAFETY INFRASTRUCTURE AND OPERATIONS. OAK RIDGE OFFICE.... SITE MANAGER, ORNL SITE OFFICE. SITE MANAGER, THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY. CHIEF COUNSEL. ASSISTANT MANAGER, OFFICE OF FINANCIAL SERVICES. OFFICE OF ENTERPRISE DEPUTY DIRECTOR, ASSESSMENTS. OFFICE OF ENTERPRISE ASSESSMENTS. DIRECTOR, OFFICE OF SECURITY ASSESSMENTS. DIRECTOR, OFFICE OF ENVIRONMENT, SAFETY AND HEALTH ASSESSMENTS. DEPUTY DIRECTOR, OFFICE OF ENVIRONMENT, SAFETY AND HEALTH ASSESSMENTS.[[Page 21538]] OFFICE OF GENERAL ASSISTANT GENERAL COUNSEL. COUNSEL FOR ENFORCEMENT. ASSISTANT GENERAL COUNSEL FOR TECHNOLOGY TRANSFER AND INTELLECTUAL PROPERTY. ASSISTANT GENERAL COUNSEL FOR PROCUREMENT AND FINANCIAL ASSISTANCE. ASSISTANT GENERAL COUNSEL FOR GENERAL LAW. DEPUTY GENERAL COUNSEL FOR ADMINISTRATION. ASSOCIATE GENERAL COUNSEL. DEPUTY GENERAL COUNSEL FOR TRANSACTIONS, TECHNOLOGY, AND CONTRACTOR HUMAN RESOURCES. OFFICE OF HEARINGS DEPUTY DIRECTOR, AND APPEALS. HEARINGS AND APPEALS (DEPUTY CHIEF ADMINISTRATIVE JUDGE). DIRECTOR, HEARINGS AND APPEALS (CHIEF ADMINISTRATIVE JUDGE). OFFICE OF DIRECTOR OFFICE OF INTELLIGENCE AND INTELLIGENCE AND COUNTERINTELLIGENCE. COUNTERINTELLIGENCE . DEPUTY DIRECTOR FOR CYBER INTELLIGENCE. DEPUTY DIRECTOR FOR COUNTERINTELLIGENCE . DEPUTY DIRECTOR FOR INTELLIGENCE ANALYSIS. PRINCIPAL DEPUTY DIRECTOR, OFFICE OF INTELLIGENCE AND COUNTERINTELLIGENCE . OFFICE OF MANAGEMENT DIRECTOR, OFFICE OF POLICY. DIRECTOR, SUSTAINABILITY PERFORMANCE OFFICE. DIRECTOR, OFFICE OF ACQUISITION MANAGEMENT. DIRECTOR, OFFICE OF THE OMBUDSMAN. DIRECTOR, OFFICE OF ADMINISTRATION. DIRECTOR, OFFICE OF HEADQUARTERS PROCUREMENT SERVICES. OFFICE OF POLICY.... CHIEF OPERATING OFFICER. DEPUTY DIRECTOR FOR ENERGY FINANCE INCENTIVES AND PROGRAM ANALYSIS. OFFICE OF PROJECT DIRECTOR, OFFICE OF MANAGEMENT PROJECT OVERSIGHT AND ASSESSMENTS. ASSESSMENTS. DEPUTY DIRECTOR, OFFICE OF PROJECT MANAGEMENT OVERSIGHT AND ASSESSMENTS. OFFICE OF SCIENCE... SITE OFFICE MANAGER, ARGONNE. SITE OFFICE MANAGER, PRINCETON. DIRECTOR OFFICE OF SCIENTIFIC AND TECHNICAL INFORMATION. SITE OFFICE MANAGER, BROOKHAVEN. SITE OFFICE MANAGER, FERMI. BERKELEY/SLAC SITE OFFICE MANAGER. ASSISTANT MANAGER, GRANTS AND COOPERATIVE AGREEMENTS. ASSISTANT MANAGER FOR RESERVATION MANAGEMENT. CHIEF COUNSEL. DIRECTOR, OFFICE OF WORKFORCE MANAGEMENT.[[Page 21539]] OFFICE OF THE CHIEF DIRECTOR, OFFICE OF HUMAN CAPITAL CORPORATE EXECUTIVE OFFICER. MANAGEMENT. DEPUTY CHIEF HUMAN CAPITAL OFFICER. DIRECTOR, OFFICE OF CORPORATE SERVICES. DIRECTOR, OFFICE OF TALENT MANAGEMENT. DIRECTOR, OAK RIDGE HUMAN RESOURCES SHARED SERVICE CENTER. UNITED STATES ENERGY DIRECTOR, OFFICE OF INFORMATION INFORMATION ADMINISTRATION. TECHNOLOGY. SENIOR ADVISOR. DIRECTOR, OFFICE OF PETROLEUM AND BIOFUELS STATISTICS. DEPUTY ADMINISTRATOR ENERGY INFORMATION ADMINISTRATION. ASSISTANT ADMINISTRATOR FOR ENERGY STATISTICS. ASSISTANT ADMINISTRATOR FOR ENERGY ANALYSIS. DIRECTOR, OFFICE OF OIL, GAS AND COAL SUPPLY STATISTICS. DIRECTOR, OFFICE OF ENERGY CONSUMPTION AND EFFICIENCY ANALYSIS. DIRECTOR OFFICE OF PETROLEUM GAS AND BIOFUELS ANALYSIS. DIRECTOR OFFICE OF INTEGRATED AND INTERNATIONAL ENERGY ANALYSIS. ASSISTANT ADMINISTRATOR FOR RESOURCES AND TECHNOLOGY MANAGEMENT. DIRECTOR, OFFICE OF ELECTRICITY, COAL, NUCLEAR AND RENEWABLES ANALYSIS. DIRECTOR, OFFICE OF ENERGY MARKETS AND FINANCIAL ANALYSIS. DIRECTOR, OFFICE OF STATISTICAL METHODS AND RESEARCH. DIRECTOR, OFFICE OF ENERGY CONSUMPTION AND EFFICIENCY STATISTICS.NATIONAL NUCLEAR SECURITY ASSOCIATE DEPUTY ASSOCIATE ADMINISTRATION. ADMINISTRATOR FOR ADMINISTRATOR FOR ACQUISITION AND ACQUISITION AND PROJECT MANAGEMENT. PROJECT MANAGEMENT. ASSOCIATE ADMINISTRATOR FOR ACQUISITION AND PROJECT MANAGEMENT. DIRECTOR, OFFICE OF ENTERPRISE PROJECT MANAGEMENT. FEDERAL PROJECT DIRECTOR (MOX). FEDERAL PROJECT DIRECTOR (URANIUM PROCESSING FACILITY). DEPUTY DIRECTOR, ACQUISITION MANAGEMENT. DIRECTOR, ACQUISITION MANAGEMENT. ASSOCIATE DIRECTOR OFFICE OF ADMINISTRATOR FOR SECURITY OPERATIONS DEFENSE NUCLEAR AND PROGRAMMATIC SECURITY. PLANNING. ASSOCIATE ADMINISTRATOR FOR DEFENSE NUCLEAR SECURITY AND CHIEF OF DEFENSE NUCLEAR SECURITY. DEPUTY ASSOCIATE ADMINISTRATOR FOR DEFENSE NUCLEAR SECURITY. ASSOCIATE ASSOCIATE ADMINISTRATOR FOR ADMINISTRATOR AND EMERGENCY DEPUTY UNDER OPERATIONS. SECRETARY FOR EMERGENCY OPERATIONS.[[Page 21540]] DEPUTY ADMINISTRATOR ASSOCIATE ASSISTANT FOR DEFENSE NUCLEAR DEPUTY NONPROLIFERATION. ADMINISTRATOR, OFFICE OF NONPROLIFERATION AND ARMS CONTROL. AADA ADMINISTRATOR FOR DEFENSE NUCLEAR NONPROLIFERATION RESEARCH AND DEVELOPMENT. ASSISTANT DEPUTY ADMINISTRATOR FOR NONPROLIFERATION RESEARCH AND DEVELOPMENT. CHIEF OF STAFF AND OPERATIONS. PRINCIPAL ASSISTANT DEPUTY ADMINISTRATOR. DEPUTY ADMINISTRATOR ASSISTANT DEPUTY FOR DEFENSE ADMINISTRATOR FOR PROGRAMS. STOCKPILE MANAGEMENT ADA FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION. PRINCIPAL ASSISTANT DEPUTY ADMINISTRATOR FOR STOCKPILE SUSTAINMENT. MANAGER, NNSA PRODUCTION OFFICE. ASSISTANT DEPUTY ADMINISTRATOR FOR SYSTEMS ENGINEERING AND INTEGRATION. PROGRAM EXECUTIVE OFFICER FOR LIFE EXTENSION PROGRAMS. PRINCIPAL DEPUTY ASSISTANT DEPUTY ADMINSTRATOR FOR SECURE TRANSPORTATION. MANAGER, NEVADA FIELD OFFICE. DEPUTY ADMINISTRATOR ASSISTANT MANAGER FOR NAVAL REACTORS. FOR OPERATIONS. DIRECTOR NUCLEAR TECHNOLOGY DIVISION. DIRECTOR, INSTRUMENTATION AND CONTROL DIVISION. PROGRAM MANAGER, NEW SHIP DESIGN. SENIOR NAVAL REACTORS REPRESENTATIVE (NEWPORT NEWS, VA). DIRECTOR, INFORMATION TECHNOLOGY MANAGEMENT. DEPUTY DIRECTOR, ADVANCED SUBMARINE SYSTEMS DIVISION. DIRECTOR ADVANCED SUBMARINE SYSTEMS DIVISION. DEPUTY DIRECTOR FOR NAVAL REACTORS. ASSISTANT MANAGER FOR OPERATIONS. DIRECTOR, COMMISSIONED SUBMARINE SYSTEMS DIVISION. PROGRAM MANAGER, PROTOTYPE AND MOORED TRAINING SHIP OPERATIONS AND INACTIVATION PROGRAM. SENIOR NAVAL REACTORS REPRESENTATIVE (PUGET SOUND NAVAL SHIP). PROGRAM MANAGER, ADVANCED TECHNOLOGY DEVELOPMENT. DIRECTOR, ACQUISITION DIVISION. DIRECTOR, GOVERNMENTAL AFFAIRS. PROGRAM MANAGER, VA CLASS SUBS AND US/ UK TECHNOLOGY EXCHANGE. SENIOR NAVAL REACTORS REPRESENTATIVE (UNITED KINGDOM). DIRECTOR, REACTOR ENGINEERING DIVISION. PROGRAM MANAGER FOR SURFACE SHIP NUCLEAR PROPULSION. MANAGER, NAVAL REACTORS LABORATORY FIELD OFFICE. DEPUTY DIRECTOR, NUCLEAR TECHNOLOGY DIVISION.[[Page 21541]] DEPUTY UNDER DEPUTY ASSOCIATE SECRETARY FOR ADMINISTRATOR FOR COUNTERTERRORISM COUNTERTERRORISM AND AND COUNTERPROLIFERATIO COUNTERPROLIFERATIO N. N. ASSOCIATE ADMINISTRATOR/ DEPUTY UNDER SECRETARY FOR COUNTERTERRORISM AND COUNTERPROLIFERATIO N. NATIONAL NUCLEAR DEPUTY MANAGER SECURITY SANDIA FIELD ADMINISTRATION OFFICE. FIELD SITE OFFICES. MANAGER, SAVANNAH RIVER FIELD OFFICE. DEPUTY MANAGER FOR BUSINESS, SECURITY AND MISSIONS. MANAGER, LOS ALAMOS FIELD OFFICE. DEPUTY MANAGER, NATIONAL NUCLEAR SECURITY ADMINISTRATION PRODUCTION OFFICE-- PANTEX. DEPUTY MANAGER, LIVERMORE FIELD OFFICE. DEPUTY MANAGER SAVANNAH RIVER FIELD OFFICE. DEPUTY MANAGER, NEVADA FIELD OFFICE. DEPUTY MANAGER, LIVERMORE FIELD OFFICE. OFFICE OF MANAGEMENT ASSOCIATE AND BUDGET. ADMINISTRATOR FOR MANAGEMENT AND BUDGET. DIRECTOR, OFFICE OF HUMAN RESOURCES. DIRECTOR, FINANCIAL INTEGRATION AND BUDGET DEPUTY. DEPUTY ASSOCIATE ADMINISTRATOR FOR FINANCIAL MANAGEMENT. DEPUTY ASSOCIATE ADMINISTRATOR FOR MANAGEMENT. OFFICE OF THE DEPUTY GENERAL GENERAL COUNSEL. COUNSEL FOR AGENCY OPERATIONS. GENERAL COUNSEL.OFFICE OF THE DEPUTY OFFICE OF THE CHIEF DIRECTOR, OFFICE OF SECRETARY. FINANCIAL OFFICER. BUDGET. DEPUTY DIRECTOR, BUDGET OPERATIONS. DIRECTOR OF CORPORATE BUSINESS SYSTEMS. DEPUTY FOR CORPORATE BUSINESS SYSTEMS. DEPUTY CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR, FINANCIAL OPERATIONS. DIRECTOR, OFFICE OF FINANCE AND ACCOUNTING. DEPUTY DIRECTOR, BUDGET ANALYSIS AND COORDINATION. DEPUTY DIRECTOR, FINANCIAL REPORTING AND BUSINESS ANALYSIS.OFFICE OF THE SECRETARY..... UNDER SECRETARY FOR SENIOR ADVISOR FOR SCIENCE. ENVIRONMENTAL MANAGEMENT TO THE UNDER SECRETARY FOR SCIENCE.DEPARTMENT OF ENERGY OFFICE OF THE INSPECTOR GENERAL DEPARTMENT OF ENERGY SPECIAL COUNSEL FOR OFFICE OF THE ADMINISTRATIVE INSPECTOR GENERAL. REMEDIES. DEPUTY INSPECTOR GENERAL. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. SENIOR COUNSEL, FOIA AND PRIVACY ACT OFFICER. ASSISTANT INSPECTOR GENERAL MANAGEMENT AND ADMINISTRATION. ASSISTANT INSPECTOR GENERAL FOR INSPECTIONS, INTELLIGENCE OVERSIGHT, AND SPECIAL PROJECTS.[[Page 21542]] DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDITS (WESTERN REGION). ASSISTANT INSPECTOR GENERAL FOR TECHNOLOGY, FINANCIAL AND ANALYTICS. ASSISTANT INSPECTOR GENERAL FOR AUDITS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDITS (EASTERN REGION). CHIEF COUNSEL TO THE INSPECTOR GENERAL.ENVIRONMENTAL PROTECTION AGENCYENVIRONMENTAL PROTECTION OFFICE OF THE DIRECTOR, OFFICE OF AGENCY. ADMINISTRATOR. ADMINISTRATIVE AND EXECUTIVE SERVICES. OFFICE OF THE DIRECTOR, COMPLIANCE ASSISTANT DIVISION. ADMINISTRATOR FOR DIRECTOR, AIR AIR AND RADIATION. QUALITY POLICY DIVISION. DIRECTOR, HEALTH AND ENVIRONMENTAL IMPACTS DIVISION. DIRECTOR, SECTOR POLICIES AND PROGRAMS DIVISION. DIRECTOR, CLIMATE CHANGE DIVISION. DIRECTOR, AIR QUALITY ASSESSMENT DIVISION. DIRECTOR, OUTREACH AND INFORMATION DIVISION. DIRECTOR, ASSESSMENT AND STANDARDS DIVISION. DIRECTOR, CLEAN AIR MARKETS DIVISION. DIRECTOR, TESTING AND ADVANCED TECHNOLOGY DIVISION. DIRECTOR, TRANSPORTATION AND CLIMATE DIVISION. DIRECTOR, INDOOR ENVIRONMENTS DIVISION. DIRECTOR, CLIMATE PROTECTION PARTNERSHIP DIVISION. DIRECTOR, RADIATION PROTECTION DIVISION. OFFICE OF THE DIRECTOR, ASSISTANT BIOPESTICIDES AND ADMINISTRATOR FOR POLLUTION CHEMICAL SAFETY AND PREVENTION POLLUTION DIVISION. PREVENTION. DEPUTY DIRECTOR, OFFICE OF PROGRAM SUPPORT. DIRECTOR, MISSION SUPPORT DIVISION. DIRECTOR, OFFICE OF PROGRAM SUPPORT. DIRECTOR, NEW CHEMICALS DIVISION. DIRECTOR, EXISTING CHEMICAL RISK MANAGEMENT DIVISION. DIRECTOR, PROJECT MANAGEMENT AND OPERATIONS DIVISION. DIRECTOR, DATA GATHERING AND ANALYSIS DIVISION. DIRECTOR, ENVIRONMENTAL ASSISTANCE DIVISION. DIRECTOR, BIOLOGICAL AND ECONOMIC ANALYSIS DIVISION. DIRECTOR, REGISTRATION DIVISION. DIRECTOR, PESTICIDE RE-EVALUATION DIVISION. DIRECTOR, ENVIRONMENTAL FATE AND EFFECTS DIVISION. DIRECTOR, CHEMISTRY, ECONOMICS AND SUSTAINABLE STRATEGIES DIVISION. DIRECTOR, NATIONAL PROGRAM CHEMICALS DIVISION. ASSOCIATE ASSISTANT ADMINISTRATOR (MANAGEMENT). DIRECTOR, CHEMICAL CONTROL DIVISION. DIRECTOR, INFORMATION MANAGEMENT DIVISION.[[Page 21543]] DIRECTOR, ANTIMICROBIALS DIVISION. DIRECTOR, FIELD AND EXTERNAL AFFAIRS DIVISION. DIRECTOR, INFORMATION TECHNOLOGY AND RESOURCES MANAGEMENT DIVISION. DIRECTOR, HEALTH EFFECTS DIVISION. DIRECTOR, RISK ASSESSMENT DIVISION. OFFICE OF THE DIRECTOR, WATER ASSISTANT ENFORCEMENT ADMINISTRATOR FOR DIVISION. ENFORCEMENT AND DEPUTY DIRECTOR, COMPLIANCE OFFICE OF CRIMINAL ASSURANCE. ENFORCEMENT, FORENSICS AND TRAINING. DIRECTOR, NATIONAL ENFORCEMENT INVESTIGATIONS CENTER. DEPUTY DIRECTOR, OFFICE OF SITE REMEDIATION ENFORCEMENT. DIRECTOR, OFFICE OF CRIMINAL ENFORCEMENT, FORENSICS AND TRAINING. DIRECTOR, OFFICE OF CIVIL ENFORCEMENT. DEPUTY DIRECTOR, OFFICE OF CIVIL ENFORCEMENT. DIRECTOR, OFFICE OF COMPLIANCE. DIRECTOR, ENFORCEMENT ***TARGETING*** AND DATA DIVISION. DIRECTOR, MONITORING ASSISTANCE AND MEDIA PROGRAMS DIVISION. DIRECTOR, AIR ENFORCEMENT DIVISION. DIRECTOR, CRIMINAL INVESTIGATION DIVISION. OFFICE OF THE DIRECTOR, RESOURCES ASSISTANT MANAGEMENT ADMINISTRATOR FOR DIVISION. ***LAND*** AND EMERGENCY DIRECTOR, ASSESSMENT MANAGEMENT. AND REMEDIATION DIVISION. DIRECTOR, TECHNOLOGY INNOVATION AND FIELD SERVICES DIVISION. DIRECTOR, MATERIALS RECOVERY AND WASTE MANAGEMENT DIVISION. DIRECTOR, OFFICE OF SITE REMEDIATION ENFORCEMENT. DIRECTOR, RESOURCE CONSERVATION AND SUSTAINABILITY DIVISION. DIRECTOR, PROGRAM IMPLEMENTATION AND INFORMATION DIVISION. OFFICE OF THE DIRECTOR, OFFICE OF ASSISTANT ACQUISITION ADMINISTRATOR FOR MANAGEMENT. MISSION SUPPORT. DIRECTOR, OFFICE OF RESOURCES AND BUSINESS OPERATIONS. DIRECTOR, OFFICE OF DIGITAL SERVICES AND TECHNICAL ARCHITECTURE. DIRECTOR, OFFICE OF ADMINISTRATION AND RESOURCES MANAGEMENT. DIRECTOR, OFFICE OF ADMINISTRATION. DIRECTOR, OFFICE OF ADMINISTRATION AND RESOURCES MANAGEMENT. ENVIRONMENTAL APPEALS JUDGE (3). DEPUTY DIRECTOR, OFFICE OF ACQUISITION MANAGEMENT. DIRECTOR, OFFICE OF GRANTS AND DEBARMENT. DIRECTOR, OFFICE OF HUMAN RESOURCES. DEPUTY DIRECTOR, OFFICE OF HUMAN RESOURCES. DEPUTY DIRECTOR, OFFICE OF GRANTS AND DEBARMENT. ENVIRONMENTAL APPEALS JUDGE.[[Page 21544]] OFFICE OF THE DEPUTY DIRECTOR FOR ASSISTANT MANAGEMENT. ADMINISTRATOR FOR DEPUTY DIRECTOR, RESEARCH AND OFFICE OF RESOURCE DEVELOPMENT. MANAGEMENT. DIRECTOR, GROUNDWATER CHARACTER AND REMEDIATION DIVISION. DIRECTOR, CENTER FOR ENVIRONMENTAL SOLUTIONS AND EMERGENCY RESPONSE. DIRECTOR, PACIFIC ECOLOGICAL SYSTEMS DIVISION. DIRECTOR, GULF ECOSYSTEM MEASUREMENT AND MODELING DIVISION. DIRECTOR, CENTER FOR ENVIRONMENTAL MEASUREMENT AND MODELING. DEPUTY DIRECTOR FOR MANAGEMENT (2). SENIOR ADVISOR (2). DIRECTOR, OFFICE OF SCIENCE INFORMATION MANAGEMENT. DIRECTOR, OFFICE OF SCIENCE ADVISOR, POLICY AND ENGAGEMENT. DIRECTOR, GREAT LAKES TOXICOLOGY AND ECOLOGY DIVISION. DIRECTOR, OFFICE OF RESOURCE MANAGEMENT. OFFICE OF THE DIRECTOR, ASSISTANT ENGINEERING AND ADMINISTRATOR FOR ANALYSIS DIVISION. WATER. DIRECTOR, WATER PERMITS DIVISION. DIRECTOR, DRINKING WATER PROTECTION DIVISION. DIRECTOR, STANDARDS AND HEALTH PROTECTION DIVISION. DIRECTOR, HEALTH AND ECOLOGICAL CRITERIA DIVISION. DIRECTOR, STANDARDS AND RISK MANAGEMENT DIVISION. DIRECTOR, WATER INFRASTRUCTURE DIVISION. DIRECTOR, WATERSHED RESTORATION, ASSESSMENT AND PROTECTION DIVISION. DIRECTOR, OCEANS, WETLANDS AND COMMUNITIES DIVISION. OFFICE OF THE CHIEF CONTROLLER. FINANCIAL OFFICER. DEPUTY CONTROLLER. DIRECTOR, OFFICE OF BUDGET. DIRECTOR, OFFICE OF TECHNOLOGY SOLUTIONS. ASSOCIATE CHIEF FINANCIAL OFFICER. DEPUTY CHIEF FINANCIAL OFFICER. DIRECTOR, OFFICE OF PLANNING, ANALYSIS AND ACCOUNTABILITY. OFFICE OF THE DIRECTOR, RESOURCES GENERAL COUNSEL. MANAGEMENT OFFICE. REGION 1--BOSTON, DIRECTOR, WATER MASSACHUSETTS. DIVISION. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. REGIONAL COUNSEL. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION. REGION 10--SEATTLE, DIRECTOR, WATER WASHINGTON. DIVISION. DIRECTOR, LABORATORY SERVICES AND APPLIED SCIENCE DIVISION. REGIONAL COUNSEL. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION.[[Page 21545]] DIRECTOR, AIR AND RADIATION DIVISION. REGION 2--NEW YORK, DIRECTOR, ***LAND***, NEW YORK. CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, WATER DIVISION. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSISTANCE DIVISION. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. REGIONAL COUNSEL. DIRECTOR, CARIBBEAN ENVIRONMENTAL PROTECTION DIVISION. DIRECTOR, LABORATORY SERVICES AND APPLIED SCIENCE DIVISION. REGION 3-- DIRECTOR, CHESAPEAKE PHILADELPHIA, BAY PROGRAM OFFICE. PENNSYLVANIA. DIRECTOR, WATER DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. REGIONAL COUNSEL. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION. REGION 4--ATLANTA, DIRECTOR, GULF OF GEORGIA. MEXICO PROGRAM. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. REGIONAL COUNSEL. DIRECTOR, LABORATORY SERVICES AND APPLIED SCIENCE DIVISION. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, WATER DIVISION. REGION 5--CHICAGO, DIRECTOR, SUPERFUND ILLINOIS. AND EMERGENCY MANAGEMENT DIVISION. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, WATER DIVISION. DIRECTOR, GREAT LAKES NATIONAL PROGRAM OFFICE. REGIONAL COUNSEL. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. REGION 6--DALLAS, DIRECTOR, TEXAS. ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. DIRECTOR, WATER DIVISION. REGIONAL COUNSEL. DIRECTOR, ***LAND***, CHEMICAL AND REDEVELOPMENT DIVISION. DIRECTOR, AIR AND RADIATION DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION. REGION 7--LENEXA, DIRECTOR, SUPERFUND KANSAS. AND EMERGENCY MANAGEMENT DIVISION. DIRECTOR, WATER DIVISION DIRECTOR, MISSION SUPPORT DIVISION REGIONAL COUNSEL DIRECTOR, LABORATORY SERVICES AND APPLIED SCIENCE DIVISION DIRECTOR, AIR AND RADIATION DIVISION DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION[[Page 21546]] DIRECTOR, ***LAND***, CHEMICAL AND REDEVELOPMENT DIVISION REGION 8--DENVER, DIRECTOR, COLORADO. ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION. DIRECTOR, WATER DIVISION. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, AIR AND RADIATION DIVISION. REGIONAL COUNSEL. DIRECTOR, MISSION SUPPORT DIVISION. REGION 9--SAN DIRECTOR, AIR AND FRANCISCO, RADIATION DIVISION. CALIFORNIA. REGIONAL COUNSEL. DIRECTOR, ENFORCEMENT AND COMPLIANCE ASSURANCE DIVISION. DIRECTOR, MISSION SUPPORT DIVISION. DIRECTOR, ***LAND***, CHEMICALS AND REDEVELOPMENT DIVISION. DIRECTOR, WATER DIVISION. DIRECTOR, SUPERFUND AND EMERGENCY MANAGEMENT DIVISION.OFFICE OF THE ADMINISTRATOR. OFFICE OF DIRECTOR, OFFICE OF ENVIRONMENTAL. ENVIRONMENTAL JUSTICE.OFFICE OF THE ASSISTANT OFFICE OF COMPLIANCE DEPUTY DIRECTOR, ADMINISTRATOR FOR OFFICE OF ENFORCEMENT AND COMPLIANCE COMPLIANCE. ASSURANCE.OFFICE OF THE ASSISTANT OFFICE OF DEPUTY DIRECTOR, ADMINISTRATOR FOR MISSION ADMINISTRATION. OFFICE OF SUPPORT. ADMINISTRATION.ENVIRONMENTAL PROTECTION AGENCY OFFICE OF THE INSPECTOR GENERAL ENVIRONMENTAL COUNSEL TO THE PROTECTION AGENCY INSPECTOR GENERAL. OFFICE OF THE ASSISTANT INSPECTOR INSPECTOR GENERAL. GENERAL FOR AUDIT. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. CHIEF OF STAFF TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. ASSISTANT INSPECTOR GENERAL FOR EVALUATION. DEPUTY INSPECTOR GENERAL. ASSOCIATE DEPUTY INSPECTOR GENERAL.EQUAL EMPLOYMENT OPPORTUNITY COMMISSIONEQUAL EMPLOYMENT OPPORTUNITY OFFICE OF DEPUTY CHIEF COMMISSION. INFORMATION INFORMATION TECHNOLOGY. OFFICER. OFFICE OF ASSOCIATE DIRECTOR. COMMUNICATIONS AND LEGISLATIVE AFFAIRS. OFFICE OF ENTERPRISE DEPUTY CHIEF DATA DATA AND ANALYTICS. OFFICER. OFFICE OF FIELD PROGRAMS DISTRICT DIRECTOR- (BIRMINGHAM).. DIRECTOR, INFORMATION INTAKE GROUP.. DISTRICT DIRECTOR- (PHILADELPHIA).. DISTRICT DIRECTOR- (CHARLOTTE).. DISTRICT DIRECTOR- (PHOENIX). DISTRICT DIRECTOR- (LOS ANGELES). DISTRICT DIRECTOR- (NEW YORK). DISTRICT DIRECTOR- (ATLANTA). DISTRICT DIRECTOR- (HOUSTON). DISTRICT DIRECTOR- (SAN FRANCISCO). DISTRICT DIRECTOR- (DALLAS). DISTRICT DIRECTOR- (CHICAGO). DISTRICT DIRECTOR- (ST LOUIS). DISTRICT DIRECTOR- (MIAMI). DISTRICT DIRECTOR- (INDIANAPOLIS). DISTRICT DIRECTOR- (MEMPHIS). OFFICE OF THE INSPECTOR GENERAL. INSPECTOR GENERAL.OFFICE OF FIELD PROGRAMS.... FIELD COORDINATION DIRECTOR, FIELD PROGRAMS. COORDINATION PROGRAMS.[[Page 21547]] FIELD MANAGEMENT DIRECTOR FIELD PROGRAMS. MANAGEMENT PROGRAMS.FEDERAL COMMUNICATIONS COMMISSIONFEDERAL COMMUNICATIONS MEDIA BUREAU........ CHIEF, VIDEO COMMISSION. DIVISION. OFFICE OF INSPECTOR INSPECTOR GENERAL. GENERAL.FEDERAL ENERGY REGULATORY COMMISSIONOFFICE OF THE CHAIRMAN...... OFFICE OF DIRECTOR, LEGAL ADMINISTRATIVE DIVISION. LITIGATION. DIRECTOR, TECHNICAL DIVISION. OFFICE OF ENERGY DIRECTOR OF DAM PROJECTS. SAFETY AND INSPECTION. OFFICE OF CHIEF ACCOUNTANT AND ENFORCEMENT. DIRECTOR, DIVISION OF AUDITS AND ACCOUNTING.FEDERAL LABOR RELATIONS AUTHORITYFEDERAL LABOR RELATIONS FEDERAL SERVICE EXECUTIVE DIRECTOR, AUTHORITY. IMPASSES PANEL. FEDERAL SERVICE IMPASSES PANEL. OFFICE OF MEMBER.... CHIEF COUNSEL (2). OFFICE OF THE CHIEF COUNSEL. CHAIRMAN. SENIOR ADVISOR. DIRECTOR, POLICY AND PERFORMANCE MANAGEMENT. SOLICITOR. OFFICE OF THE EXECUTIVE DIRECTOR. EXECUTIVE DIRECTOR. OFFICE OF THE DEPUTY GENERAL GENERAL COUNSEL. COUNSEL (2).OFFICE OF THE CHAIRMAN...... OFFICE OF THE INSPECTOR GENERAL. INSPECTOR GENERAL.OFFICE OF THE GENERAL OFFICE OF THE REGIONAL DIRECTOR-- COUNSEL. GENERAL COUNSEL ATLANTA. REGIONAL OFFICES. REGIONAL DIRECTOR-- DENVER. REGIONAL DIRECTOR-- SAN FRANCISCO. REGIONAL DIRECTOR-- WASHINGTON, DC. REGIONAL DIRECTOR-- BOSTON. REGIONAL DIRECTOR-- DALLAS. REGIONAL DIRECTOR-- CHICAGO ILLINOIS.FEDERAL LABOR RELATIONS FEDERAL LABOR INSPECTOR GENERAL. AUTHORITY OFFICE OF RELATIONS AUTHORITY INSPECTOR GENERAL. OFFICE OF INSPECTOR GENERAL.FEDERAL MARITIME COMMISSIONFEDERAL MARITIME COMMISSION. OFFICE OF THE DEPUTY MANAGING MANAGING DIRECTOR. DIRECTOR. DIRECTOR, STRATEGIC PLANNING AND REGULATORY REVIEW.OFFICE OF THE MANAGING BUREAU OF TRADE DIRECTOR, BUREAU OF DIRECTOR. ANALYSIS. TRADE ANALYSIS.OFFICE OF THE MEMBERS....... OFFICE OF THE INSPECTOR GENERAL. INSPECTOR GENERAL.FEDERAL MEDIATION AND CONCILIATION SERVICEOFFICE OF THE DIRECTOR...... OFFICE OF THE DEPUTY DIRECTOR OF FIELD DIRECTOR. OPERATIONS.FEDERAL RETIREMENT THRIFT INVESTMENT BOARD FEDERAL RETIREMENT DIRECTOR OF RESOURCE THRIFT INVESTMENT MANAGEMENT. BOARD. DIRECTOR OF COMMUNICATIONS AND EDUCATION. SENIOR ADVISOR FOR UNIFORMED SERVICES. DIRECTOR OF PARTICIPANT SERVICES. CHIEF FINANCIAL OFFICER (2). DIRECTOR OF ENTERPRISE RISK MANAGEMENT. CHIEF TECHNOLOGY OFFICER.FEDERAL TRADE COMMISSIONFEDERAL TRADE COMMISSION.... BUREAU OF DEPUTY DIRECTOR, COMPETITION. BUREAU OF COMPETITION. BUREAU OF CONSUMER DEPUTY DIRECTOR, PROTECTION. BUREAU OF CONSUMER PROTECTION. BUREAU OF ECONOMICS. DEPUTY DIRECTOR FOR RESEARCH AND MANAGEMENT. OFFICE OF EXECUTIVE CHIEF INFORMATION DIRECTOR. OFFICER. DEPUTY EXECUTIVE DIRECTOR. OFFICE OF THE PRINCIPAL DEPUTY GENERAL COUNSEL. GENERAL COUNSEL.FEDERAL TRADE COMMISSION OFFICE OF THE INSPECTOR GENERALFEDERAL TRADE COMMISSION FEDERAL TRADE INSPECTOR GENERAL. OFFICE OF THE INSPECTOR COMMISSION OFFICE GENERAL. OF THE INSPECTOR GENERAL.GENERAL SERVICES ADMINISTRATION[[Page 21548]] FEDERAL ACQUISITION SERVICE. TECHNOLOGY DIRECTOR, PUBLIC TRANSFORMATION EXPERIENCE SERVICES. PORTFOLIO.GENERAL SERVICES FEDERAL ACQUISITION DIRECTOR, CENTERS OF ADMINISTRATION. SERVICE. EXCELLENCE. DEPUTY ASSISTANT COMMISSIONER FOR ACQUISITION. DIRECTOR, FEDERAL SYSTEMS INTEGRATION AND MANAGEMENT CENTER. DIRECTOR, INFORMATION TECHNOLOGY SERVICES. ASSISTANT COMMISSIONER FOR SYSTEMS MANAGEMENT. DEPUTY ASSISTANT COMMISSIONER FOR CATEGORY MANAGEMENT. ASSISTANT COMMISSIONER FOR ENTERPRISE STRATEGY MANAGEMENT. DIRECTOR, INFORMATION TECHNOLOGY SCHEDULE CONTRACT OPERATIONS. DIRECTOR, TELECOMMUNICATIONS SERVICES. DIRECTOR OF TRAVEL, EMPLOYEE RELOCATION, AND TRANSPORTATION. DIRECTOR OF SUPPLY CHAIN MANAGEMENT. DIRECTOR OF FLEET MANAGEMENT. ASSISTANT COMMISSIONER FOR POLICY AND COMPLIANCE. ASSISTANT COMMISSIONER FOR ASSISTED ACQUISITION SERVICES. ASSISTANT COMMISSIONER FOR CUSTOMER AND STAKEHOLDER ENGAGEMENT. ASSISTANT COMMISSIONER FOR TRAVEL, TRANSPORTATION AND LOGISTICS CATEGORIES. ASSISTANT COMMISSIONER FOR GENERAL SUPPLIES AND SERVICES CATEGORIES. DEPUTY ASSISTANT COMMISSIONER FOR INFORMATION TECHNOLOGY CATEGORY. >ASSISTANT COMMISSIONER FOR INFORMATION TECHNOLOGY CATEGORY. OFFICE OF DEPUTY ASSOCIATE GOVERNMENTWIDE ADMINISTRATOR, POLICY. SHARED SOLUTIONS AND PERFORMANCE IMPROVEMENT OFFICE. PRINCIPAL DEPUTY FOR ASSET AND TRANSPORTATION MANAGEMENT. DIRECTOR OF THE FEDERAL ACQUISITION INSTITUTE. DIRECTOR OF GENERAL SERVICES ACQUISITION POLICY, INTEGRITY AND WORKFORCE. DIRECTOR OF FEDERAL HIGH- PERFORMANCE GREEN BUILDINGS. DIRECTOR OF GOVERNMENTWIDE ACQUISITION POLICY. DEPUTY ASSOCIATE ADMINISTRATOR FOR INFORMATION, INTEGRITY AND ACCESS. DEPUTY CHIEF ACQUISITION OFFICER AND SENIOR PROCUREMENT EXECUTIVE. DEPUTY ASSOCIATE ADMINISTRATOR FOR ASSET AND TRANSPORTATION MANAGEMENT.[[Page 21549]] OFFICE OF GENERAL ASSOCIATE CHIEF SERVICES INFORMATION OFFICER ADMINISTRATION, FOR CORPORATE INFORMATION INFORMATION TECHNOLOGY. TECHNOLOGY SERVICES. DEPUTY ASSOCIATE CHIEF INFORMATION OFFICER. ASSOCIATE CHIEF INFORMATION OFFICER FOR PUBLIC BUILDINGS INFORMATION TECHNOLOGY SERVICES. ASSOCIATE CHIEF INFORMATION OFFICER FOR DIGITAL INFRASTRUCTURE TECHNOLOGIES. ASSOCIATE CHIEF INFORMATION OFFICER FOR ENTERPRISE PLANNING AND GOVERNANCE. ASSOCIATE CHIEF INFORMATION OFFICER FOR ACQUISITION INFORMATION TECHNOLOGY SERVICES. CHIEF INFORMATION SECURITY OFFICER. OFFICE OF HUMAN CHIEF HUMAN CAPITAL RESOURCES OFFICER. MANAGEMENT. DEPUTY CHIEF HUMAN CAPITAL OFFICER. OFFICE OF MISSION ASSOCIATE ASSURANCE. ADMINISTRATOR FOR MISSION ASSURANCE. PRINCIPAL DEPUTY ASSOCIATE ADMINISTRATOR FOR MISSION ASSURANCE. OFFICE OF THE DIRECTOR, OFFICE OF ADMINISTRATOR. PERSONNEL MANAGEMENT--GENERAL SERVICES ADMINISTRATION MERGER PROJECT MANAGEMENT OFFICE. DIRECTOR, PRESIDENTIAL TRANSITION. OFFICE OF THE CHIEF DIRECTOR OF REGIONAL FINANCIAL OFFICER. FINANCIAL SERVICES. DIRECTOR OF FINANCIAL MANAGEMENT DIRECTOR OF BUDGET CHIEF FINANCIAL OFFICER DIRECTOR, OFFICE OF ANALYTICS, PERFORMANCE AND IMPROVEMENT DEPUTY CHIEF FINANCIAL OFFICER PUBLIC BUILDINGS CHIEF ARCHITECT. SERVICE. ASSISTANT COMMISSIONER, OFFICE OF STRATEGY AND ENGAGEMENT. DEPUTY ASSISTANT COMMISSIONER FOR REAL PROPERTY ASSET MANAGEMENT. SENIOR ADVISOR ASSISTANT COMMISSIONER FOR FACILITIES MANAGEMENT AND SERVICES PROGRAMS. ASSISTANT COMMISSIONER FOR LEASING. ASSISTANT COMMISSIONER FOR ACQUISITION MANAGEMENT. ASSISTANT COMMISSIONER FOR PROJECT DELIVERY. ASSISTANT COMMISSIONER FOR PORTFOLIO MANAGEMENT AND CUSTOMER ENGAGEMENT. ASSISTANT COMMISSIONER FOR REAL PROPERTY UTILIZATION AND DISPOSAL.REGIONAL ADMINISTRATORS..... GREAT LAKES REGION.. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. GREATER SOUTHWEST REGIONAL REGION. COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. MID-ATLANTIC REGION. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE.[[Page 21550]] NATIONAL CAPITAL REGIONAL REGION. COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. DEPUTY DIRECTOR OF PORTFOLIO MANAGEMENT AND LEASING REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE DIRECTOR OF FACILITIES MANAGEMENT AND SERVICES PROGRAMS DIRECTOR FOR DESIGN AND CONSTRUCTION DIRECTOR OF PORTFOLIO MANAGEMENT AND REAL ESTATE NEW ENGLAND REGION.. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. NORTHEAST AND REGIONAL CARIBBEAN REGION. COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. NORTHWEST/ARCTIC REGIONAL REGION. COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. PACIFIC RIM REGION.. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. ROCKY MOUNTAIN REGIONAL REGION. COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. SOUTHEAST SUNBELT REGIONAL REGION. COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE. THE HEARTLAND REGION REGIONAL COMMISSIONER FOR FEDERAL ACQUISITION SERVICE. REGIONAL COMMISSIONER FOR PUBLIC BUILDINGS SERVICE.GENERAL SERVICES ADMINISTRATION OFFICE OF THE INSPECTOR GENERAL GENERAL SERVICES DEPUTY INSPECTOR ADMINISTRATION GENERAL. OFFICE OF THE DEPUTY ASSISTANT INSPECTOR GENERAL. INSPECTOR GENERAL FOR REAL PROPERTY AUDITS. ASSISTANT INSPECTOR GENERAL FOR INSPECTIONS. ASSISTANT INSPECTOR GENERAL FOR AUDITING. DEPUTY ASSISTANT INSPECTOR GENERAL FOR ACQUISITION PROGRAMS AUDITS. COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. ASSOCIATE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR ADMINISTRATION.GULF COAST ECOSYSTEM RESTORATION COUNCIL GULF COAST ECOSYSTEM DEPUTY EXECUTIVE RESTORATION COUNCIL. DIRECTOR AND DIRECTOR OF PROGRAMS.DEPARTMENT OF HEALTH AND HUMAN SERVICESCENTERS FOR MEDICARE AND CENTER FOR CONSUMER DIRECTOR, MEDICAID SERVICES. INFORMATION AND MARKETPLACE INSURANCE OVERSIGHT. INFORMATION TECHNOLOGY GROUP. CENTER FOR MEDICARE. DIRECTOR, MEDICARE CONTRACTOR MANAGEMENT GROUP.[[Page 21551]] CENTER FOR PROGRAM DIRECTOR, INTEGRITY. INVESTIGATIONS AND AUDITS GROUP. DEPUTY CENTER DIRECTOR (2). DIRECTOR, PROVIDER COMPLIANCE GROUP. OFFICE OF THE DIRECTOR, PARTS C ACTUARY. AND D ACTUARIAL GROUP. DIRECTOR, MEDICARE AND MEDICAID COST ESTIMATES GROUP. DIRECTOR, OFFICE OF THE ACTUARY (CHIEF ACTUARY). DIRECTOR, NATIONAL HEALTH STATISTICS GROUP.CHIEF OPERATING OFFICER..... OFFICE OF DEPUTY DIRECTOR, ACQUISITIONS AND OFFICE OF GRANTS MANAGEMENT. ACQUISITION AND GRANTS MANAGEMENT. DIRECTOR, OFFICE OF ACQUISITIONS AND GRANTS MANAGEMENT. OFFICE OF FINANCIAL DEPUTY DIRECTOR MANAGEMENT. OFFICE OF FINANCIAL MANAGEMENT. DIRECTOR OFFICE OF FINANCIAL MANAGEMENT. DIRECTOR, FINANCIAL SERVICES GROUP. DIRECTOR, ACCOUNTING MANAGEMENT GROUP. OFFICE OF DIRECTOR, OFFICE OF INFORMATION INFORMATION TECHNOLOGY. TECHNOLOGY/CMS CHIEF INFORMATION OFFICER. DIRECTOR, INFORMATION SECURITY AND PRIVACY GROUP/CHIEF INFORMATION SECURITY OFFICER. DEPUTY DIRECTOR, OFFICE OF INFORMATION TECHNOLOGY. DEPUTY DIRECTOR, OFFICE OF INFORMATION TECHNOLOGY.DEPARTMENT OF HEALTH AND ADMINISTRATION FOR DEPUTY ASSISTANT HUMAN SERVICES. CHILDREN AND SECRETARY FOR FAMILIES. ADMINISTRATION. ADMINISTRATION FOR DEPUTY ADMINISTRATOR COMMUNITY LIVING. FOR THE CENTER FOR INTEGRATED PROGRAMS. DEPUTY ADMINISTRATOR FOR MANAGEMENT AND BUDGET. CENTERS FOR DISEASE DIRECTOR, ASSET CONTROL AND MANAGEMENT SERVICES PREVENTION. OFFICE. DIRECTOR, OFFICE OF SAFETY, SECURITY AND ASSET MANAGEMENT. DEPUTY DIRECTOR FOR MANAGEMENT AND OPERATIONS. DIRECTOR, DIVISION OF EMERGENCY OPERATIONS. CHIEF OPERATING OFFICER. DIRECTOR, DIVISION OF ACQUISITION SERVICES. CHIEF INFORMATION SECURITY OFFICER. DEPUTY CHIEF INFORMATION OFFICER. DIRECTOR, DIGITAL SERVICES OFFICE. BUDGET OFFICER. DIRECTOR, OFFICE OF FINANCE AND ACCOUNTING. DIRECTOR OFFICE OF GRANTS SERVICES. DEPUTY CHIEF FINANCIAL OFFICER. CHIEF FINANCIAL OFFICER. CHIEF INFORMATION OFFICER. DEPUTY DIRECTOR FOR MANAGEMENT. FOOD AND DRUG DIRECTOR, OFFICE OF ADMINISTRATION. COMPLIANCE AND BIOLOGICS QUALITY. DIRECTOR, OFFICE OF ACQUISITIONS AND GRANTS SERVICES. CHIEF OPERATING OFFICER. DEPUTY CHIEF FINANCIAL OFFICER/ DIRECTOR, OFFICE OF FINANCIAL OPERATIONS. DEPUTY CHIEF OPERATING OFFICER. DIRECTOR, OFFICE OF BUDGET.[[Page 21552]] DIRECTOR, OFFICE OF SECURITY AND EMERGENCY MANAGEMENT. DIRECTOR, OFFICE OF FINANCIAL MANAGEMENT/CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR FOR COMPLIANCE OPERATIONS. DIRECTOR OFFICE OF HUMAN CAPITAL MANAGEMENT. DIRECTOR, OFFICE OF TALENT SOLUTIONS. DIRECTOR, DIVISION OF ETHICS AND INTEGRITY. INDIAN HEALTH CHIEF EXECUTIVE SERVICE. OFFICER, PHOENIX INDIAN MEDICAL CENTER. NATIONAL INSTITUTES DEPUTY DIRECTOR FOR OF HEALTH. MANAGEMENT, NIH. ASSOCIATE DIRECTOR FOR MANAGEMENT, NIGMS. DIRECTOR, OFFICE OF INFORMATION TECHNOLOGY SERVICES MANAGEMENT, CIT. DEPUTY DIRECTOR FOR MANAGEMENT, NINDS. ASSOCIATE DIRECTOR FOR SECURITY AND EMERGENCY RESPONSE, OD. ASSOCIATE DIRECTOR FOR MANAGEMENT, NIDCR. ASSOCIATE DIRECTOR FOR MANAGEMENT, NIDDK. ERA PROGRAM MANAGER, OD. ASSOCIATE DIRECTOR OF MANAGEMENT, NIEHS. DEPUTY DIRECTOR, CIT. ASSOCIATE DIRECTOR FOR ADMINISTRATIVE MANAGEMENT, NLM. DEPUTY DIRECTOR, DIVISION OF PROGRAM COORDINATION, PLANNING, AND STRATEGIC INITIATIVES, OD. SENIOR POLICY OFFICER (ETHICS), OD. DIRECTOR, OFFICE OF ACQUISITION AND LOGISTICS MANAGEMENT, OD. DIRECTOR, OFFICE OF POPULATION GENOMICS, NHGRI. ASSOCIATE DIRECTOR FOR MANAGEMENT, NIMH. DIRECTOR, OFFICE OF RESEARCH INFORMATION SYSTEMS. ASSOCIATE DIRECTOR FOR EXTRAMURAL PROGRAMS, NLM. ASSOCIATE DIRECTOR FOR ADMINISTRATION, NCATS. DIRECTOR, CENTER FOR INFORMATION TECHNOLOGY AND CHIEF INFORMATION OFFICER. DIRECTOR, OFFICE OF MANAGEMENT ASSESSMENT, OD. DEPUTY DIRECTOR FOR MANAGEMENT, NEI. ASSOCIATE DIRECTOR FOR MANAGEMENT, OD. DEPUTY DIRECTOR FOR MANAGEMENT, NIDA. ASSOCIATE DIRECTOR FOR ADMINISTRATION, NICHD. DIRECTOR, INFORMATION SYSTEMS, NLM. ASSOCIATE DIRECTOR FOR LIBRARY OPERATIONS, NLM. DIRECTOR, OFFICE OF FINANCIAL MANAGEMENT, OD. ASSOCIATE DIRECTOR FOR ADMINISTRATIVE MANAGEMENT, NHLBI. ASSOCIATE DIRECTOR FOR ADMINISTRATION, NIAAA.[[Page 21553]] DIRECTOR OF MANAGEMENT, NIA. ASSOCIATE DIRECTOR FOR MANAGEMENT, NHGRI. CHIEF OPERATING OFFICER, CC. DEPUTY DIRECTOR FOR MANAGEMENT, NCI. ASSOCIATE DIRECTOR FOR ADMINISTRATION, NIDCD. ASSOCIATE DIRECTOR FOR MANAGEMENT AND OPERATIONS, NIAMS. DIRECTOR, OFFICE OF POLICY FOR EXTRAMURAL RESEARCH ADMINISTRATION, OD. CHIEF FINANCIAL OFFICER, CC. DIRECTOR, OFFICE OF STRATEGIC PLANNING AND MANAGEMENT OPERATIONS, OD. SUBSTANCE ABUSE AND DIRECTOR, OFFICE OF MENTAL HEALTH FINANCIAL SERVICES. SERVICES ADMINISTRATION.FOOD AND DRUG ADMINISTRATION OFFICE OF REGULATORY DEPUTY DIRECTOR FOR AFFAIRS. ***TARGETING***, ANALYSIS AND SUPPORT. DIRECTOR OFFICE OF CRIMINAL INVESTIGATIONS.NATIONAL INSTITUTES OF NATIONAL LIBRARY OF DEPUTY DIRECTOR. HEALTH. MEDICINE. OFFICE OF THE DIRECTOR, OFFICE OF DIRECTOR. RESEARCH FACILITIES DEVELOPMENT AND OPERATIONS.OFFICE OF THE ASSISTANT PROGRAM SUPPORT EXECUTIVE OFFICER. SECRETARY FOR CENTER. ADMINISTRATION.OFFICE OF THE ASSISTANT OFFICE OF THE DEPUTY DIRECTOR, OFFICE OF SECRETARY FOR FINANCIAL ASSISTANT SECRETARY PROGRAM INTEGRITY RESOURCES. FOR BUDGET. COORDINATION. OFFICE OF THE DEPUTY ASSOCIATE DEPUTY ASSISTANT SECRETARY ASSISTANT FOR FINANCE. SECRETARY, FINANCE.OFFICE OF THE COMMISSIONER.. OFFICE OF OPERATIONS DIRECTOR OF FISCAL SERVICES AND OPERATIONS.OFFICE OF THE SECRETARY..... OFFICE OF THE CHIEF INFORMATION ASSISTANT SECRETARY SECURITY OFFICER. FOR ADMINISTRATION. DEPUTY DIRECTOR, PROGRAM SUPPORT CENTER. HUMAN RESOURCES OPERATIONS DIRECTOR. OFFICE OF THE DIRECTOR, OFFICE OF ASSISTANT SECRETARY SMALL AND FOR FINANCIAL DISADVANTAGED RESOURCES. BUSINESS UTILIZATION. ASSOCIATE DEPUTY ASSISTANT SECRETARY, ACQUISITION. ASSOCIATE DEPUTY ASSISTANT SECRETARY, OFFICE OF GRANTS, ACQUISITION POLICY AND ACCOUNTABILITY. DEPUTY ASSISTANT SECRETARY, OFFICE OF ACQUISITIONS. EXECUTIVE DIRECTOR, GRANTS QUALITY SERVICE MANAGEMENT. OFFICE OF THE ASSOCIATE DEPUTY ASSISTANT SECRETARY ASSISTANT SECRETARY FOR PLANNING AND FOR PLANNING AND EVALUATION. EVALUATION (HEALTH SERVICES POLICY). OFFICE OF THE EXECUTIVE OFFICER/ ASSISTANT SECRETARY DEPUTY AGENCY CHIEF FOR PUBLIC AFFAIRS. FOIA. OFFICE OF THE DEPUTY ASSOCIATE GENERAL COUNSEL. GENERAL COUNSEL FOR ETHICS ADVICE AND POLICY (ADAEO). DEPUTY GENERAL COUNSEL (LITIGATION). ASSOCIATE GENERAL COUNSEL, ETHICS DIVISION AND DESIGNATED AGENCY ETHICS OFFICIAL.PROGRAM SUPPORT CENTER...... OFFICE OF FINANCIAL DIRECTOR, FINANCIAL MANAGEMENT SERVICE. MANAGEMENT SERVICE.DEPARTMENT OF HEALTH AND HUMAN SERVICES DEPARTMENT OF HEALTH DEPUTY CHIEF OF AND HUMAN SERVICES STAFF. OFFICE OF THE CHIEF OF STAFF. INSPECTOR GENERAL. PRINCIPAL DEPUTY INSPECTOR GENERAL.[[Page 21554]] DEPARTMENT OF HEALTH AND OFFICE OF AUDIT DEPUTY INSPECTOR HUMAN SERVICES OFFICE OF SERVICES. GENERAL FOR AUDIT THE INSPECTOR GENERAL. SERVICES. ASSISTANT INSPECTOR GENERAL FOR AUDIT SERVICES (3). ASSISTANT INSPECTOR GENERAL FOR MEDICARE AND MEDICAID SERVICE AUDITS. ASSISTANT INSPECTOR GENERAL FOR AUDIT SERVICES (CYBERSECURITY AND INFORMATION TECHNOLOGY AUDITS). OFFICE OF COUNSEL TO CHIEF COUNSEL TO THE THE INSPECTOR INSPECTOR GENERAL. GENERAL. ASSISTANT INSPECTOR GENERAL FOR LEGAL AFFAIRS (2). OFFICE OF EVALUATION DEPUTY INSPECTOR AND INSPECTIONS. GENERAL FOR EVALUATION AND INSPECTIONS. ASSISTANT INSPECTOR GENERAL FOR EVALUATION AND INSPECTIONS (2). OFFICE OF ASSISTANT INSPECTOR INVESTIGATIONS. GENERAL FOR INVESTIGATIONS (3). DEPUTY INSPECTOR GENERAL FOR INVESTIGATIONS. OFFICE OF MANAGEMENT ASSISTANT INSPECTOR AND POLICY. GENERAL FOR MANAGEMENT AND POLICY (DEPUTY CHIEF FINANCIAL OFFICER). DEPUTY INSPECTOR GENERAL FOR MANAGEMENT AND POLICY. ASSISTANT INSPECTOR GENERAL (CHIEF DATA OFFICER). ASSISTANT INSPECTOR GENERAL FOR INFORMATION TECHNOLOGY (CHIEF INFORMATION OFFICER).DEPARTMENT OF HOMELAND SECURITYDEPARTMENT OF HOMELAND CYBERSECURITY AND REGIONAL DIRECTOR SECURITY. INFRASTRUCTURE (3). SECURITY AGENCY. CHIEF INFORMATION OFFICER. ASSISTANT DIRECTOR, NATIONAL RISK MANAGEMENT CENTER. REGIONAL DIRECTOR, REGION 3, PHILADELPHIA, PA. DEPUTY EXECUTIVE ASSISTANT DIRECTOR FOR CYBERSECURITY. DIRECTOR OF MANAGEMENT. REGIONAL DIRECTOR, REGION 6, DALLAS, TX. DEPUTY DIRECTOR, OFFICE OF BIOMETRIC IDENTITY MANAGEMENT. DIRECTOR, PROTECTIVE SECURITY COORDINATION. EXECUTIVE ASSISTANT DIRECTOR FOR EMERGENCY COMMUNICATIONS. ASSISTANT DIRECTOR, FUTURES IDENTITY. SENIOR ADVISOR, OFFICE OF INFRASTRUCTURE SECURITY. DEPUTY DIRECTOR OF MANAGEMENT (BUSINESS SERVICE DELIVERY LEAD). DIRECTOR, NATIONAL INFRASTRUCTURE COORDINATING CENTER. REGIONAL DIRECTOR, REGION I, BOSTON, MA. REGIONAL DIRECTOR, REGION 10, SEATTLE, WA. DEPUTY ASSISTANT DIRECTOR FOR INTEGRATED OPERATIONS. REGIONAL DIRECTOR. CHIEF INFORMATION SECURITY OFFICER. EXECUTIVE DIRECTOR, CYBERSECURITY AND INFRASTRUCTURE SECURITY AGENCY. DEPUTY DIRECTOR CYBER THREAT DETECTION AND ANALYSIS. DEPUTY ASSISTANT DIRECTOR, NATIONAL RISK MANAGEMENT CENTER.[[Page 21555]] REGIONAL DIRECTOR, REGION 7, KANSAS CITY, MO. REGIONAL DIRECTOR. CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR, NETWORK SECURITY DEPLOYMENT. COMPONENT ACQUISITION EXECUTIVE. SENIOR COUNSELOR TO THE DIRECTOR FOR CYBERSECURITY AND INFRASTRUCTURE SECURITY AGENCY. DIRECTOR, OFFICE OF COMPLIANCE AND SECURITY. COMPONENT CHIEF HUMAN CAPITAL OFFICER. CHIEF TECHNOLOGY OFFICER, CYBER SECURITY AND COMMUNICATIONS. DEPUTY EXECUTIVE ASSISTANT DIRECTOR FOR INFRASTRUCTURE SECURITY. DIRECTOR MISSION INTEGRATION. DEPUTY EXECUTIVE ASSISTANT DIRECTOR FOR EMERGENCY COMMUNICATIONS. DEPUTY DIRECTOR FOR OPERATIONS, NATIONAL CYBERSECURITY AND COMMUNICATIONS INTEGRATION CENTER (NCCIC). ASSISTANT DIRECTOR FOR STAKEHOLDER ENGAGEMENT. PRINCIPAL DEPUTY DIRECTOR, NATIONAL CYBERSECURITY AND COMMUNICATIONS INTEGRATION CENTER. DIRECTOR, NETWORK SECURITY DEPLOYMENT. ASSISTANT DIRECTOR FOR INTEGRATED OPERATIONS. FEDERAL EMERGENCY DEPUTY DIRECTOR, MANAGEMENT AGENCY. INDIVIDUAL ASSISTANCE DIVISION. DEPUTY ASSISTANT ADMINISTRATOR, GRANTS SYSTEMS AND POLICY INTEGRATION. DIRECTOR, OFFICE OF EQUAL RIGHTS. DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY. ASSISTANT ADMINISTRATOR, FUND MANAGEMENT. DEPUTY CHIEF ADMINISTRATIVE OFFICER. DEPUTY ASSISTANT ADMINISTRATOR FOR RISK MANAGEMENT. DEPUTY ASSISTANT ADMINISTRATOR FOR FEDERAL INSURANCE. ASSISTANT ADMINISTRATOR FOR MITIGATION. DIRECTOR, NATIONAL ASSESSMENT, INTEGRATION, AND INDIVIDUAL PREPAREDNESS. CHIEF INFORMATION SECURITY OFFICER. DEPUTY CHIEF COMPONENT HUMAN CAPITAL OFFICER OF OPERATIONS. DEPUTY REGIONAL ADMINISTRATOR (REGION I BOSTON). DEPUTY REGIONAL ADMINISTRATOR (REGION II NEW YORK). DEPUTY REGIONAL ADMINISTRATOR (REGION III PHILADELPHIA). DEPUTY REGIONAL ADMINISTRATOR (REGION V CHICAGO). DEPUTY REGIONAL ADMINISTRATOR (REGION VII KANSAS). DEPUTY REGIONAL ADMINISTRATOR (REGION VIII DENVER). DEPUTY REGIONAL ADMINISTRATOR (REGION IX OAKLAND).[[Page 21556]] DEPUTY REGIONAL ADMINISTRATOR (REGION X SEATTLE). DEPUTY REGIONAL ADMINISTRATOR (REGION VI, DALLAS). PRINCIPAL DEPUTY CHIEF COUNSEL. DEPUTY REGIONAL ADMINISTRATOR, REGION IV, ATLANTA. DEPUTY ASSISTANT ADMINISTRATOR, NATIONAL PREPAREDNESS DIRECTORATE. DIRECTOR, EMERGENCY COMMUNICATION DIVISION. CHIEF TECHNOLOGY OFFICER. CHIEF SECURITY OFFICER. DEPUTY DIRECTOR, PUBLIC ASSISTANCE DIVISION. DEPUTY ASSISTANT ADMINISTRATOR, FIELD OPERATIONS DIRECTORATE. DIRECTOR, OPERATIONAL COORDINATION. DEPUTY DIRECTOR, EXTERNAL AFFAIRS. SUPERINTENDENT, CENTER FOR DOMESTIC PREPAREDNESS. DEPUTY CHIEF COUNSEL FOR OPERATIONS. DEPUTY ASSISTANT ADMINISTRATOR, GRANTS PROGRAM. ASSISTANT ADMINISTRATOR FOR FINANCIAL MANAGEMENT. DIRECTOR, OPERATIONS DIVISION (RESPONSE AND RECOVERY). DIRECTOR, NATIONAL EXERCISES AND TECHNOLOGICAL HAZARDS DIVISION. DEPUTY ASSOCIATE ADMINISTRATOR FOR POLICY, PROGRAM ANALYSIS AND INTERNATIONAL AFFAIRS. CHIEF ADMINISTRATIVE OFFICER. DEPUTY ASSISTANT ADMINISTRATOR FOR MITIGATION. ASSISTANT ADMINISTRATOR, FIELD OPERATIONS DIRECTORATE. DEPUTY CHIEF COMPONENT PROCUREMENT OFFICER. DEPUTY ASSISTANT ADMINISTRATOR FOR RESPONSE. DEPUTY CHIEF INFORMATION OFFICER (DISASTER OPERATIONS), MISSION SUPPORT DIRECTORATE. SUPERINTENDENT, EMERGENCY MANAGEMENT INSTITUTE. DEPUTY ASSISTANT ADMINISTRATOR FOR FINANCIAL SYSTEMS MODERNIZATION. DEPUTY ASSOCIATE ADMINISTRATOR FOR MISSION SUPPORT. ASSISTANT ADMINISTRATOR FOR NATIONAL PREPAREDNESS. DIRECTOR, INDIVIDUAL ASSISTANCE DIVISION. DIRECTOR, PUBLIC ASSISTANCE DIVISION. CHIEF COMPONENT PROCUREMENT OFFICER. DIVISION DIRECTOR, HAZARD MITIGATION ASSISTANCE. DEPUTY CHIEF COUNSEL FOR GENERAL LAW. DIRECTOR, PLANNING AND EXERCISE DIVISION, OFFICE OF RESPONSE AND RECOVERY. ASSISTANT ADMINISTRATOR FOR FEDERAL INSURANCE. ASSOCIATE ADMINISTRATOR, MISSION SUPPORT BUREAU.[[Page 21557]] ASSISTANT ADMINISTRATOR FOR BUDGET. DEPUTY CHIEF COMPONENT HUMAN CAPITAL OFFICER FOR STRATEGIC SERVICES. CHIEF FINANCIAL OFFICER. DEPUTY ASSOCIATE ADMINISTRATOR, FEDERAL INSURANCE AND MITIGATION ADMINISTRATION. DIRECTOR, GRANTS MANAGEMENT DIVISION. ASSISTANT ADMINISTRATOR FOR RISK MANAGEMENT. DEPUTY CHIEF INFORMATION OFFICER. DEPUTY CHIEF FINANCIAL OFFICER. FEDERAL LAW SENIOR EXECUTIVE ENFORCEMENT ADVISOR. TRAINING CENTER. ASSISTANT DIRECTOR (MISSION AND READINESS SUPPORT DIRECTORATE). ASSISTANT DIRECTOR (CHIEF FINANCIAL OFFICER). ASSISTANT DIRECTOR OF TRAINING (CORE TRAINING OPERATIONS DIRECTORATE. ASSISTANT DIRECTOR OF TRAINING (NATIONAL CAPITAL REGION TRAINING OPERATIONS DIRECTORATE. CHIEF COUNSEL. ASSISTANT DIRECTOR (CHIEF INFORMATION OFFICER DIRECTORATE). DIRECTOR, FEDERAL LAW ENFORCEMENT TRAINING CENTER. DEPUTY DIRECTOR. ASSOCIATE DIRECTOR FOR TRAINING OPERATIONS. ASSISTANT DIRECTOR OF TRAINING (TRAINING MANAGEMENT OPERATIONS DIRECTORATE). ASSISTANT DIRECTOR OF TRAINING (TECHNICAL TRAINING OPERATIONS DIRECTORATE). MANAGEMENT DEPUTY DIRECTOR, DIRECTORATE. TECHNOLOGY AND INNOVATION (CHIEF TECHNOLOGY OFFICER). EXECUTIVE DIRECTOR, SUSTAINABILITY AND ENVIRONMENTAL PROGRAMS. EXECUTIVE DIRECTOR, HUMAN RESOURCES MANAGEMENT AND SERVICES. EXECUTIVE DIRECTOR, ENTERPRISE SECURITY OPERATIONS AND SUPPORT. DIRECTOR, FINANCIAL MANAGEMENT. EXECUTIVE DIRECTOR, THREAT MANAGEMENT OPERATIONS. DIRECTOR, OFFICE OF BUDGET. EXECUTIVE DIRECTOR, SOLUTIONS DEVELOPMENT DIRECTORATE. CHIEF PROCUREMENT OFFICER. DEPUTY CHIEF INFORMATION SECURITY OFFICER-- CYBERSECURITY (CIO). DEPUTY CHIEF HUMAN CAPITAL OFFICER. DEPUTY CHIEF DATA OFFICER. EXECUTIVE DIRECTOR, HEADQUARTERS SUPPORT. EXECUTIVE DIRECTOR, ACQUISITION WORKFORCE AND SYSTEMS SUPPORT. ASSISTANT DIRECTOR FOR FIELD OPERATIONS (EAST), FEDERAL PROTECTIVE SERVICE. DEPUTY CHIEF SECURITY OFFICER. EXECUTIVE DIRECTOR, ACQUISITION, POLICY AND OVERSIGHT.[[Page 21558]] DEPUTY EXECUTIVE DIRECTOR, INFORMATION TECHNOLOGY OPERATIONS (ENGINEERING). EXECUTIVE DIRECTOR, HUMAN CAPITAL POLICY AND PROGRAMS. DEPUTY CHIEF INFORMATION SECURITY OFFICER (FISMA). EXECUTIVE DIRECTOR, FACILITIES AND OPERATIONAL SUPPORT. DEPUTY DIRECTOR, POLICY, INTERGOVERNMENTAL PROGRAMS AND COMMUNICATIONS. CHIEF SECURITY OFFICER. EXECUTIVE DIRECTOR, INFORMATION TECHNOLOGY OPERATIONS. EXECUTIVE DIRECTOR, BUSINESS MANAGEMENT DIRECTORATE. DEPUTY CHIEF PROCUREMENT OFFICER. ASSISTANT DIRECTOR PROTECTIVE SECURITY OFFICER OVERSIGHT. DEPUTY CHIEF READINESS SUPPORT OFFICER. EXECUTIVE DIRECTOR, OFFICE OF THE CHIEF TECHNOLOGY OFFICER. DIRECTOR, FEDERAL PROTECTIVE SERVICE. EXECUTIVE DIRECTOR, CHIEF INFORMATION SECURITY OFFICER. DEPUTY EXECUTIVE DIRECTOR, INFORMATION TECHNOLOGY OPERATIONS. DEPUTY DIRECTOR, OFFICE OF PROCUREMENT OPERATIONS. DEPUTY CHIEF INFORMATION OFFICER. EXECUTIVE DIRECTOR, OFFICE OF PROCUREMENT OPERATIONS. EXECUTIVE DIRECTOR, STRATEGIC OPERATIONS. ASSISTANT DIRECTOR FOR RESOURCE MANAGEMENT (FINANCIAL OPERATIONS). EXECUTIVE DIRECTOR, REGIONAL MISSION SUPPORT. DIRECTOR, PROCUREMENT POLICY AND OVERSIGHT. EXECUTIVE DIRECTOR, ACQUISITION POLICY AND LEGISLATION BRANCH. EXECUTIVE DIRECTOR, STRATEGIC WORKFORCE PLANNING AND ANALYSIS. EXECUTIVE DIRECTOR, HEADQUARTERS SERVICES. DEPUTY DIRECTOR, PROGRAM ACCOUNTABILITY AND RISK MANAGEMENT. EXECUTIVE DIRECTOR, ASSETS AND LOGISTICS. DEPUTY CHIEF TECHNOLOGY OFFICER. DEPUTY BUDGET DIRECTOR, OFFICE OF BUDGET. EXECUTIVE DIRECTOR, STRATEGIC PROGRAMS DIVISION. DEPUTY EXECUTIVE DIRECTOR, SOLUTIONS DEVELOPMENT DIRECTORATE. PRINCIPAL DEPUTY DIRECTOR, FEDERAL PROTECTIVE SERVICE. CHIEF DATA OFFICER. DIRECTOR, DEPARTMENTAL GENERAL ACCOUNTING OFFICE/INSPECTOR GENERAL (GAO/IG) LIAISON OFFICE. ASSISTANT DIRECTOR OF OPERATIONS, FEDERAL PROTECTIVE SERVICES. ASSISTANT DIRECTOR OF FIELD OPERATIONS (WEST), FEDERAL PROTECTIVE SERVICES.[[Page 21559]] ASSISTANT DIRECTOR OF FIELD OPERATIONS (CENTRAL), FEDERAL PROTECTIVE SERVICES. EXECUTIVE DIRECTOR, HUMAN CAPITAL BUSINESS SYSTEMS. DIRECTOR, RISK MANAGEMENT AND ASSURANCE. DIRECTOR, WORKFORCE HEALTH AND MEDICAL SUPPORT/DEPUTY CHIEF MEDICAL OFFICER. EXECUTIVE DIRECTOR, DIVERSITY AND INCLUSION. ASSISTANT DIRECTOR, OFFICE OF RESOURCE MANAGEMENT, FEDERAL PROTECTIVE SERVICE. ASSISTANT DIRECTOR, OFFICE OF TRAINING AND CAREER DEVELOPMENT, FEDERAL PROTECTIVE SERVICE. EXECUTIVE DIRECTOR, PROGRAM ACCOUNTABILITY AND RISK MANAGEMENT OFFICE. OFFICE OF CHIEF OF STAFF. INTELLIGENCE AND DEPUTY UNDER ANALYSIS. SECRETARY FOR INTELLIGENCE ENTERPRISE READINESS. DIRECTOR, CYBER MISSION CENTER. DIRECTOR, BORDER SECURITY DIVISION. DIRECTOR, CURRENT AND EMERGING THREATS CENTER. PRINCIPAL DEPUTY UNDER SECRETARY FOR INTELLIGENCE AND ANALYSIS. OFFICE OF STRATEGY, DEPUTY ASSISTANT POLICY, AND PLANS. SECRETARY FOR INTERNATIONAL AFFAIRS (WESTERN HEMISPHERE). DEPUTY ASSISTANT SECRETARY FOR CYBER. DEPUTY ASSISTANT SECRETARY FOR UNITY OF EFFORT INTEGRATION. DEPUTY ASSISTANT SECRETARY FOR IMMIGRATION STATISTICS. DEPARTMENT OF HOMELAND SECURITY (DHS) ATTACHE TO CENTRAL AMERICA. EXECUTIVE DIRECTOR, JOINT CYBER COORDINATION GROUP. OFFICE OF THE DEPUTY ASSOCIATE GENERAL COUNSEL. GENERAL COUNSEL FOR GENERAL LAW. CHIEF OF STAFF/ MANAGING COUNSEL. LEGAL ADVISOR OF ETHICS/ALTERNATE DESIGNATED AGENCY ETHICS OFFICIAL. DEPUTY ASSOCIATE GENERAL COUNSEL FOR ACQUISITION AND PROCUREMENT. OFFICE OF THE SENIOR DEPARTMENT OF SECRETARY. HOMELAND SECURITY ADVISOR TO THE COMMANDER, UNITED STATES NORTHERN COMMAND/NORTH AMERICAN AEROSPACE DEFENSE COMMAND. DEPARTMENT OF HOMELAND SECURITY (DHS) ADVISOR TO THE DEPARTMENT OF DEFENSE (DOD). SCIENCE AND DIRECTOR, TEST AND TECHNOLOGY EVALUATION DIRECTORATE. DIVISION. TECHNICAL DIRECTOR, TECHNOLOGY CENTERS. PRINCIPAL DIRECTOR, OFFICE OF SCIENCE AND ENGINEERING. DIRECTOR, SYSTEMS ENGINEERING AND STANDARDS. DIRECTOR, FINANCE AND BUDGET DIVISION. DIRECTOR, TECHNOLOGY CENTERS. DIRECTOR, OFFICE FOR STRATEGY AND POLICY.[[Page 21560]] DIRECTOR, TECHNOLOGY TRANSITION. DIRECTOR, OPERATIONS AND REQUIREMENTS ANALYSIS. SENIOR ADVISOR TO THE DEPUTY UNDER SECRETARY FOR SCIENCE AND TECHNOLOGY. CHIEF SCIENTIST. SENIOR COUNSELOR FOR RESILIENCE. PRINCIPAL DIRECTOR, OFFICE OF ENTERPRISE SERVICES. PRINCIPAL DIRECTOR, OFFICE OF INNOVATION AND COLLABORATION. SENIOR ADVISOR FOR INTERAGENCY COORDINATION. UNITED STATES DIRECTOR, NATIONAL CITIZENSHIP AND RECORDS CENTER. IMMIGRATION DEPUTY DIRECTOR, SERVICES. SERVICE CENTER, LAGUNA NIGUEL, CALIFORNIA. DEPUTY DIRECTOR, SERVICE CENTER, DALLAS, TEXAS. CHIEF, INTERNATIONAL OPERATIONS. DISTRICT DIRECTOR, FIELD SERVICES, TAMPA, FLORIDA. DISTRICT DIRECTOR, FIELD SERVICES, NEWARK, NEW JERSEY. DISTRICT DIRECTOR, FIELD SERVICES, ATLANTA, GEORGIA. CHIEF, OFFICE OF SECURITY AND INTEGRITY. ASSOCIATE DIRECTOR, IMMIGRATION RECORDS AND IDENTITY SERVICES DIVISION. DEPUTY ASSOCIATE DIRECTOR, REFUGEE, ASYLUM, AND INTERNATIONAL OPERATIONS. ASSOCIATE DIRECTOR, SERVICE CENTER OPERATIONS. DEPUTY DIRECTOR, SERVICE CENTER, LINCOLN, NEBRASKA. CHIEF FINANCIAL OFFICER. DIRECTOR, SERVICE CENTER, LINCOLN, NEBRASKA. DIRECTOR, SERVICE CENTER, LAGUNA NIGUEL, CALIFORNIA. DIRECTOR, SERVICE CENTER, DALLAS, TEXAS. DIRECTOR, VERMONT SERVICE CENTER, SAINT ALBANS, VERMONT. CENTRAL REGIONAL DIRECTOR (DALLAS, TEXAS). DISTRICT DIRECTOR, FIELD SERVICES, MIAMI, FLORIDA. DEPUTY ASSOCIATE DIRECTOR, OFFICE OF FIELD OPERATIONS. DIRECTOR, OFFICE OF REFUGEE AFFAIRS. CHIEF, PERFORMANCE AND QUALITY. CHIEF INFORMATION OFFICER. ASSOCIATE DIRECTOR, OFFICE OF MANAGEMENT. ASSOCIATE DIRECTOR, FRAUD DETECTION AND NATIONAL SECURITY. WESTERN REGIONAL DIRECTOR (LAGUNA NIGUEL, CALIFORNIA). NORTHEAST REGIONAL DIRECTOR (BURLINGTON, VERMONT). CHIEF, INTAKE AND DOCUMENT PRODUCTION. CHIEF, ASYLUM DIVISION. DISTRICT DIRECTOR, FIELD SERVICES, NEW YORK CITY, NEW YORK. DEPUTY ASSOCIATE DIRECTOR, IMMIGRATION RECORDS AND IDENTITY SERVICES DIVISION.[[Page 21561]] DEPUTY CHIEF INFORMATION OFFICER. CHIEF, HUMAN CAPITAL AND TRAINING. DEPUTY GENERAL COUNSEL. ASSOCIATE DIRECTOR, REFUGEE, ASYLUM AND INTERNATIONAL OPERATIONS. DEPUTY ASSOCIATE DIRECTOR, FRAUD DETECTION AND NATIONAL SECURITY. DISTRICT DIRECTOR, FIELD SERVICES (CLEVELAND, OH). DISTRICT DIRECTOR, FIELD SERVICES (SAN ANTONIO, TX). CHIEF, IDENTIFY AND INFORMATION MANAGEMENT DIVISION. COMPONENT ACQUISITION EXECUTIVE. DEPUTY DIRECTOR, POTOMAC SERVICE CENTER. DIRECTOR, POTOMAC SERVICE CENTER. DISTRICT DIRECTOR, FIELD SERVICES, DALLAS, TEXAS. CHIEF DATA OFFICER. DEPUTY CHIEF FINANCIAL OFFICER. DEPUTY CHIEF INFORMATION OFFICE FOR OPERATIONS. DISTRICT DIRECTOR, WASHINGTON, DC. CHIEF, OFFICE OF CONTRACTING. DISTRICT DIRECTOR, FIELD OPERATIONS (SEATTLE, WA). DISTRICT DIRECTOR, FIELD SERVICES (SAN DIEGO, CA). DISTRICT DIRECTOR, FIELD SERVICES (KANSAS CITY, MO). DEPUTY ASSOCIATE DIRECTOR, SERVICE CENTER OPERATIONS. CHIEF, IMMIGRANT AND INVESTOR PROGRAM. DEPUTY CHIEF OFFICE OF SECURITY AND INTEGRITY. DEPUTY ASSOCIATE DIRECTOR, OFFICE OF MANAGEMENT. DEPUTY ASSOCIATE DIRECTOR, EXTERNAL AFFAIRS DIRECTORATE. DEPUTY CHIEF COUNSEL FOR FIELD MANAGEMENT. DEPUTY DIRECTOR, SERVICE CENTER, SAINT ALBANS, VERMONT. ASSOCIATE DIRECTOR, FIELD OPERATIONS. CHIEF, ADMINISTRATIVE APPEALS. CHIEF, VERIFICATION DIVISION. DISTRICT DIRECTOR, FIELD SERVICES, BOSTON, MASSACHUSETTS. DISTRICT DIRECTOR, FIELD SERVICES, CHICAGO, ILLINOIS. CHIEF STRATEGY OFFICER, OFFICE OF POLICY AND STRATEGY. CHIEF, OFFICE OF ADMINISTRATION. DIRECTOR, NATIONAL BENEFITS CENTER. DISTRICT DIRECTOR, FIELD SERVICES, LOS ANGELES CALIFORNIA. DISTRICT DIRECTOR, FIELD SERVICES, SAN FRANCISCO CALIFORNIA. REGIONAL DIRECTOR, SOUTHEAST REGION. DEPUTY DIRECTOR, NATIONAL BENEFITS CENTER. UNITED STATES EXECUTIVE ASSISTANT CUSTOMS AND BORDER COMMISSIONER, FIELD PROTECTION. OPERATIONS. DEPUTY EXECUTIVE ASSISTANT COMMISSIONER, FIELD OPERATIONS. DEPUTY CHIEF (DEPUTY EXECUTIVE ASSISTANT COMMISSIONER), BORDER PATROL. EXECUTIVE DIRECTOR, OPERATIONS.[[Page 21562]] DIRECTOR, FIELD OPERATIONS (SEATTLE). DIRECTOR, FIELD OPERATIONS (DETROIT). DIRECTOR, FIELD OPERATIONS (BUFFALO). DEPUTY ASSISTANT COMMISSIONER, OFFICE OF TRAINING AND DEVELOPMENT. DEPUTY CHIEF PATROL AGENT, RIO GRANDE VALLEY. ASSISTANT COMMISSIONER, ACQUISITION, CHIEF ACQUISITION OFFICER. DEPUTY CHIEF PATROL AGENT, EL PASO. PORT DIRECTOR, JOHN F. KENNEDY AIRPORT. EXECUTIVE DIRECTOR, PLANNING, PROGRAM ANALYSIS AND EVALUATION. DEPUTY CHIEF COUNSEL. EXECUTIVE DIRECTOR, INTELLIGENCE AND ANALYSIS. EXECUTIVE DIRECTOR, CYBERSECURITY OPERATIONS AND POLICY. DEPUTY COMMISSIONER. ASSISTANT COMMISSIONER, HUMAN RESOURCES MANAGEMENT. DEPUTY ASSISTANT COMMISSIONER, HUMAN RESOURCES MANAGEMENT. EXECUTIVE DIRECTOR, HUMAN RESOURCES POLICY AND PROGRAMS. ASSISTANT COMMISSIONER, FACILITIES AND ASSET MANAGEMENT, CHIEF READINESS SUPPORT OFFICER. ASSISTANT COMMISSIONER, TRAINING AND DEVELOPMENT. EXECUTIVE ASSISTANT COMMISSIONER, OFFICE OF TRADE. EXECUTIVE DIRECTOR, REGULATORY AUDIT. EXECUTIVE DIRECTOR, REGULATIONS AND RULINGS. ASSISTANT COMMISSIONER, FINANCE, CHIEF FINANCIAL OFFICER. EXECUTIVE DIRECTOR, BUDGET. ASSISTANT COMMISSIONER, INFORMATION AND TECHNOLOGY. EXECUTIVE DIRECTOR, LABORATORIES AND SCIENTIFIC SERVICES. ASSISTANT COMMISSIONER, OFFICE OF PROFESSIONAL RESPONSIBILITY. DIRECTOR, FIELD OPERATIONS (NEW YORK). CHIEF ACCOUNTABILITY OFFICER. PORT DIRECTOR, NEWARK. PORT DIRECTOR, MIAMI INTERNATIONAL AIRPORT. DIRECTOR, FIELD OPERATIONS (MIAMI). DIRECTOR, FIELD OPERATIONS (CHICAGO). DIRECTOR, FIELD OPERATIONS (LOS ANGELES). DIRECTOR, FIELD OPERATIONS (HOUSTON). DIRECTOR, FIELD OPERATIONS (LAREDO). DIRECTOR, FIELD OPERATIONS (SAN DIEGO). DEPUTY EXECUTIVE ASSISTANT COMMISSIONER, AIR AND MARINE. CHIEF (EXECUTIVE ASSISTANT COMMISSIONER), UNITED STATES BORDER PATROL. CHIEF PATROL AGENT, LAREDO. DIRECTOR, FIELD OPERATIONS (SAN FRANCISCO).[[Page 21563]] CHIEF PATROL AGENT (EL PASO). CHIEF PATROL AGENT, SAN DIEGO. DEPUTY EXECUTIVE DIRECTOR, PROGRAM MANAGEMENT. DIRECTOR, FIELD OPERATIONS (EL PASO). ASSOCIATE CHIEF COUNSEL--ENFORCEMEN T. ASSOCIATE CHIEF COUNSEL--TRADE AND FINANCE. ASSOCIATE CHIEF COUNSEL FOR ETHICS, LABOR, AND EMPLOYMENT. ASSOCIATE CHIEF COUNSEL--SOUTHEAST. ASSOCIATE CHIEF COUNSEL--NEW YORK. ASSOCIATE CHIEF COUNSEL--CHICAGO. ASSOCIATE CHIEF COUNSEL--HOUSTON. ASSOCIATE CHIEF COUNSEL--LOS ANGELES. DEPUTY ASSISTANT COMMISSIONER, FINANCE. EXECUTIVE DIRECTOR, NATIONAL ***TARGETING*** CENTER. PORT DIRECTOR, SAN FRANCISCO. DIRECTOR, FIELD OPERATIONS (TUCSON). DIRECTOR, FIELD OPERATIONS (SAN JUAN). DIRECTOR, FIELD OPERATIONS (BOSTON). PORT DIRECTOR, LOS ANGELES AIRPORT. EXECUTIVE DIRECTOR, PLANNING, PROGRAM ANALYSIS, AND EVALUATION. DEPUTY EXECUTIVE ASSISTANT COMMISSIONER, OFFICE OF TRADE. CHIEF PATROL AGENT (TUCSON). PORT DIRECTOR, LOS ANGELES/LONG BEACH SEAPORT. PORT DIRECTOR (EL PASO). DEPUTY ASSISTANT COMMISSIONER, INFORMATION AND TECHNOLOGY. EXECUTIVE DIRECTOR, PROCUREMENT. EXECUTIVE DIRECTOR, ***AGRICULTURE*** PROGRAMS AND TRADE LIAISON. EXECUTIVE DIRECTOR, MISSION SUPPORT. DEPUTY EXECUTIVE ASSISTANT COMMISSIONER, OPERATIONS SUPPORT. DEPUTY ASSISTANT COMMISSIONER, FACILITIES AND ASSET MANAGEMENT. EXECUTIVE DIRECTOR, MISSION READINESS OPERATIONS DIRECTORATE. EXECUTIVE DIRECTOR, ENTERPRISE NETWORKS AND TECHNOLOGY SUPPORT. CHIEF, LAW ENFORCEMENT OPERATIONS, OFFICE OF BORDER PATROL. DIRECTOR, FIELD OPERATIONS (ATLANTA). EXECUTIVE DIRECTOR, CARGO AND CONVEYANCE SECURITY. EXECUTIVE DIRECTOR, PLANNING, ANALYSIS AND REQUIREMENTS EVALUATION (PARE). EXECUTIVE ASSISTANT COMMISSIONER, AIR AND MARINE. CHIEF PATROL AGENT (DEL RIO). EXECUTIVE DIRECTOR, ADMISSIBILITY AND PASSENGER PROGRAMS. CHIEF PATROL AGENT, RIO GRANDE VALLEY. CHIEF PATROL AGENT, YUMA, ARIZONA.[[Page 21564]] EXECUTIVE DIRECTOR, ***TARGETING*** AND ANALYSIS SYSTEMS. EXECUTIVE DIRECTOR, ENTERPRISE DATA MANAGEMENT AND ENGINEERING. DEPUTY CHIEF, LAW ENFORCEMENT OPERATIONAL PROGRAMS, OFFICE OF BORDER PATROL. EXECUTIVE DIRECTOR, CARGO SYSTEMS. EXECUTIVE DIRECTOR, COMMERCIAL ***TARGETING*** AND ENFORCEMENT. DEPUTY ASSISTANT COMMISSIONER, OFFICE OF PROFESSIONAL RESPONSIBILITY. DEPUTY CHIEF, LAW ENFORCEMENT OPERATIONS, OFFICE OF BORDER PATROL. EXECUTIVE DIRECTOR, MISSION SUPPORT, OFFICE OF CUSTOMS AND BORDER PROTECTION (CBP) AIR AND MARINE. EXECUTIVE ASSISTANT COMMISSIONER, ENTERPRISE SERVICES. EXECUTIVE DIRECTOR, TRADE POLICY AND PROGRAMS. EXECUTIVE DIRECTOR, OPERATIONS, AIR AND MARINE. CHIEF, STRATEGIC PLANNING AND ANALYSIS. DEPUTY ASSISTANT COMMISSIONER, OFFICE OF INTELLIGENCE. EXECUTIVE DIRECTOR, FIELD SUPPORT. EXECUTIVE DIRECTOR, TRAINING, SAFETY AND STANDARDS. EXECUTIVE DIRECTOR, NATIONAL AIR SECURITY OPERATIONS, AIR AND MARINE. EXECUTIVE DIRECTOR, PASSENGER SYSTEMS PROGRAM OFFICE. DIRECTOR OF OPERATIONS, SOUTHWEST BORDER, EL PASO, NEW MEXICO. EXECUTIVE DIRECTOR, AIR AND MARINE OPERATIONS CENTER, RIVERSIDE, OFFICE OF CUSTOMS AND BORDER PROTECTION (CBP) AIR AND MARINE. DIRECTOR OF OPERATIONS, SOUTHEASTERN REGION, MIAMI, FL. PORT DIRECTOR, LAREDO. EXECUTIVE DIRECTOR, FINANCIAL OPERATIONS. DIRECTOR OF OPERATIONS, NORTHERN REGION, WDC, (CBP) AMO. EXECUTIVE DIRECTOR, PROGRAM MANAGEMENT OFFICE. DEPUTY CHIEF PATROL AGENT, SAN DIEGO. CHIEF PATROL AGENT, EL CENTRO, CALIFORNIA. DEPUTY CHIEF PATROL AGENT, TUCSON. PORT DIRECTOR, SAN YSIDRO. DEPUTY ASSISTANT COMMISSIONER, OFFICE OF ACQUISITION. EXECUTIVE DIRECTOR, TALENT MANAGEMENT. DEPUTY EXECUTIVE ASSISTANT COMMISSIONER, ENTERPRISE SERVICES. DIRECTOR, FIELD OPERATIONS (PRECLEARANCE). DEPUTY ASSISTANT COMMISSIONER, INTERNATIONAL AFFAIRS. EXECUTIVE DIRECTOR, ACQUISITION MANAGEMENT.[[Page 21565]] EXECUTIVE DIRECTOR, AUTOMATED COMMERCIAL ENVIRONMENT (ACE) BUSINESS OFFICE. ASSISTANT COMMISSIONER, OFFICE OF INTELLIGENCE. DIRECTOR, NATIONAL ***TARGETING*** CENTER (PASSENGER). CHIEF PATROL AGENT (DETROIT). CHIEF PATROL AGENT (BIG BEND). EXECUTIVE DIRECTOR, PRIVACY AND DIVERSITY. ASSISTANT COMMISSIONER, INTERNATIONAL AFFAIRS. EXECUTIVE DIRECTOR, INTELLIGENCE OPERATIONS. DIRECTOR, JOINT TASK FORCE (JTF)--WEST, SAN ANTONIO, TX. DIRECTOR, LEADERSHIP DEVELOPMENT CENTER. DIRECTOR, NATIONAL ***TARGETING*** CENTER (CARGO). DEPUTY JOINT FIELD COMMANDER, EAST. DIRECTOR, COUNTER NETWORK. EXECUTIVE ASSISTANT COMMISSIONER, OPERATIONS SUPPORT. EXECUTIVE DIRECTOR, BORDER ENFORCEMENT AND MANAGEMENT SYSTEMS. ASSOCIATE CHIEF COUNSEL (TUCSON). DIRECTOR, FIELD OPERATIONS (BALTIMORE). PORT DIRECTOR, BUFFALO. PORT DIRECTOR, CALEXICO, CA. PORT DIRECTOR, NOGALES, AZ. EXECUTIVE DIRECTOR, PROGRAMMING. EXECUTIVE DIRECTOR, INVESTIGATIVE OPERATIONS. CHIEF PATROL AGENT, GRAND FORKS. CHIEF PATROL AGENT, MIAMI. EXECUTIVE DIRECTOR, INTERGOVERNMENTAL PUBLIC LIAISON. EXECUTIVE DIRECTOR, SECURITY OPERATIONS. CHIEF PATROL AGENT, BLAINE. EXECUTIVE DIRECTOR, INTELLIGENCE ENTERPRISE. PORT DIRECTOR (OTAY MESA). EXECUTIVE DIRECTOR, OPERATIONS. EXECUTIVE DIRECTOR, FIELD OPERATIONS ACADEMY. DEPUTY CHIEF PATROL AGENT (LAREDO). DEPUTY EXECUTIVE DIRECTOR, OPERATIONS. EXECUTIVE DIRECTOR, MISSION SUPPORT. DIRECTOR, BORDER PATROL ACADEMY. EXECUTIVE DIRECTOR, LAW ENFORCEMENT SAFETY AND COMPLIANCE. UNITED STATES DEPUTY ASSISTANT IMMIGRATION AND DIRECTOR, CUSTOMS ENFORCEMENT. INVESTIGATIONS (ILLICIT TRADE, TRAVEL, AND FINANCE). ASSISTANT DIRECTOR, INTERNATIONAL OPERATIONS. ASSISTANT DIRECTOR, INTELLIGENCE, HOMELAND SECURITY INVESTIGATIONS. SPECIAL AGENT IN CHARGE (MIAMI). ASSISTANT DIRECTOR, NATIONAL SECURITY INVESTIGATIONS. SPECIAL AGENT IN CHARGE (NEW YORK). DEPUTY DIRECTOR, OFFICE OF HOMELAND SECURITY INVESTIGATIONS.[[Page 21566]] FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, DALLAS, TEXAS. SPECIAL AGENT IN CHARGE, DALLAS. SPECIAL AGENT IN CHARGE, SAN FRANCISCO. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, SAN FRANCISCO, CA. DEPUTY ASSISTANT SECRETARY FOR IMMIGRATION AND CUSTOMS ENFORCEMENT. DEPUTY ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS (WEST). SPECIAL AGENT IN CHARGE, PHOENIX. SPECIAL AGENT IN CHARGE, EL PASO. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS, PHILADELPHIA, PENNSYLVANIA. DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS (INTERNATIONAL), ERO. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, ST. PAUL, MN. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, SEATTLE, ERO. SPECIAL AGENT IN CHARGE, CHICAGO. SPECIAL AGENT IN CHARGE, HOUSTON. SPECIAL AGENT IN CHARGE, LOS ANGELES. SPECIAL AGENT IN CHARGE, NEW ORLEANS. SPECIAL AGENT IN CHARGE, SAN ANTONIO. SPECIAL AGENT IN CHARGE, SAN DIEGO. ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY. SPECIAL AGENT IN CHARGE (SAC), NASHVILLE, TN. SPECIAL AGENT IN CHARGE, BALTIMORE. SPECIAL AGENT IN CHARGE, DENVER. DIRECTOR, FACILITIES AND ASSET ADMINISTRATION. DEPUTY ASSISTANT DIRECTOR, DOMESTIC OPERATIONS. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS, PHOENIX, ARIZONA. FIELD OFFICE DIRECTOR, OERO, LOS ANGELES, CALIFORNIA. FIELD OFFICE DIRECTOR, OFFICE OF ERO, NEW YORK. SPECIAL AGENT IN CHARGE, SAINT PAUL, MINNESOTA. SPECIAL AGENT IN CHARGE, TAMPA, FLORIDA. CHIEF FINANCIAL OFFICER. ASSISTANT DIRECTOR, ENFORCEMENT AND ***REMOVAL*** OPERATIONS, REPATRIATION DIVISION. DIRECTOR, FINANCIAL MANAGEMENT. DEPUTY CHIEF FINANCIAL OFFICER. ASSISTANT DIRECTOR, U.S IMMIGRATION AND CUSTOMS ENFORCEMENT SERVICES HEALTH CORPS. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY DIVISION DIRECTOR FOR INVESTIGATIONS, OFFICE OF PROFESSIONAL RESPONSIBILITY. ASSISTANT DIRECTOR, OFFICE OF LEADERSHIP AND CAREER DEVELOPMENT.[[Page 21567]] ASSISTANT DIRECTOR, INFORMATION GOVERNANCE AND PRIVACY. DEPUTY PRINCIPAL LEGAL ADVISOR FOR FIELD OPERATIONS. DEPUTY PRINCIPAL LEGAL ADVISOR FOR GENERAL AND ADMINISTRATIVE LAW. DEPUTY DIRECTOR, ENFORCEMENT AND ***REMOVAL*** OPERATIONS. DEPUTY ASSISTANT DIRECTOR, CYBER DIVISION. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS, SAN DIEGO, CALIFORNIA. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS, SAN ANTONIO, TEXAS. ASSISTANT DIRECTOR, OPERATIONS SUPPORT, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS. ASSISTANT DIRECTOR, ENFORCEMENT AND ***REMOVAL*** OPERATIONS, CUSTODY OPERATIONS DIVISION. ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS (DOMESTIC OPERATIONS). DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS (DOMESTIC OPERATIONS--WEST), OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS. DEPUTY CHIEF HUMAN CAPITAL OFFICER FOR STRATEGY AND SERVICES. DEPUTY PRINCIPAL LEGAL ADVISOR. DIRECTOR, OFFICE OF HOMELAND SECURITY INVESTIGATIONS. DEPUTY EXECUTIVE ASSOCIATE DIRECTOR, MANAGEMENT AND ADMINISTRATION. DEPUTY DIRECTOR, INTERNATIONAL CRIMINAL POLICE ORGANIZATION (INTERPOL). DEPUTY ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS (EAST). ASSISTANT DIRECTOR, DIVERSITY AND CIVIL RIGHTS. DEPUTY ASSISTANT DIRECTOR, CRITICAL INFRASTRUCTURE, PROTECTION, AND FRAUD. DIRECTOR, BUDGET AND PROGRAM PERFORMANCE. CHIEF HUMAN CAPITAL OFFICER. EXECUTIVE DIRECTOR, MANAGEMENT AND ADMINISTRATION. ASSISTANT DIRECTOR, ENFORCEMENT DIVISION, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS. ASSISTANT DIRECTOR, OFFICE OF ACQUISITIONS. CHIEF INFORMATION OFFICER. ASSISTANT DIRECTOR, ENFORCEMENT AND ***REMOVAL*** OPERATIONS, FIELD OPERATIONS. SPECIAL AGENT IN CHARGE, ATLANTA. SPECIAL AGENT IN CHARGE, WASHINGTON, DC. DEPUTY ASSISTANT DIRECTOR, INTERNATIONAL OPERATIONS. >DEPUTY ASSISTANT DIRECTOR, MISSION SUPPORT. ASSISTANT DIRECTOR, OPERATIONS SUPPORT. DIRECTOR OF ENFORCEMENT AND LITIGATION. DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS. SPECIAL AGENT IN CHARGE (SEATTLE).[[Page 21568]] DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS (DOMESTIC OPERATIONS - EAST). DEPUTY ASSISTANT DIRECTOR, TRANSNATIONAL ORGANIZED CRIME DIVISION TWO. ASSISTANT DIRECTOR, SECURITY DIVISION. DEPUTY ASSISTANT DIRECTOR, INTELLIGENCE, HOMELAND SECURITY INVESTIGATIONS. DEPUTY HEAD OF CONTRACTING ACTIVITY. DEPUTY ASST. DIRECTOR, DETENTION & MANAGEMENT DIVISION (DMD), ERO. CHIEF COUNSEL, NEW ORLEANS. SPECIAL AGENT IN CHARGE (KANSAS CITY). SPECIAL AGENT IN CHARGE, NEWARK, NEW JERSEY. SPECIAL AGENT IN CHARGE, BOSTON, MASSACHUSETTS. SPECIAL AGENT IN CHARGE, PHILADELPHIA, PENNSYLVANIA. SPECIAL AGENT IN CHARGE, BUFFALO, NEW YORK. SPECIAL AGENT IN CHARGE, SAN JUAN, PUERTO RICO. COMPONENT ACQUISITION EXECUTIVE. SPECIAL AGENT IN CHARGE, HONOLULU, HI. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, DENVER, CO. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, BUFFALO, NY. DEPUTY ASSISTANT DIRECTOR NATIONAL SECURITY PROGRAMS. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, BOSTON, MA. CHIEF COUNSEL, PHOENIX. CHIEF COUNSEL, CHICAGO. CHIEF COUNSEL, SAN ANTONIO. CHIEF COUNSEL, NEW YORK. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, EL PASO, TEXAS. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, ATLANTA, GEORGIA. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, CHICAGO, ILLINOIS. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, HOUSTON, TEXAS. ASSISTANT DIRECTOR, INTELLECTUAL PROPERTY RIGHTS CENTER. ASSISTANT DIRECTOR, OPERATIONAL TECHNOLOGY AND CYBER DIVISION. DEPUTY CHIEF HUMAN CAPITAL OFFICER FOR OPERATIONS. SPECIAL AGENT IN CHARGE, DETROIT. DEPUTY CHIEF INFORMATION OFFICER. ASSISTANT DIRECTOR, ENFORCEMENT AND ***REMOVAL*** OPERATIONS, ***TARGETING*** OPERATIONS DIVISION. DIRECTOR, FEDERAL EXPORT ENFORCEMENT COORDINATION CENTER. CHIEF COUNSEL, MIAMI. CHIEF COUNSEL FOR LOS ANGELES.[[Page 21569]] ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS. ASSISTANT DIRECTOR, INSPECTIONS AND DETENTION OVERSIGHT DIVISION. ASSISTANT DIRECTOR, HOMELAND SECURITY INVESTIGATIVE PROGRAMS. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL*** OPERATIONS, MIAMI, FLORIDA. FIELD OFFICE DIRECTOR, OFFICE OF ENFORCEMENT AND ***REMOVAL***, NEW ORLEANS, LOUISIANA. DEPUTY ASSISTANT DIRECTOR, STUDENT AND EXCHANGE VISITOR PROGRAM. UNITED STATES COAST DIRECTOR, ASSISTANT GUARD. COMMANDANT FOR HUMAN RESOURCES. DEPUTY ASSISTANT COMMANDANT FOR CAPABILITY. DIRECTOR OF FINANCIAL OPERATIONS/ COMPTROLLER. DEPUTY ASSISTANT COMMANDANT FOR HUMAN RESOURCES. DIRECTOR, INCIDENT MANAGEMENT AND PREPAREDNESS POLICY. DIRECTOR, COAST GUARD INVESTIGATIVE SERVICE. HEAD OF CONTRACTING ACTIVITY. DEPUTY ASSISTANT COMMANDANT FOR ACQUISITION/ DIRECTOR OF ACQUISITION SERVICES. DIRECTOR, NATIONAL POLLUTION FUNDS CENTER. ASSISTANT JUDGE ADVOCATE GENERAL FOR ACQUISITION AND LITIGATION. DIRECTOR, MARINE TRANSPORTATION SYSTEM MANAGEMENT. DEPUTY ASSISTANT COMMANDANT FOR INTELLIGENCE. DEPUTY ASSISTANT COMMANDANT FOR COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS AND INFORMATION TECHNOLOGY/DEPUTY CHIEF INFORMATION OFFICER. DEPUTY ASSISTANT COMMANDANT FOR RESOURCES AND DEPUTY CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR OF ACQUISITION PROGRAMS. UNITED STATES SECRET DEPUTY ASSISTANT SERVICE. DIRECTOR, ENTERPRISE READINESS OFFICE. DEPUTY ASSISTANT DIRECTOR, INVESTIGATIONS. DEPUTY ASSISTANT DIRECTOR, OFFICE OF HUMAN RESOURCES. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PROTECTIVE OPERATIONS. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PROTECTIVE OPERATIONS. ASSISTANT DIRECTOR, OFFICE OF TRAINING. CHIEF OPERATING OFFICER. DIRECTOR OF COMMUNICATIONS (MEDIA AFFAIRS). CHIEF OF STAFF. ASSISTANT DIRECTOR-- OFFICE OF INTERGOVERNMENTAL AND LEGISLATIVE AFFAIRS. COMPONENT ACQUISITION EXECUTIVE. ASSISTANT DIRECTOR, OFFICE OF STRATEGIC INTELLIGENCE AND INFORMATION.[[Page 21570]] DEPUTY ASSISTANT DIRECTOR, STRATEGIC INTELLIGENCE AND INFORMATION. SPECIAL AGENT IN CHARGE, PARIS FIELD OFFICE. SPECIAL AGENT IN CHARGE--MIAMI FIELD OFFICE. DEPUTY CHIEF COUNSEL/ PRINCIPAL ETHICS OFFICIAL. EQUITY AND EMPLOYEE SUPPORT SERVICES EXECUTIVE. SPECIAL AGENT IN CHARGE--CRIMINAL INVESTIGATIVE DIVISION. SPECIAL AGENT IN CHARGE--ROWLEY TRAINING CENTER. SPECIAL AGENT IN CHARGE--ROME. SPECIAL AGENT IN CHARGE, PROTECTIVE INTELLIGENCE AND ASSESSMENT DIVISION. DEPUTY ASSISTANT DIRECTOR, PROTECTIVE OPERATIONS. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PROTECTIVE OPERATIONS. SPECIAL AGENT IN CHARGE - PHILADELPHIA FIELD OFFICE. DEPUTY ASSISTANT DIRECTOR--OFFICE OF INVESTIGATIONS. SPECIAL AGENT IN CHARGE, CHICAGO FIELD OFFICE. SPECIAL AGENT IN CHARGE, SPECIAL OPERATIONS DIVISION. DEPUTY ASSISTANT DIRECTOR, OFFICE OF INTERGOVERNMENTAL AND LEGISLATIVE AFFAIRS. CHIEF FINANCIAL OFFICER. SPECIAL AGENT IN CHARGE (DIGNITARY PROTECTIVE DIVISION). DEPUTY CHIEF, OFFICE OF STRATEGIC PLANNING AND POLICY. DEPUTY SPECIAL AGENT IN CHARGE-- PRESIDENTIAL PROTECTIVE DIVISION. CHIEF, OFFICE OF STRATEGIC PLANNING AND POLICY. DEPUTY ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS. SPECIAL AGENT IN CHARGE--HOUSTON FIELD OFFICE. DEPUTY ASSISTANT DIRECTOR, OFFICE OF TRAINING. DEPUTY ASSISTANT DIRECTOR, TECHNICAL DEVELOPMENT AND MISSION SUPPORT. DEPUTY SPECIAL AGENT IN CHARGE (OPERATIONAL). CHIEF INFORMATION OFFICER. DEPUTY SPECIAL AGENT IN CHARGE--VICE PRESIDENTIAL PROTECTIVE DIVISION. SPECIAL AGENT IN CHARGE--ATLANTA FIELD OFFICE. SPECIAL AGENT IN CHARGE--HONOLULU FIELD OFFICE. PROTECTIVE INTELLIGENCE SENIOR ADVISOR. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY. DEPUTY ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS. SPECIAL AGENT IN CHARGE--LOS ANGELES FIELD OFFICE. SPECIAL AGENT IN CHARGE--WASHINGTON FIELD OFFICE. DEPUTY ASSISTANT DIRECTOR, OFFICE OF INVESTIGATIONS.[[Page 21571]] TALENT DEVELOPMENT EXECUTIVE. DIRECTOR, UNITED STATES SECRET SERVICE. DEPUTY ASSISTANT DIRECTOR, OFFICE OF INTEGRITY. DEPUTY CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR, UNITED STATES SECRET SERVICE. ASSISTANT DIRECTOR, INVESTIGATIONS. ASSISTANT DIRECTOR, PROTECTIVE OPERATIONS. ASSISTANT DIRECTOR/ CHIEF TECHNOLOGY OFFICER, OFFICE OF TECHNICAL DEVELOPMENT AND MISSION SUPPORT. ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY. SPECIAL AGENT IN CHARGE--PRESIDENTIA L PROTECTIVE DIVISION. SPECIAL AGENT IN CHARGE--NEW YORK. ASSISTANT DIRECTOR, OFFICE OF HUMAN RESOURCES. SPECIAL AGENT IN CHARGE--VICE PRESIDENTIAL PROTECTIVE DIVISION. SPECIAL AGENT IN CHARGE--TECHNICAL SECURITY DIVISION. CHIEF COUNSEL. SPECIAL AGENT IN CHARGE--SAN FRANCISCO FIELD OFFICE. SPECIAL AGENT IN CHARGE--DALLAS FIELD OFFICE. CHIEF SECURITY OFFICER.OFFICE OF THE SECRETARY..... COUNTERING WEAPONS PRINCIPAL DEPUTY OF MASS DESTRUCTION ASSISTANT SECRETARY OFFICE. FOR HEALTH AFFAIRS. DEPUTY ASSISTANT SECRETARY FOR HEALTH SECURITY. CHIEF FINANCIAL MANAGER. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR SYSTEMS SUPPORT. DIRECTOR OF ACQUISITION. CHIEF OF STAFF. ASSISTANT DIRECTOR, OPERATIONS SUPPORT DIRECTORATE. DEPUTY ASSISTANT SECRETARY FOR POLICY AND PLANS. OFFICE FOR CIVIL DIRECTOR CIVIL RIGHTS AND CIVIL RIGHTS AND CIVIL LIBERTIES. LIBERTIES PROGRAMS BRANCH. DEPUTY CIVIL RIGHTS AND CIVIL LIBERTIES OFFICER, PROGRAMS AND COMPLIANCE. DEPUTY CIVIL RIGHTS AND CIVIL LIBERTIES OFFICER, EQUAL EMPLOYMENT OPPORTUNITY AND DIVERSITY DIRECTOR. DIRECTOR, COMPLIANCE BRANCH. OFFICE OF OPERATIONS PRINCIPAL DEPUTY COORDINATION. DIRECTOR, TERRORIST SCREENING CENTER. OFFICE OF DEPUTY ASSISTANT PARTNERSHIP AND SECRETARY. ENGAGEMENT. EXECUTIVE DIRECTOR, SOCIAL IMPACT. OFFICE OF THE DEPUTY EXECUTIVE SECRETARY. SECRETARY, OPERATIONS AND ADMINISTRATION.DEPARTMENT OF HOMELAND SECURITY OFFICE OF INSPECTOR GENERALDEPARTMENT OF HOMELAND DEPARTMENT OF ASSISTANT INSPECTOR SECURITY OFFICE OF HOMELAND SECURITY GENERAL FOR INSPECTOR GENERAL. OFFICE OF INSPECTOR ENTERPRISE GENERAL. INNOVATION AND OPERATIONS COORDINATION. DEPUTY ASSISTANT INSPECTOR GENERAL, AUDITS (LAW ENFORCEMENT AND TERRORISM). ATTORNEY ADVISOR. ASSISTANT INSPECTOR GENERAL, INTEGRITY AND QUALITY OVERSIGHT. DEPUTY ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT.[[Page 21572]] DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS (2). ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. ASSISTANT INSPECTOR GENERAL, AUDITS. COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL, INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL, INFORMATION TECHNOLOGY AUDITS. ASSISTANT INSPECTOR GENERAL FOR SPECIAL REVIEWS AND EVALUATIONS. DEPUTY COUNSEL. DEPUTY ASSISTANT INSPECTOR GENERAL, AUDIT (DISASTER AND IMMIGRATION). DEPUTY ASSISTANT INSPECTOR GENERAL, AUDITS. DEPUTY INSPECTOR GENERAL. DEPUTY ASSISTANT INSPECTOR GENERAL, SPECIAL REVIEWS AND EVALUATIONS. CHIEF OF STAFF.DEPARTMENT OF HOUSING AND URBAN DEVELOPMENTDEPARTMENT OF HOUSING AND OFFICE OF THE URBAN DEVELOPMENT. SECRETARY.OFFICE OF THE SECRETARY..... GOVERNMENT NATIONAL SENIOR VICE MORTGAGE PRESIDENT FOR ASSOCIATION. MORTGAGE-BACKED SECURITIES. SENIOR VICE PRESIDENT OF THE OFFICE OF SECURITIES OPERATIONS. SENIOR VICE PRESIDENT AND CHIEF FINANCIAL OFFICER. SENIOR VICE PRESIDENT, OFFICE OF ENTERPRISE DATA AND TECHNOLOGY SOLUTIONS. SENIOR VICE PRESIDENT OFFICE OF CAPITAL MARKETS. SENIOR VICE PRESIDENT AND CHIEF RISK OFFICER. OFFICE OF COMMUNITY DEPUTY ASSISTANT PLANNING AND SECRETARY FOR DEVELOPMENT. SPECIAL NEEDS PROGRAMS. DIRECTOR OF STRATEGIC PLANNING AND MANAGEMENT OF HUMAN CAPITAL. DEPUTY ASSISTANT SECRETARY FOR GRANT PROGRAMS. OFFICE OF DIRECTOR, OFFICE OF DEPARTMENTAL EQUAL DEPARTMENTAL EQUAL EMPLOYMENT EMPLOYMENT OPPORTUNITY. OPPORTUNITY. OFFICE OF FAIR ASSOCIATE DEPUTY HOUSING AND EQUAL ASSISTANT SECRETARY OPPORTUNITY. FOR OPERATIONS AND MANAGEMENT. OFFICE OF FIELD DIRECTOR. POLICY AND MANAGEMENT. OFFICE OF HOUSING... DEPUTY ASSISTANT SECRETARY FOR OPERATION. HOUSING FEDERAL HOUSING ADMINISTRATION--COM PTROLLER. DIRECTOR, PROGRAM SYSTEMS MANAGEMENT OFFICE. DEPUTY ASSISTANT SECRETARY FOR FINANCE AND BUDGET. DEPUTY ASSISTANT SECRETARY FOR MULTIFAMILY HOUSING. FEDERAL HOUSING ADMINISTRATION COMPTROLLER. DEPUTY ASSISTANT SECRETARY FOR HEALTHCARE PROGRAMS. OFFICE OF POLICY DEPUTY ASSISTANT DEVELOPMENT AND SECRETARY FOR RESEARCH. POLICY DEVELOPMENT AND RESEARCH.[[Page 21573]] OFFICE OF PUBLIC GENERAL DEPUTY AFFAIRS. ASSISTANT SECRETARY FOR PUBLIC AFFAIRS. OFFICE OF PUBLIC AND DEPUTY ASSISTANT INDIAN HOUSING. SECRETARY FOR NATIVE AMERICAN PROGRAMS. DEPUTY ASSISTANT SECRETARY FOR POLICY PROGRAM AND LEGISLATIVE INITIATIVES. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR THE REAL ESTATE ASSESSMENT CENTER. DEPUTY ASSISTANT SECRETARY FOR PUBLIC HOUSING INVESTMENTS. DEPUTY ASSISTANT SECRETARY FOR THE REAL ESTATE ASSESSMENT CENTER. DIRECTOR FOR BUDGET AND FINANCIAL MANAGEMENT. OFFICE OF THE CHIEF DISASTER AND ADMINISTRATION. NATIONAL SECURITY OFFICER. CHIEF PRIVACY OFFICER AND CHIEF FOIA OFFICER. OFFICE OF THE CHIEF ASSISTANT CHIEF FINANCIAL OFFICER. FINANCIAL OFFICER FOR BUDGET. ASSISTANT CHIEF FINANCIAL OFFICER FOR FINANCIAL MANAGEMENT. CHIEF RISK OFFICER. DEPUTY CHIEF FINANCIAL OFFICER. ASSISTANT CHIEF FINANCIAL OFFICER FOR SYSTEMS. ASSISTANT CHIEF FINANCIAL OFFICER FOR ACCOUNTING. OFFICE OF THE CHIEF CHIEF LEARNING HUMAN CAPITAL OFFICER. OFFICER. DIRECTOR, OFFICE OF HUMAN CAPITAL SERVICES. CHIEF HUMAN CAPITAL OFFICER. DEPUTY CHIEF HUMAN CAPITAL OFFICER (2). DIRECTOR, HUMAN CAPITAL SERVICES. OFFICE OF THE CHIEF PRINCIPAL DEPUTY INFORMATION OFFICER. CHIEF INFORMATION OFFICER. DEPUTY CHIEF INFORMATION SECURITY OFFICER. CHIEF TECHNOLOGY OFFICER. PRINCIPAL DEPUTY CHIEF INFORMATION OFFICER. DEPUTY CHIEF INFORMATION OFFICER FOR INFRASTRUCTURE AND OPERATIONS. DEPUTY CHIEF INFORMATION OFFICER - OFFICE OF CUSTOMER RELATIONSHIP AND PERFORMANCE MANAGEMENT. DEPUTY CHIEF INFORMATION OFFICER FOR BUSINESS AND INFORMATION TECHNOLOGY RESOURCE MANAGEMENT OFFICER. CHIEF INFORMATION SECURITY OFFICER. OFFICE OF THE DIRECTOR, GENERAL COUNSEL. DEPARTMENTAL ENFORCEMENT CENTER. SENIOR COUNSEL. ASSOCIATE GENERAL COUNSEL FOR PROGRAM ENFORCEMENT.DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT OFFICE OF THE INSPECTOR GENERAL DEPARTMENT OF SENIOR ADVISOR FOR HOUSING AND URBAN EXTERNAL AFFAIRS. DEVELOPMENT OFFICE CHIEF STRATEGY OF THE INSPECTOR OFFICER. GENERAL. COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATION. ASSISTANT INSPECTOR GENERAL FOR AUDIT.[[Page 21574]] DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (FIELD OPERATIONS). DEPUTY ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATION (HEADQUARTERS OPERATIONS). ASSISTANT INSPECTOR GENERAL FOR OFFICE OF EVALUATION (OE). DEPUTY ASSISTANT INSPECTOR GENERAL FOR INFORMATION TECHNOLOGY. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (FIELD OPERATIONS). DEPUTY INSPECTOR GENERAL.DEPARTMENT OF THE INTERIORASSISTANT SECRETARY--FISH NATIONAL PARK CHIEF, UNITED STATES AND WILDLIFE AND PARKS. SERVICE. PARK POLICE. CHIEF FINANCIAL OFFICER. COMPTROLLER. ASSOCIATE DIRECTOR, INTERPRETATION AND EDUCATION. UNITED STATES FISH CHIEF, OFFICE OF LAW AND WILDLIFE ENFORCEMENT. SERVICE.ASSISTANT SECRETARY--***LAND*** BUREAU OF ***LAND*** ASSISTANT DIRECTOR, AND MINERALS MANAGEMENT. MANAGEMENT. HUMAN CAPITAL MANAGEMENT. DIRECTOR, LAW ENFORCEMENT AND SECURITY. BUREAU OF OCEAN STRATEGIC RESOURCES ENERGY MANAGEMENT. CHIEF.ASSISTANT SECRETARY--POLICY, OFFICE OF HEARINGS DIRECTOR, OFFICE OF MANAGEMENT AND BUDGET. AND APPEALS. HEARINGS AND APPEALS. OFFICE OF NATURAL PROGRAM DIRECTOR FOR RESOURCES REVENUE COORDINATION, MANAGEMENT. ENFORCEMENT, VALUATION AND APPEALS. DEPUTY DIRECTOR, OFFICE OF NATURAL RESOURCES REVENUE MANAGEMENT. PROGRAM DIRECTOR FOR REVENUE, REPORTING AND COMPLIANCE MANAGEMENT. PROGRAM DIRECTOR FOR AUDIT AND COMPLIANCE MANAGEMENT.ASSISTANT SECRETARY--WATER BUREAU OF DIRECTOR, MISSION AND SCIENCE. RECLAMATION. SUPPORT ORGANIZATION. DIRECTOR, DAM SAFETY AND INFRASTRUCTURE. UNITED STATES ASSOCIATE DIRECTOR GEOLOGICAL SURVEY. FOR ADMINISTRATION. ASSOCIATE DIRECTOR FOR ECOSYSTEMS. ASSOCIATE DIRECTOR FOR ENERGY AND MINERALS. DEPUTY DIRECTOR. DIRECTOR, EARTH RESOURCES OBSERVATION AND SCIENCE CENTER AND POLICY ADVISOR. ASSOCIATE DIRECTOR FOR COMMUNICATIONS AND PUBLISHING. ASSOCIATE DIRECTOR FOR BUDGET, PLANNING, AND INTEGRATION. ASSOCIATE DIRECTOR FOR NATURAL HAZARDS. ASSOCIATE DIRECTOR FOR ***LAND*** RESOURCES. ASSOCIATE DIRECTOR FOR WATER. ASSOCIATE DIRECTOR FOR CORE SCIENCE SYSTEMS.BUREAU OF ***LAND*** MANAGEMENT... FIELD OFFICES-- DIRECTOR, NATIONAL BUREAU OF ***LAND*** OPERATIONS CENTER. MANAGEMENT.DEPARTMENT OF THE INTERIOR.. ASSISTANT SECRETARY-- DIRECTOR OF HUMAN INDIAN AFFAIRS. CAPITAL MANAGEMENT.[[Page 21575]] ASSISTANT SECRETARY-- CHIEF DIVERSITY POLICY, MANAGEMENT OFFICER/DIRECTOR, AND BUDGET. OFFICE OF CIVIL RIGHTS. DEPUTY ASSISTANT SECRETARY--HUMAN CAPITAL AND DIVERSITY/CHIEF HUMAN CAPITAL OFFICER. DEPUTY DIRECTOR, OFFICE OF FINANCIAL MANAGEMENT. DIRECTOR, OFFICE OF EMERGENCY MANAGEMENT. DIRECTOR, OFFICE OF GRANTS MANAGEMENT. CHIEF, BUDGET ADMINISTRATION AND DEPARTMENTAL MANAGEMENT. CHIEF DIVISION OF BUDGET AND PROGRAM REVIEW. DEPUTY ASSISTANT SECRETARY--BUDGET, FINANCE, GRANTS AND ACQUISITION. DEPUTY CHIEF HUMAN CAPITAL OFFICER/ DIRECTOR, OFFICE OF HUMAN CAPITAL. DIRECTOR, OFFICE OF LAW ENFORCEMENT AND SECURITY. DEPUTY ASSISTANT SECRETARY--PUBLIC SAFETY, RESOURCE PROTECTION AND EMERGENCY SERVICES. DIRECTOR, OFFICE OF FINANCIAL MANAGEMENT AND DEPUTY CHIEF FINANCIAL OFFICER. OFFICE OF THE DESIGNATED AGENCY SOLICITOR. ETHICS OFFICIAL. ASSOCIATE SOLICITOR FOR ADMINISTRATION. DEPUTY CHIEF FOIA OFFICER.NATIONAL PARK SERVICE....... FIELD OFFICES-- PARK MANAGER, NATIONAL PARK YELLOWSTONE SERVICE. NATIONAL PARK. PARK MANAGER, GRAND CANYON NATIONAL PARK.OFFICE OF SURFACE MINING.... FIELD OFFICES-- REGIONAL DIRECTOR, OFFICE OF SURFACE DOI UNIFIED REGION MINING. 3. REGIONAL DIRECTOR, DOI UNIFIED REGION 1.UNITED STATES GEOLOGICAL FIELD OFFICES-- REGIONAL DIRECTOR-- SURVEY. UNITED STATES DOI UNIFIED REGION GEOLOGICAL SURVEY. 9. REGIONAL DIRECTOR-- DOI UNIFIED REGIONS 3 AND 5. REGIONAL DIRECTOR-- DOI UNIFIED REGIONS 8 AND 10. REGIONAL DIRECTOR-- DOI UNIFIED REGION 11. REGIONAL DIRECTOR-- DOI UNIFIED REGION 1. REGIONAL DIRECTOR-- DOI UNIFIED REGIONS 4 AND 6. REGIONAL DIRECTOR-- DOI UNIFIED REGION 7.DEPARTMENT OF THE INTERIOR OFFICE OF THE INSPECTOR GENERALDEPARTMENT OF THE INTERIOR OFFICE OF THE ASSISTANT INSPECTOR OFFICE OF THE INSPECTOR INSPECTOR GENERAL. GENERAL FOR GENERAL. STRATEGIC PROGRAMS. CHIEF OF STAFF. DEPUTY INSPECTOR GENERAL.OFFICE OF THE INSPECTOR OFFICE OF AUDITS, ASSISTANT INSPECTOR GENERAL. INSPECTIONS, AND GENERAL FOR AUDITS, EVALUATIONS. INSPECTIONS, AND EVALUATIONS. OFFICE OF GENERAL GENERAL COUNSEL. COUNSEL. OFFICE OF ASSISTANT INSPECTOR INVESTIGATIONS. GENERAL FOR INVESTIGATIONS. OFFICE OF MANAGEMENT ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT.DEPARTMENT OF JUSTICEDEPARTMENT OF JUSTICE....... EXECUTIVE OFFICE FOR DIRECTOR, ORGANIZED ORGANIZED CRIME CRIME DRUG DRUG ENFORCEMENT ENFORCEMENT TASK TASK FORCES. FORCES.[[Page 21576]] OFFICE OF THE SENIOR ADVISOR FOR ATTORNEY GENERAL. LAW ENFORCEMENT RELATIONS. OFFICE OF THE DEPUTY CHIEF AND COUNSELOR ATTORNEY GENERAL. TO THE DEPUTY ATTORNEY GENERAL, PROFESSIONAL MISCONDUCT REVIEW UNIT. OFFICE OF TRIBAL DIRECTOR. JUSTICE.OFFICE OF THE ASSOCIATE ANTITRUST DIVISION.. EXECUTIVE OFFICER. ATTORNEY GENERAL. CHIEF, TELECOMMUNICATIONS AND MEDIA SECTION. DIRECTOR, ECONOMIC ENFORCEMENT. CIVIL DIVISION...... DEPUTY DIRECTOR, OFFICE OF IMMIGRATION LITIGATION, APPELLATE SECTION. DEPUTY DIRECTOR, COMMERCIAL LITIGATION BRANCH. DEPUTY BRANCH DIRECTOR, FEDERAL PROGRAMS. SPECIAL COUNSEL. DIRECTOR, BUDGET STAFF. DEPUTY DIRECTOR, CONSTITUTIONAL AND SPECIALIZED TORT LITIGATION. DEPUTY DIRECTOR CONSUMER PROTECTION BRANCH. DEPUTY DIRECTOR, OFFICE OF IMMIGRATION LITIGATION, APPELLATE SECTION. DEPUTY DIRECTOR, COMMERCIAL LITIGATION, FRAUD SECTION. DEPUTY DIRECTOR (OPERATIONS), OFFICE OF IMMIGRATION LITIGATION, DISTRICT COURT SECTION. DEPUTY DIRECTOR APPELLATE BRANCH. DIRECTOR, CONSUMER LITIGATION BRANCH, FOREIGN LITIGATION SECTION. SPECIAL LITIGATION COUNSEL, AVIATION AND ADMIRALTY SECTION. DEPUTY DIRECTOR, COMMERCIAL LITIGATION BRANCH. DEPUTY BRANCH DIRECTOR, FEDERAL PROGRAMS. DEPUTY BRANCH DIRECTOR. DEPUTY DIRECTOR, APPELLATE STAFF. APPELLATE LITIGATION COUNSEL. DEPUTY DIRECTOR, COMMERCIAL LITIGATION BRANCH (INTELLECTUAL PROPERTY). DIRECTOR, OFFICE OF MANAGEMENT PROGRAMS. DEPUTY DIRECTOR, COMMERCIAL LITIGATION BRANCH. DEPUTY BRANCH DIRECTOR, FEDERAL PROGRAMS. DIRECTOR, CONSUMER PROTECTION BRANCH. CIVIL RIGHTS PRINCIPAL DEPUTY DIVISION. CHIEF, CRIMINAL SECTION. PRINCIPAL DEPUTY CHIEF, VOTING SECTION. CHIEF, POLICY STRATEGY SECTION. PRINCIPAL DEPUTY CHIEF, EMPLOYMENT LITIGATION SECTION. PRINCIPAL DEPUTY CHIEF, HOUSING AND CIVIL ENFORCEMENT SECTION. PRINCIPAL DEPUTY CHIEF, DISABILITY RIGHTS SECTION. PRINCIPAL DEPUTY CHIEF, SPECIAL LITIGATION SECTION. DEPUTY ASSISTANT ATTORNEY GENERAL (2). CHIEF FEDERAL COORDINATION AND COMPLIANCE SECTION. EXECUTIVE OFFICER. CHIEF, EMPLOYMENT LITIGATION SECTION. CHIEF APPELLATE SECTION.[[Page 21577]] CHIEF CRIMINAL SECTION. CHIEF, HOUSING AND CIVIL ENFORCEMENT SECTION. CHIEF, VOTING SECTION. CHIEF, EDUCATIONAL OPPORTUNITIES SECTION. CHIEF-SPECIAL LITIGATION SECTION. COUNSEL TO THE ASSISTANT ATTORNEY GENERAL. CHIEF, DISABILITY RIGHTS SECTION. DEPUTY SPECIAL COUNSEL FOR IMMIGRATION-RELATED UNFAIR EMPLOYMENT PRACTICES. ENVIRONMENT AND DEPUTY CHIEF, NATURAL RESOURCES ENVIRONMENTAL DIVISION. CRIMES SECTION. CHIEF, ENVIRONMENTAL DEFENSE SECTION. DEPUTY CHIEF ENVIRONMENTAL ENFORCEMENT SECTION. SENIOR LITIGATION COUSEL. DEPUTY CHIEF, APPELLATE SECTION. DEPUTY CHIEF, ENVIRONMENTAL DEFENSE SECTION. DEPUTY SECTION CHIEF, NATURAL RESOURCES SECTION. DEPUTY CHIEF, ENVIRONMENTAL ENFORCEMENT SECTION. CHIEF, INDIAN RESOURCES SECTION. DEPUTY CHIEF, NATURAL RESOURCES SECTION. CHIEF-APPELLATE SECTION. CHIEF, ***LAND*** ACQUISITION SECTION. CHIEF, NATURAL RESOURCES SECTION. DEPUTY CHIEF, ENVIRONMENTAL ENFORCEMENT SECTION. CHIEF, WILDLIFE AND MARINE RESOURCES SECTION. CHIEF ENVIRONMENTAL ENFORCEMENT SECTION. CHIEF ENVIRONMENTAL CRIMES SECTION. EXECUTIVE OFFICER. OFFICE OF JUSTICE DEPUTY CHIEF PROGRAMS. FINANCIAL OFFICER. DIRECTOR, OFFICE OF AUDIT, ASSESSMENT AND MANAGEMENT. DEPUTY DIRECTOR, OFFICE FOR VICTIMS OF CRIME. DIRECTOR OF COMMUNICATIONS. DIRECTOR, OFFICE OF ADMINISTRATION. CHIEF FINANCIAL OFFICER. OFFICE OF TAX DEPUTY CHIEF, DIVISION. APPELLATE SECTION. CHIEF, APPELLATE SECTION. CHIEF, COURT OF FEDERAL CLAIMS SECTION. DEPUTY ASSISTANT ATTORNEY GENERAL. CHIEF, CIVIL TRIAL SECTION, CENTRAL REGION. CHIEF CIVIL TRIAL SECTION, NORTHERN REGION. CHIEF CIVIL TRIAL SECTION, SOUTHERN REGION. CHIEF CIVIL TRIAL SECTION, WESTERN REGION. SPECIAL LITIGATION COUNSEL. SENIOR LITIGATION COUNSEL. CHIEF, CRIMINAL ENFORCEMENT SECTION, SOUTH REGION. CHIEF, CRIMINAL ENFORCEMENT SECTION, NORTH REGION. CHIEF, CRIMINAL ENFORCEMENT SECTION, WESTERN REGION. CHIEF, CRIMINAL APPEALS AND TAX ENFORCEMENT POLICY SECTION.[[Page 21578]] CHIEF CIVIL TRIAL SECTION SOUTHWESTERN REGION. CHIEF CIVIL TRIAL SECTION EASTERN REGION. CHIEF OFFICE OF REVIEW. EXECUTIVE OFFICER.OFFICE OF THE DEPUTY BUREAU OF ALCOHOL, SPECIAL AGENT IN ATTORNEY GENERAL. TOBACCO, FIREARMS CHARGE, CHICAGO. AND EXPLOSIVES. SPECIAL AGENT IN CHARGE, KANSAS CITY. SPECIAL AGENT IN CHARGE, PHILADELPHIA. SPECIAL AGENT IN CHARGE, PHOENIX. SPECIAL AGENT IN CHARGE, SAN FRANCISCO. SPECIAL AGENT IN CHARGE, MIAMI. SPECIAL AGENT IN CHARGE, CHARLOTTE. SPECIAL AGENT IN CHARGE, DETROIT. SPECIAL AGENT IN CHARGE, LOUISVILLE. SPECIAL AGENT IN CHARGE, SEATTLE. SPECIAL AGENT IN CHARGE, TAMPA. SPECIAL ASSISTANT TO THE DIRECTOR. SPECIAL AGENT IN CHARGE, NATIONAL CENTER FOR EXPLOSIVES TRAINING AND RESEARCH. DEPUTY ASSISTANT DIRECTOR HUMAN RESOURCES. SPECIAL AGENT IN CHARGE, SAINT PAUL. SPECIAL AGENT IN CHARGE, ATLANTA. DEPUTY DIRECTOR, TERRORIST EXPLOSIVE DEVICE ANALYTICAL CENTER. DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS (PROGRAMS). EXECUTIVE ASSISTANT TO THE DIRECTOR. CHIEF, SPECIAL OPERATIONS DIVISION. DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS--EAST. DEPUTY ASSISTANT DIRECTOR, INDUSTRY OPERATIONS. SPECIAL AGENT IN CHARGE, NASHVILLE. SPECIAL AGENT IN CHARGE, DALLAS. ASSISTANT DIRECTOR, OFFICE OF STRATEGIC INTELLIGENCE AND INFORMATION. DEPUTY ASSISTANT DIRECTOR, OFFICE OF STRATEGIC INTELLIGENCE AND INFORMATION. ASSISTANT DIRECTOR, OFFICE OF PUBLIC AND GOVERNMENTAL AFFAIRS. SPECIAL AGENT IN CHARGE, COLUMBUS. SPECIAL AGENT IN CHARGE, NEW ORLEANS. SPECIAL AGENT IN CHARGE, BALTIMORE. SPECIAL AGENT IN CHARGE, NEWARK. SPECIAL AGENT IN CHARGE, DENVER. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PUBLIC AND GOVERNMENTAL AFFAIRS. DEPUTY DIRECTOR. ASSISTANT DIRECTOR, FIELD OPERATIONS. DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS-CENTRAL. ASSISTANT DIRECTOR, ENFORCEMENT PROGRAMS AND SERVICES. DEPUTY ASSISTANT DIRECTOR, ENFORCEMENT PROGRAMS AND SERVICES. DEPUTY ASSISTANT DIRECTOR, HUMAN RESOURCES AND PROFESSIONAL DEVELOPMENT.[[Page 21579]] ASSISTANT DIRECTOR, HUMAN RESOURCES AND PROFESSIONAL DEVELOPMENT. ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY AND SECURITY OPERATIONS. DEPUTY ASSISTANT DIRECTOR, MANAGEMENT AND CHIEF FINANCIAL OFFICER. ASSISTANT DIRECTOR, MANAGEMENT AND CHIEF FINANCIAL OFFICER. DEPUTY ASSISTANT DIRECTOR FOR INFORMATION TECHNOLOGY AND DEPUTY CHIEF INFORMATION OFFICER. ASSISTANT DIRECTOR, SCIENCE AND TECHNOLOGY. DEPUTY ASSISTANT DIRECTOR, FORENSIC SERVICES. DEPUTY ASSISTANT DIRECTOR, FIELD OPERATIONS--WEST. SPECIAL AGENT IN CHARGE, LOS ANGELES. SPECIAL AGENT IN CHARGE, NEW YORK. SPECIAL AGENT IN CHARGE, WASHINGTON DC. SPECIAL AGENT IN CHARGE, HOUSTON. DEPUTY ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY AND SECURITY OPERATIONS. SPECIAL AGENT IN CHARGE, BOSTON. CRIMINAL DIVISION... CHIEF, ASSET FORFEITURE AND MONEY LAUNDERING SECTION. DEPUTY CHIEF PUBLIC INTEGRITY SECTION. CHIEF, ORGANIZED CRIME AND GANG SECTION. CHIEF, APPELLATE SECTION. DEPUTY CHIEF FOR ORGANIZED CRIME AND GANG SECTION. CHIEF, CHILD EXPLOITATION AND OBSCENITY SECTION. DIRECTOR, INTERNATIONAL CRIMINAL INVESTIGATIVE TRAINING ASSISTANCE PROGRAM. CHIEF, COMPUTER CRIME AND INTELLECTUAL PROPERTY SECTION. DEPUTY CHIEF, COMPUTER CRIME AND INTELLECTUAL PROPERTY SECTION. SENIOR COUNSEL FOR CYBERCRIME. DEPUTY CHIEF, NARCOTIC AND DANGEROUS DRUG SECTION. DIRECTOR, OFFICE OF OVERSEAS PROSECUTORIAL DEVELOPMENT, ASSISTANCE, AND TRAINING. DEPUTY CHIEF, CHILD EXPLOITATION AND OBSCENITY SECTION. DEPUTY CHIEF, ASSET FORFEITURE AND MONEY LAUNDERING SECTION. DEPUTY ASSISTANT ATTORNEY GENERAL. CHIEF, HUMAN RIGHTS AND SPECIAL PROSECUTIONS SECTION. CHIEF FRAUD SECTION. CHIEF PUBLIC INTEGRITY SECTION. CHIEF NARCOTIC AND DANGEROUS DRUG SECTION. DEPUTY CHIEF, APPELLATE SECTION. EXECUTIVE OFFICER. DEPUTY, CHIEF FRAUD SECTION.[[Page 21580]] EXECUTIVE OFFICE FOR REGIONAL DEPUTY IMMIGRATION REVIEW. CHIEF IMMIGRATION JUDGE (2). DEPUTY CHIEF APPELLATE IMMIGRATION JUDGE. CHIEF ADMINISTRATIVE HEARING OFFICER. GENERAL COUNSEL. CHAIRMAN, BOARD OF IMMIGRATION APPEALS. ASSISTANT DIRECTOR FOR POLICY. CHIEF IMMIGRATION JUDGE. DEPUTY CHIEF IMMIGRATION JUDGE. ASSISTANT DIRECTOR FOR ADMINISTRATION. VICE CHAIRMAN, BOARD OF IMMIGRATION APPEALS. EXECUTIVE OFFICE FOR DEPUTY DIRECTOR. UNITED STATES CHIEF FINANCIAL ATTORNEYS. OFFICER. DEPUTY DIRECTOR FOR ADMINISTRATION AND MANAGEMENT. CHIEF, INFORMATION OFFICER. GENERAL COUNSEL. CHIEF HUMAN RESOURCES OFFICER. COUNSEL, LEGAL PROGRAMS AND POLICY. ASSOCIATE DIRECTOR, OFFICE OF LEGAL EDUCATION. FEDERAL BUREAU OF SENIOR DEPUTY PRISONS. ASSISTANT DIRECTOR, INDUSTRIES, EDUCATION, AND VOCATIONAL TRAINING DIVISION. ASSISTANT DIRECTOR, HEALTH SERVICES DIVISION. CHIEF, OFFICE OF PUBLIC AFFAIRS. SENIOR DEPUTY ASSISTANT DIRECTOR, PROGRAM REVIEW DIVISION. SENIOR ADVISOR (2). WARDEN, FCI, MENDOTA, CA. CHIEF EDUCATION ADMINISTRATOR. ASSISTANT DIRECTOR, INFORMATION, POLICY AND PUBLIC AFFAIRS. SENIOR DEPUTY ASSISTANT DIRECTOR, INFORMATION, POLICY, AND PUBLIC AFFAIRS DIVISION. ASSISTANT DIRECTOR, REENTRY SERVICES DIVISION. SENIOR DEPUTY ASSISTANT DIRECTOR, ADMINISTRATION DIVISION. WARDEN FCI FORT WORTH TX. WARDEN FCI, THOMSON, IL. SENIOR DEPUTY ASSISTANT DIRECTOR, PROGRAM REVIEW DIVISION. SENIOR DEPUTY GENERAL COUNSEL, OFFICE OF THE GENERAL COUNSEL. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, SHERIDAN, OREGON. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, GILMER, WEST VIRGINIA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, MANCHESTER, KENTUCKY. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, BENNETTSVILLE, SOUTH CAROLINA. COMPLEX WARDEN, FEDERAL CORRECTION COMPLEX, PETERSBURG, VIRGINIA. WARDEN, UNITED STATES PENITENTIARY, HAZELTON, WEST VIRGINIA. COMPLEX WARDEN, FEDERAL CORRECTIONAL COMPLEX, YAZOO CITY, MISSISSIPPI. WARDEN, UNITED STATES PENITENTIARY, CANAAN, PENNSYLVANIA. WARDEN, FEDERAL CORRECTIONAL COMPLEX, FORREST CITY, ARKANSAS.[[Page 21581]] SENIOR DEPUTY ASSISTANT DIRECTOR RE- ENTRY SERVICES DIVISION. WARDEN, UNITED STATES PENITENTIARY COLEMAN-I, COLEMAN, FLORIDA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, WILLIAMSBURG, SOUTH CAROLINA. COMPLEX WARDEN, UNITED STATES PENITENTIARY, TUCSON, ARIZONA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, CUMBERLAND, MARYLAND. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, GREENVILLE, ILLINOIS. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, MCKEAN, PENNSYLVANIA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, PEKIN, ILLINOIS. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, SCHUYLKILL, PENNSYLVANIA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, THREE RIVERS, TEXAS. WARDEN, METROPOLITAN DETENTION CENTER, GUAYNABO, PUERTO RICO. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, JESUP, GEORGIA. COMPLEX WARDEN, FEDERAL CORRECTIONAL COMPLEX, VICTORVILLE, CALIFORNIA. WARDEN, UNITED STATES PENITENTIARY, MCCREARY, KENTUCKY. WARDEN, UNITED STATES PENITENTIARY, POLLOCK, LOUISIANA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, MEMPHIS, TENNESSEE. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, PHOENIX, ARIZONA. WARDEN, FEDERAL MEDICAL CENTER, ROCHESTER, MINNESOTA. REGIONAL DIRECTOR MIDDLE ATLANTIC REGION. DEPUTY DIRECTOR. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, TALLADEGA, ALABAMA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, FORT DIX, NEW JERSEY. WARDEN, FEDERAL CORRECTIONAL COMPLEX, FLORENCE, COLORADO. WARDEN, UNITED STATES PENITENTIARY--HIGH, FLORENCE, COLORADO. WARDEN, FEDERAL CORRECTIONAL COMPLEX, OAKDALE, LOUISIANA. WARDEN, FEDERAL MEDICAL CENTER, CARSWELL, TEXAS. WARDEN, FEDERAL CORRECTIONAL COMPLEX, ALLENWOOD, PENNSYLVANIA. WARDEN, FEDERAL TRANSFER CENTER, OKLAHOMA CITY, OKLAHOMA. SENIOR DEPUTY ASSISTANT DIRECTOR, HUMAN RESOURCES MANAGEMENT DIVISION. WARDEN, FEDERAL DETENTION CENTER, MIAMI, FLORIDA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, FAIRTON, NEW JERSEY. ASSISTANT DIRECTOR, PROGRAM REVIEW DIVISION. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, EDGEFIELD, SOUTH CAROLINA. WARDEN, FEDERAL MEDICAL CENTER, DEVENS, MASSACHUSETTS.[[Page 21582]] WARDEN, METROPOLITAN DETENTION CENTER, LOS ANGELES, CALIFORNIA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, MARIANNA, FLORIDA. ASSISTANT DIRECTOR FOR ADMINISTRATION. ASSISTANT DIRECTOR CORRECTIONAL PROGRAMS DIVISION. ASSISTANT DIRECTOR, OFFICE OF GENERAL COUNSEL. REGIONAL DIRECTOR, NORTHEAST REGION. REGIONAL DIRECTOR, SOUTHEAST REGION. REGIONAL DIRECTOR, NORTH CENTRAL REGION. REGIONAL DIRECTOR, WESTERN REGION. REGIONAL DIRECTOR, SOUTH CENTRAL REGION. WARDEN, UNITED STATES PENITENTIARY, ATLANTA, GEORGIA. WARDEN, UNITED STATES PENITENTIARY, LEAVENWORTH, KANSAS. WARDEN, UNITED STATES PENITENTIARY, LEWISBURG, PENNSYLVANIA. WARDEN, FEDERAL CORRECTIONAL COMPLEX, LOMPOC, CALIFORNIA. WARDEN, UNITED STATES MEDICAL CENTER FEDERAL PRISONERS, SPRINGFIELD, MISSOURI. WARDEN, FEDERAL MEDICAL CENTER, LEXINGTON, KENTUCKY. WARDEN, UNITED STATES PENITENTIARY, MARION ILLINOIS. SUPERVISORY INDUSTRIAL SPECIALIST (CEO)FEDERAL PRISON INDUSTRIES. SENIOR DEPUTY ASSISTANT DIRECTOR, REENTRY SERVICES. WARDEN FEDERAL CORRECTIONAL COMPLEX, TERRE HAUTE, INDIANA. WARDEN FEDERAL CORRECTIONAL COMPLEX, BUTNER, NORTH CAROLINA. WARDEN, METROPOLITAN CORRECTIONAL CENTER, NEW YORK, NEW YORK. SENIOR DEPUTY ASSISTANT DIRECTOR ADMINISTRATION DIVISION. SENIOR DEPUTY ASSISTANT DIRECTOR, INFORMATION, POLICY, AND PUBLIC AFFAIRS DIVISION. WARDEN, UNITED STATES PENITENTIARY, BIG SANDY, KENTUCKY. SENIOR COUNSEL, OFFICE OF GENERAL COUNSEL. WARDEN, METROPOLITAN DETENTION CENTER, BROOKLYN, NEW YORK. WARDEN, FEDERAL CORRECTIONAL COMPLEX, BEAUMONT, TEXAS. WARDEN, FEDERAL CORRECTIONAL COMPLEX, COLEMAN, FLORIDA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, BECKLEY, WEST VIRGINIA. WARDEN, FEDERAL CORRECTIONAL INSTITUTION, OTISVILLE, NEW YORK. WARDEN, UNITED STATES PENITENTIARY, LEE, VIRGINIA. WARDEN, UNITED STATES PENITENTIARY, ATWATER, CALIFORNIA. ASSISTANT DIRECTOR HUMAN RESOURCES MANAGEMENT DIVISION. SENIOR DEPUTY ASSISTANT DIRECTOR, CORRECTIONAL PROGRAMS DIVISION.[[Page 21583]] JUSTICE MANAGEMENT DIRECTOR RM AND E- DIVISION. DISCOVERY. DIRECTOR, ASSET FORFEITURE MANAGEMENT STAFF. DEPUTY ASSISTANT ATTORNEY GENERAL/ CHIEF INFORMATION OFFICER. DIRECTOR PROCUREMENT SERVICES STAFF. GENERAL COUNSEL. DIRECTOR, EQUAL EMPLOYMENT OPPORTUNITY STAFF. DIRECTOR, BUDGET STAFF. DIRECTOR, DEBT COLLECTION MANAGEMENT STAFF. DEPUTY DIRECTOR, SERVICE DELIVERY STAFF. DIRECTOR, DEPARTMENTAL ETHICS OFFICE. DEPUTY DIRECTOR, BUDGET STAFF, OPERATIONS AND FUNDS CONTROL. SENIOR ADVISOR. DIRECTOR, SERVICE ENGINEERING STAFF. DIRECTOR, SERVICE DELIVERY STAFF. DEPUTY DIRECTOR, CYBERSECURITY STAFF/ DEPUTY CHIEF INFORMATION SECURITY OFFICER. SENIOR COUNSELOR, OFFICE OF THE DEPUTY ASSISTANT ATTORNEY GENERAL FOR POLICY, MANAGEMENT AND PLANNING JUSTICE MANAGEMENT DIVISION. ASSISTANT ATTORNEY GENERAL FOR ADMINISTRATION. DEPUTY CHIEF INFORMATION OFFICER. CHIEF TECHNOLOGY OFFICER. DIRECTOR, CYBERSECURITY SERVICES STAFF. DEPUTY DIRECTOR, BUDGET STAFF, PROGRAMS AND PERFORMANCE. DEPUTY DIRECTOR, AUDITING, FINANCE STAFF. DEPUTY DIRECTOR, HUMAN RESOURCES. DIRECTOR, INFORMATION TECHNOLOGY POLICY AND PLANNING STAFF. DIRECTOR, FACILITIES AND ADMINISTRATIVE SERVICES STAFF. DIRECTOR, OFFICE OF ATTORNEY RECRUITMENT AND MANAGEMENT. DIRECTOR FINANCE STAFF. DEPUTY ASSISTANT ATTORNEY GENERAL (CONTROLLER). DEPUTY ASSISTANT ATTORNEY GENERAL FOR HUMAN RESOURCES AND ADMINISTRATION. DIRECTOR LIBRARY STAFF. DIRECTOR JUSTICE SECURITY OPERATIONS CENTER. DEPUTY ASSISTANT ATTORNEY GENERAL, POLICY, MANAGEMENT, AND PLANNING. DIRECTOR, HUMAN RESOURCES. DIRECTOR, APPROPRIATION LIAISON OFFICE. DIRECTOR, SECURITY AND EMERGENCY PLANNING STAFF. DEPUTY DIRECTOR, CUSTOMER AND BUSINESS SOLUTIONS SERVICE DELIVERY STAFF.[[Page 21584]] NATIONAL SECURITY CHIEF, FOREIGN DIVISION. INVESTMENT REVIEW STAFF. DIRECTOR OF RISK MANAGEMENT AND SENIOR COUNSEL. DIRECTOR, FOIA AND DECLASSIFICATION PROGRAM. CHIEF, APPELLATE UNIT. DEPUTY CHIEF, COUNTERTERRORISM SECTION. DEPUTY ASSISTANT ATTORNEY GENERAL, FISA OPERATIONS AND INTELLIGENCE OVERSIGHT. CHIEF, OPERATIONS SECTION. CHIEF, OVERSIGHT SECTION. EXECUTIVE OFFICER. SPECIAL COUNSEL FOR NATIONAL SECURITY. OFFICE OF DEPUTY COUNSEL ON PROFESSIONAL PROFESSIONAL RESPONSIBILITY. RESPONSIBILITY. COUNSEL ON PROFESSIONAL RESPONSIBILITY. OFFICE OF THE LEGAL SPECIAL COUNSEL (2). COUNSEL. PROFESSIONAL DIRECTOR, RESPONSIBILITY PROFESSIONAL ADVISORY OFFICE. RESPONSPONSIBILITY ADVISORY OFFICE. UNITED STATES ASSISTANT DIRECTOR, MARSHALS SERVICE. HUMAN RESOURCES. CHIEF FINANCIAL OFFICER, FINANCIAL SERVICES. ASSISTANT DIRECTOR, WITNESS SECURITY. ASSISTANT DIRECTOR, MANAGEMENT SUPPORT. ASSISTANT DIRECTOR, ASSET FORFEITURE. ASSISTANT DIRECTOR, TRAINING. ASSISTANT DIRECTOR, INVESTIGATIVE OPERATIONS. DEPUTY DIRECTOR. ASSISTANT DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY. ASSISTANT DIRECTOR JUDICIAL SECURITY. PROCUREMENT EXECUTIVE, FINANCIAL SERVICES. ASSISTANT DIRECTOR, JPATS. ATTORNEY ADVISOR. ASSOCIATE DIRECTOR, OPERATIONS. ASSOCIATE DIRECTOR, ADMINISTRATION. ASSISTANT DIRECTOR, TACTICAL OPERATIONS. ASSISTANT DIRECTOR FOR PRISONER OPERATIONS. ASSISTANT DIRECTOR, INFORMATION TECHNOLOGY. ASSISTANT DIRECTOR FINANCIAL SERVICES.DEPARTMENT OF JUSTICE OFFICE OF THE INSPECTOR GENERALDEPARTMENT OF JUSTICE OFFICE AUDIT DIVISION...... DEPUTY ASSISTANT OF THE INSPECTOR GENERAL. INSPECTOR GENERAL, AUDIT DIVISION. ASSISTANT INSPECTOR GENERAL, AUDIT DIVISION. EVALUATION AND ASSISTANT INSPECTOR INSPECTIONS GENERAL, EVALUATION DIVISION. AND INSPECTIONS DIVISION. FRONT OFFICE........ DEPUTY INSPECTOR GENERAL. >GENERAL COUNSEL. INFORMATION ASSISTANT INSPECTOR TECHNOLOGY DIVISION. GENERAL, INFORMATION TECHNOLOGY DIVISION. INVESTIGATIONS ASSISTANT INSPECTOR DIVISION. GENERAL, INVESTIGATIONS DIVISION. DEPUTY ASSISTANT INSPECTOR GENERAL, INVESTIGATIONS DIVISION.[[Page 21585]] MANAGEMENT AND DEPUTY ASSISTANT PLANNING DIVISION. INSPECTOR GENERAL, MANAGEMENT AND PLANNING. ASSISTANT INSPECTOR GENERAL, MANAGEMENT AND PLANNING DIVISION. OVERSIGHT AND REVIEW DEPUTY ASSISTANT DIVISION. INSPECTOR GENERAL, OVERSIGHT AND REVIEW DIVISION. ASSISTANT INSPECTOR GENERAL, OVERSIGHT AND REVIEW DIVISION.DEPARTMENT OF LABORDEPARTMENT OF LABOR......... BUREAU OF LABOR ASSOCIATE STATISTICS. COMMISSIONER FOR ADMINISTRATION. ASSOCIATE COMMISSIONER FOR PRICES AND LIVING CONDITIONS. ASSOCIATE COMMISSIONER PRODUCTIVITY AND TECHNOLOGY. DEPUTY COMMISSIONER FOR LABOR STATISTICS. ASSISTANT COMMISSIONER FOR INTERNATIONAL PRICES. ASSOCIATE COMMISSIONER FOR PUBLICATIONS AND SPECIAL STUDIES. ASSOCIATE COMMISSIONER FOR TECHNOLOGY AND SURVEY PROCESSING. ASSISTANT COMMISSIONER FOR COMPENSATION LEVELS AND TRENDS. ASSISTANT COMMISSIONER FOR SAFETY, HEALTH AND WORKING CONDITIONS. ASSOCIATE COMMISSIONER FOR COMPENSATION AND WORKING CONDITIONS. DIRECTOR OF TECHNOLOGY AND COMPUTING SERVICES. ASSISTANT COMMISSIONER FOR INDUSTRIAL PRICES AND PRICE INDEXES. ASSOCIATE COMMISSIONER FOR EMPLOYMENT AND UNEMPLOYMENT STATISTICS. ASSISTANT COMMISSIONER FOR CURRENT EMPLOYMENT ANALYSIS. ASSOCIATE COMMISSIONER FOR SURVEY METHODS RESEARCH. DIRECTOR OF SURVEY PROCESSING. ASSISTANT COMMISSIONER FOR REGIONAL OPERATIONS (3). ASSISTANT COMMISSIONER FOR CONSUMER PRICES AND PRICES INDEXES. ASSOCIATE COMMISSIONER FOR FIELD OPERATIONS. ASSISTANT COMMISSIONER FOR OCCUPATIONAL STATISTICS AND EMPLOYMENT PROJECTIONS. ASSOCIATE COMMISSIONER FOR PRICES AND LIVING CONDITIONS. ASSISTANT COMMISSIONER FOR INDUSTRY EMPLOYMENT STATISTICS. EMPLOYEE BENEFITS REGIONAL DIRECTOR-- SECURITY PHILADELPHIA. ADMINISTRATION. DEPUTY ASSISTANT SECRETARY REGIONAL OFFICES. REGIONAL DIRECTOR NEW YORK. CHIEF ACCOUNTANT. REGIONAL DIRECTOR-- NEW YORK. REGIONAL DIRECTOR. DIRECTOR OF EXEMPTION DETERMINATIONS. DIRECTOR OF REGULATIONS AND INTERPRETATIONS. DEPUTY ASSISTANT SECRETARY FOR PROGRAM OPERATIONS. DIRECTOR OF HEALTH PLAN STANDARDS COMPLIANCE AND ASSISTANCE. DIRECTOR, OFFICE OF TECHNOLOGY AND INFORMATION SERVICES. REGIONAL DIRECTOR-- BOSTON.[[Page 21586]] REGIONAL DIRECTOR-- ATLANTA. REGIONAL DIRECTOR-- KANSAS CITY. REGIONAL DIRECTOR-- SAN FRANCISCO. DIRECTOR OF ENFORCEMENT. DIRECTOR, OFFICE OF OUTREACH EDUCATION AND ASSISTANCE. REGIONAL DIRECTOR-- CHICAGO. EMPLOYMENT AND ASSOCIATE TRAINING ADMINISTRATOR. ADMINISTRATION. COMPTROLLER. DEPUTY ASSISTANT SECRETARY (OPERATIONS AND MANAGEMENT). DEPUTY ADMINISTRATOR JOB CORP. DEPUTY ADMINISTRATOR, OFFICE OF JOB CORP. ADMINISTRATOR, OFFICE OF WORKFORCE SECURITY. ADMINISTRATOR, OFFICE OF FOREIGN LABOR CERTIFICATION. ADMINISTRATOR, OFFICE OF TRADE ADJUSTMENT ASSISTANCE. ADMINISTRATOR, OFFICE OF GRANTS MANAGEMENT. ADMINISTRATOR, OFFICE OF POLICY DEVELOPMENT AND RESEARCH. ADMINISTRATOR, OFFICE OF JOB CORPS. REGIONAL ADMINISTRATOR (4). ADMINISTRATOR, APPRENTICESHIP AND TRAINING, EMPLOYEE AND LABOR SERVICES. MINE SAFETY AND DIRECTOR OF PROGRAM HEALTH EVALUATION AND ADMINISTRATION. INFORMATION RESOURCES. REGIONAL ADMINISTRATOR. DIRECTOR OF ADMINISTRATION AND MANAGEMENT. DEPUTY ASSISTANT SECRETARY. DIRECTOR, OFFICE OF ASSESSMENTS, ACCOUNTABILITY, SPECIAL ENFORCEMENT, AND INVESTIGATIONS. CHIEF OF STANDARDS, REGULATIONS AND VARIANCES. DIRECTOR OF TECHNICAL SUPPORT. DEPUTY ADMINISTRATOR FOR COAL MINE SAFETY AND HEALTH. OCCUPATIONAL SAFETY DIRECTOR OF AND HEALTH CONSTRUCTION. ADMINISTRATION. DIRECTORATE OF TECHNICAL SUPPORT AND EMERGENCY MANAGEMENT. DIRECTOR, ADMINISTRATIVE PROGRAMS. OFFICE OF DISABILITY DEPUTY ASSISTANT EMPLOYMENT POLICY. SECRETARY. DIRECTOR FOR PROGRAM MANAGEMENT. OFFICE OF FEDERAL REGIONAL DIRECTOR CONTRACT COMPLIANCE FOR OFFICE OF PROGRAMS. FEDERAL CONTRACT COMPLIANCE PROGRAMS. DIRECTOR, MANAGEMENT AND ADMINISTRATIVE PROGRAMS. >REGIONAL DIRECTOR FOR OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS (3). DIRECTOR, DIVISION OF POLICY, PLANNING AND PROGRAM DEVELOPMENT. REGIONAL DIRECTOR FOR OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS. REGIONAL DIRECTOR FOR OFFICE OF FEDERAL CONTRACTS COMPLIANCE PROGRAMS. OFFICE OF LABOR- DIRECTOR, OFFICE OF MANAGEMENT PROGRAM OPERATIONS. STANDARDS. DIRECTOR, OFFICE OF FIELD OPERATIONS. REGIONAL DIRECTOR, SAINT LOUIS, MO. REGIONAL DIRECTOR, MILWAUKEE. REGIONAL DIRECTOR, NEW YORK, NEW YORK.[[Page 21587]] REGIONAL DIRECTOR, NEW ORLEANS. DEPUTY DIRECTOR, OFFICE OF LABOR MANAGEMENT STANDARDS. OFFICE OF THE DIRECTOR, ASSISTANT SECRETARY PERFORMANCE FOR ADMINISTRATION MANAGEMENT CENTER. AND MANAGEMENT. DIRECTOR BUSINESS OPERATIONS CENTER. DIRECTOR OF CIVIL RIGHTS. DIRECTOR, DIRECTORATE OF INFORMATION TECHNOLOGY OPERATIONS AND SERVICES. SENIOR DIRECTOR OF JOB CORPS ACQUISITION SERVICES. HEAD OF CONTRACTING ACTIVITY. DEPUTY ASSISTANT SECRETARY FOR BUDGET. DIRECTOR OF CASE MANAGEMENT. DIRECTOR, GRANTS MANAGEMENT. DIRECTOR, BENEFITS AND PAYMENTS. DIRECTOR, BUSINESS APPLICATION SERVICES. CHIEF TECHNOLOGY OFFICER. SENIOR PROCUREMENT EXECUTIVE. DIRECTOR, CYBERSECURITY AND CHIEF INFORMATION SECURITY OFFICER. DIRECTOR OF ENTERPRISE SERVICES. DEPUTY CHIEF INFORMATION OFFICER. CHIEF HUMAN CAPITAL OFFICER. DEPUTY DIRECTOR OF HUMAN RESOURCES. DEPUTY ASSISTANT SECRETARY FOR OPERATIONS. DIRECTOR DEPARTMENTAL BUDGET CENTER. OFFICE OF THE DIRECTOR, OFFICE OF ASSISTANT SECRETARY REGULATORY AND FOR POLICY. PROGRAMMATIC POLICY. DEPUTY ASSISTANT SECRETARY FOR POLICY. OFFICE OF THE CHIEF ASSOCIATE DEPUTY FINANCIAL OFFICER. CHIEF FINANCIAL OFFICER FOR FINANCIAL SYSTEMS. DEPUTY CHIEF FINANCIAL OFFICER (2). OFFICE OF THE ASSOCIATE SOLICITOR, SOLICITOR. MANAGEMENT AND ADMINISTRATIVE LEGAL SERVICES DIVISION. ASSOCIATE SOLICITOR FOR CIVIL RIGHTS AND LABOR MANAGEMENT. ASSOCIATE SOLICITOR FOR BLACK LUNG AND LONGSHORE LEGAL SERVICES. DEPUTY SOLICITOR (NATIONAL OPERATIONS). ASSOCIATE SOLICITOR FOR FAIR LABOR STANDARDS. REGIONAL SOLICITOR-- ATLANTA. ASSOCIATE SOLICITOR FOR FEDERAL EMPLOYEES' AND ENERGY WORKERS' COMPENSATION. REGIONAL SOLICITOR-- BOSTON. REGIONAL SOLICITOR-- NEW YORK. ASSOCIATE SOLICITOR FOR PLAN BENEFITS SECURITY. DEPUTY SOLICITOR (REGIONAL OPERATIONS). ASSOCIATE SOLICITOR FOR OCCUPATIONAL SAFETY AND HEALTH. ASSOCIATE SOLICITOR FOR MINE SAFETY AND HEALTH. REGIONAL SOLICITOR-- CHICAGO. REGIONAL SOLICITOR-- PHILADELPHIA. REGIONAL SOLICITOR-- DALLAS. REGIONAL SOLICITOR-- SAN FRANCISCO.[[Page 21588]] OFFICE OF WORKERS DEPUTY DIRECTOR FOR COMPENSATION OFFICE OF WORKERS' PROGRAMS. COMPENSATION PROGRAMS. DIRECTOR, ENERGY EMPLOYEES' OCCUPATIONAL ILLNESS COMPENSATION. DIRECTOR OF COAL MINE WORKERS COMPENSATION. ADMINISTRATIVE OFFICER. DEPUTY DIRECTOR, POLICY AND NATIONAL OPERATIONS. NATIONAL ADMINISTRATION OF FIELD OPERATIONS, DIVISION OF FEDERAL EMPLOYEES COMPENSATION. NATIONAL ADMINISTRATION OF FIELD OPERATION, DIVISION OF ENERGY EMPLOYEE OCCUPATIONAL ILLNESS COMPENSATION. DEPUTY DIRECTOR, CLAIMS ADMINISTRATION, POLICY, HEARINGS, AND TECHNICAL ASSISTANCE. DEPUTY DIRECTOR, PROGRAM AND SYSTEMS INTEGRITY. COMPTROLLER. REGIONAL DIRECTOR (NORTHEAST REGION). REGIONAL DIRECTOR-- DALLAS. REGIONAL DIRECTOR (2). COMPTROLLER. DIRECTOR FOR FEDERAL EMPLOYEES' COMPENSATION. VETERANS EMPLOYMENT DIRECTOR, OFFICE OF AND TRAINING FIELD OPERATIONS. SERVICE. DIRECTOR OF NATIONAL PROGRAMS. DEPUTY ASSISTANT SECRETARY FOR OPERATIONS AND MANAGEMENT. WAGE AND HOUR ASSISTANT DIVISION. ADMINISTRATOR, OPERATIONS. ASSOCIATE ADMINISTRATOR, REGIONAL ENFORCEMENT AND SUPPORT. ASSOCIATE ADMINISTRATOR FOR ENTERPRISE DATA AND ANALYTICS. WOMEN'S BUREAU...... DEPUTY DIRECTOR, WOMEN'S BUREAU.DEPARTMENT OF LABOR OFFICE OF INSPECTOR GENERAL DEPARTMENT OF LABOR ASSISTANT INSPECTOR OFFICE OF INSPECTOR GENERAL FOR AUDIT. GENERAL. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT. CHIEF PERFORMANCE AND RISK MANAGEMENT OFFICER. DEPUTY ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT AND POLICY. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS--LAB OR RACKETEERING. COUNSEL TO THE INSPECTOR GENERAL. DEPUTY INSPECTOR GENERAL. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS-- LABOR RACKETEERING. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT AND POLICY. ASSISTANT INSPECTOR GENERAL FOR CONGRESSIONAL AND PUBLIC RELATIONS.MERIT SYSTEMS PROTECTION BOARDMERIT SYSTEMS PROTECTION DALLAS REGIONAL REGIONAL DIRECTOR, BOARD. OFFICE. DALLAS.OFFICE OF REGIONAL ATLANTA REGIONAL REGIONAL DIRECTOR, OPERATIONS. OFFICE. ATLANTA. CENTRAL REGION, REGIONAL DIRECTOR, CHICAGO REGIONAL CHICAGO. OFFICE. NORTHEAST REGION, REGIONAL DIRECTOR, PHILADELPHIA PHILADELPHIA. REGIONAL OFFICE.[[Page 21589]] WASHINGTON, DC REGIONAL DIRECTOR, REGION, WASHINGTON WASHINGTON, D.C REGIONAL OFFICE. WESTERN REGION, REGIONAL DIRECTOR, OAKLAND REGIONAL OAKLAND. OFFICE.OFFICE OF THE BOARD, OFFICE OF FINANCIAL DIRECTOR, FINANCIAL CHAIRMAN. AND ADMINISTRATIVE AND ADMINISTRATIVE MANAGEMENT. MANAGEMENT. OFFICE OF DIRECTOR, INFORMATION INFORMATION RESOURCES RESOURCES MANAGEMENT. MANAGEMENT. OFFICE OF POLICY AND DIRECTOR, OFFICE OF EVALUATION. POLICY AND EVALUATION. OFFICE OF REGIONAL DIRECTOR, OFFICE OF OPERATIONS. REGIONAL OPERATIONS. OFFICE OF THE CLERK CLERK OF THE BOARD. OF THE BOARD.NATIONAL AERONAUTICS AND SPACE ADMINISTRATION NATIONAL AERONAUTICS DIRECTOR, HUMAN AND SPACE RESOURCES. ADMINISTRATION. DIRECTOR, SPACEPORT INTEGRATION AND SERVICES. DIRECTOR, COMMUNICATION AND PUBLIC ENGAGEMENT. DIRECTOR, EXPLORATION RESEARCH AND TECHNOLOGY PROGRAMS. GROUND SYSTEMS INTEGRATION MANAGER, EXPLORATION GROUND SYSTEMS PROGRAM.AERONAUTICS RESEARCH MISSION DIRECTORATEAERONAUTICS RESEARCH MISSION AMES RESEARCH CENTER DEPUTY DIRECTOR, DIRECTORATE. SCIENCE. DIRECTOR, PROGRAMS AND PROJECTS. ASSOCIATE DIRECTOR FOR RESEARCH AND TECHNOLOGY. DEPUTY DIRECTOR, EXPLORATION TECHNOLOGY. PROGRAM MANAGER FOR SOFIA. PROCUREMENT OFFICER. CHIEF INFORMATION OFFICER. DEPUTY CENTER DIRECTOR, ARC. DIRECTOR OF SAFETY AND MISSION ASSURANCE. DEPUTY DIRECTOR, AERONAUTICS. DIRECTOR OF SCIENCE. DIRECTOR, EXPLORATION TECHNOLOGY. CHIEF FINANCIAL OFFICER. DIRECTOR OF CENTER OPERATIONS. DIRECTOR OF AERONAUTICS. ASSISTANT CENTER DIRECTOR FOR MANAGEMENT OPERATIONS. DIRECTOR OF ENGINEERING. CENTER ASSOCIATE DIRECTOR. GLENN RESEARCH PLUM BROOK STATION CENTER. MANAGER. CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR OF FACILITIES, TEST AND MANUFACTURING DIRECTORATE. CENTER ASSOCIATE DIRECTOR. DIRECTOR OF CENTER OPERATIONS. DIRECTOR, OFFICE OF PROCUREMENT. DIRECTOR, AEROSCIENCES EVALUATION AND TEST CAPABILITIES PORTFOLIO. DEPUTY DIRECTOR, NASA SAFETY CENTER. DEPUTY CENTER DIRECTOR. ASSOCIATE DIRECTOR FOR STRATEGY. DIRECTOR, FACILITIES, TEST AND MANUFACTURING DIRECTORATE. DIRECTOR, SAFETY AND MISSION ASSURANCE DIRECTORATE. DIRECTOR, AERONAUTICS DIRECTORATE. DIRECTOR, HUMAN RESOURCES. DIRECTOR, OFFICE OF TECHNOLOGY INCUBATION AND INNOVATION.[[Page 21590]] LANGLEY RESEARCH CHIEF FINANCIAL CENTER. OFFICER. DIRECTOR, SAFETY AND MISSION ASSURANCE OFFICE. DIRECTOR, ENGINEERING DIRECTORATE. DEPUTY DIRECTOR, ENGINEERING DIRECTORATE. DIRECTOR, RESEARCH DIRECTORATE. DEPUTY DIRECTOR, RESEARCH DIRECTORATE. DIRECTOR, CENTER OPERATIONS DIRECTORATE. DIRECTOR, AERONAUTICS RESEARCH DIRECTORATE. DIRECTOR, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ENGINEERING AND SAFETY CENTER. DEPUTY DIRECTOR, LANGLEY RESEARCH CENTER. CHIEF INFORMATION OFFICER. DEPUTY DIRECTOR, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ENGINEERING AND SAFETY CENTER. DIRECTOR, SCIENCE DIRECTORATE. DIRECTOR, SYSTEMS ANALYSIS AND ADVANCED CONCEPTS DIRECTORATE. DIRECTOR, RESEARCH SERVICES DIRECTORATE. DIRECTOR, OFFICE OF HUMAN CAPITAL MANAGEMENT. MANAGER, NESC INTEGRATION OFFICE. MANAGER, LOW BOOM FLIGHT DEMONSTRATION MISSION. DEPUTY DIRECTOR FOR STRUCTURES AND MATERIALS. DEPUTY DIRECTOR FOR MISSION ASSURANCE. SENIOR ADVISOR, ON- ORBIT SERVICING, ASSEMBLY, AND MANUFACTURING. DIRECTOR, OFFICE OF STRATEGIC ANALYSIS, COMMUNICATIONS, AND BUSINESS DEVELOPMENT. ASSOCIATE DIRECTOR, TECHNICAL. SENIOR ADVISOR FOR ENGINEERING DEVELOPMENT. DEPUTY DIRECTOR FOR AEROSCIENCES. DEPUTY DIRECTOR FOR SAFETY. DIRECTOR, EARTH SYSTEM SCIENCE PATHFINDER PROGRAM OFFICE. DEPUTY DIRECTOR FOR TECHNICAL CAPABILITIES. DEPUTY DIRECTOR FOR AERONAUTICS PROJECTS. DIRECTOR, SPACE TECHNOLOGY AND EXPLORATION DIRECTORATE. ASSOCIATE DIRECTOR, LANGLEY RESEARCH CENTER. DEPUTY DIRECTOR FOR INTELLIGENT FLIGHT SYSTEMS.GLENN RESEARCH CENTER....... NASA SAFETY CENTER.. DIRECTOR, AUDITS AND ASSESSMENTS. OFFICE OF THE CHIEF CHIEF INFORMATION INFORMATION OFFICER. OFFICER. RESEARCH AND DEPUTY DIRECTOR, ENGINEERING RESEARCH AND DIRECTORATE. ENGINEERING DIRECTORATE. DEPUTY CHIEF, POWER DIVISION. CHIEF, POWER DIVISION. DIRECTOR, RESEARCH AND ENGINEERING DIRECTORATE. CHIEF, CHIEF ENGINEER OFFICE.[[Page 21591]] SPACE FLIGHT SYSTEMS DIRECTOR, SPACE DIRECTORATE. FLIGHT SYSTEMS DIRECTORATE. DEPUTY DIRECTOR, SPACE FLIGHT SYSTEMS. MANAGER, POWER AND PROPULSION ELEMENT PROJECT OFFICE. MANAGER, EUROPEAN SERVICE MODULE INTEGRATION OFFICE.GODDARD SPACE FLIGHT CENTER. FLIGHT PROJECTS..... ASSOCIATE DIRECTOR FOR EXPLORERS AND HELIOPHYSICS PROJECTS DIVISION. DEPUTY ASSOCIATE DIRECTOR OF FLIGHT PROJECTS FOR JOINT POLAR SATELLITE SYSTEM (JPSS) GROUND. INFORMATION CHIEF INFORMATION TECHNOLOGY. OFFICER. MANAGEMENT DEPUTY DIRECTOR OF OPERATIONS. MANAGEMENT OPERATIONS. SCIENCES AND DEPUTY DIRECTOR OF EXPLORATION. SCIENCES AND EXPLORATION.JOHNSON SPACE CENTER........ CENTER OPERATIONS... DIRECTOR, CENTER OPERATIONS. ENGINEERING......... CHIEF, AEROSCIENCE AND FLIGHT MECHANICS DIVISION. CHIEF, PROPULSION AND POWER DIVISION. DEPUTY DIRECTOR, ENGINEERING. CHIEF, SOFTWARE, ROBOTICS AND SIMULATION DIVISION. DIRECTOR, ENGINEERING. EXPLORATION DEPUTY DIRECTOR, INTEGRATION AND EXPLORATION SCIENCE. INTEGRATION AND SCIENCE. DIRECTOR, EXPLORATION INTEGRATION AND SCIENCE. ASSOCIATE DIRECTOR, EXPLORATION, INTEGRATION AND SCIENCE. MANAGER, EXTRA VEHICULAR ACTIVITY MANAGEMENT OFFICE. FLIGHT OPERATIONS... CHIEF ASTRONAUT OFFICE. CHIEF, FLIGHT DIRECTOR OFFICE. CHIEF, AIRCRAFT OPERATIONS DIVISION. CHIEF, MISSION SYSTEMS DIVISION. DEPUTY DIRECTOR, FLIGHT OPERATIONS. DIRECTOR, FLIGHT OPERATIONS. HUMAN HEALTH AND DEPUTY DIRECTOR, PERFORMANCE. HUMAN HEALTH AND PERFORMANCE DIRECTOR, HUMAN HEALTH AND PERFORMANCE. INFORMATION DIRECTOR, RESOURCES. INFORMATION RESOURCES. OFFICE OF DIRECTOR, OFFICE OF PROCUREMENT. PROCUREMENT. SENIOR ADVISOR (TRANSFORMATION). ORION PROGRAM....... MANAGER, ORION PROGRAM. DEPUTY MANAGER, ORION PROGRAM. MANAGER, AVIONICS, POWER AND SOFTWARE OFFICE. SPACE STATION MANAGER, EXTERNAL PROGRAM OFFICE. INTEGRATION OFFICE. DEPUTY MANAGER FOR UTILIZATION. MANAGER, INTERNATIONAL SPACE STATION RESEARCH INTEGRATION OFFICE. MANAGER, OPERATIONS INTEGRATION. MANAGER, SAFETY AND MISSION ASSURANCE/ PROGRAM RISK OFFICE, ISSP. MANAGER, INTERNATIONAL SPACE STATION TRANSPORTATION INTEGRATION. MANAGER, PROGRAM PLANNING AND CONTROL OFFICE, INTERNATIONAL SPACE STATION. MANAGER, AVIONICS AND SOFTWARE OFFICE. DEPUTY MANAGER, INTERNATIONAL SPACE STATION PROGRAM. MANAGER, VEHICLE OFFICE.[[Page 21592]] MANAGER, INTERNATIONAL SPACE STATION PROGRAM. WHITE SANDS TEST MANAGER, WHITE SANDS FACILITY. TEST FACILITY.KENNEDY SPACE CENTER........ LAUNCH SERVICES MANAGER, LAUNCH PROGRAM. SERVICES PROGRAM. SAFETY AND MISSION DIRECTOR, SAFETY AND ASSURANCE. MISSION ASSURANCE.MISSION SUPPORT DIRECTORATE. NASA SHARED SERVICES DIRECTOR, SERVICE CENTER. DELIVERY DIRECTORATE. DIRECTOR, SUPPORT OPERATIONS DIRECTORATE. EXECUTIVE DIRECTOR OF NASA SHARED SERVICES CENTER. OFFICE OF CHIEF CHIEF HEALTH AND HEALTH AND MEDICAL MEDICAL OFFICER. OFFICER. DEPUTY CHIEF HEALTH AND MEDICAL OFFICER. OFFICE OF DIRECTOR, HEADQUARTERS HEADQUARTERS OPERATIONS. INFORMATION AND COMMUNICATION DIVISION. DIRECTOR, HUMAN RESOURCE MANAGEMENT DIVISION. DIRECTOR, BUDGET MANAGEMENT AND SYSTEMS SUPPORT. EXECUTIVE DIRECTOR, HEADQUARTERS OPERATIONS. OFFICE OF HUMAN DIRECTOR, HUMAN CAPITAL MANAGEMENT. RESOURCES SERVICES DIVISION. SPECIAL ASSISTANT TO THE CHIEF HUMAN CAPITAL OFFICER. DIRECTOR, BUSINESS OPERATIONS DIVISION. DEPUTY ASSISTANT ADMINISTRATOR FOR HIRING. DIRECTOR, EXECUTIVE RESOURCES. DEPUTY ASSISTANT ADMINISTRATOR FOR HUMAN CAPITAL MANAGEMENT. DIRECTOR, WORKFORCE STRATEGY DIVISION. DIRECTOR, WORKFORCE CULTURE DIVISION. ASSISTANT ADMINISTRATOR FOR HUMAN CAPITAL MANAGEMENT. DIRECTOR, TALENT ACQUISITION AND DEVELOPMENT PROGRAM OFFICE. OFFICE OF DIRECTOR, PROGRAM PROCUREMENT. OPERATIONS DIVISION. DIRECTOR, OFFICE OF PROCUREMENT. DEPUTY ASSISTANT ADMINISTRATOR FOR OFFICE OF PROCUREMENT. DIRECTOR, INFORMATION TECHNOLOGY PROCUREMENT OFFICE. DIRECTOR, CONTRACT MANAGEMENT DIVISION. ASSISTANT ADMINISTRATOR FOR PROCUREMENT. DIRECTOR, OFFICE OF PROCUREMENT. OFFICE OF PROTECTIVE ASSISTANT SERVICES. ADMINISTRATOR FOR PROTECTIVE SERVICES. DEPUTY ASSISTANT ADMINISTRATOR FOR PROTECTIVE SERVICES. SENIOR ADVISOR (TRANSFORMATION). DIRECTOR OF COUNTERINTELLIGENCE/ COUNTERTERRORISM FOR PROTECTIVE SERVICES. OFFICE OF STRATEGIC DIRECTOR INFRASTRUCTURE. ENVIRONMENTAL MANAGEMENT DIVISION. SENIOR ADVISOR (TRANSFORMATION) ASSISTANT ADMINISTRATOR FOR INFRASTRUCTURE AND ADMINISTRATION DIRECTOR, LOGISTICS MANAGEMENT DIVISION DIRECTOR, FACILITIES AND REAL ESTATE DEPUTY ASSISTANT ADMINISTRATOR FOR STRATEGIC INFRASTRUCTURE[[Page 21593]] DIRECTOR, SPACE ENVIRONMENTS TESTING MANAGEMENT OFFICE (SETMO) OFFICE OF THE CHIEF CHIEF ENGINEER. ENGINEER. DEPUTY FOR MANAGEMENT. OFFICE OF THE CHIEF DEPUTY CHIEF FINANCIAL OFFICER. FINANCIAL OFFICER (APPROPRIATIONS). DIRECTOR, POLICY DIVISION DIRECTOR, BUDGET DIVISION DEPUTY CHIEF FINANCIAL OFFICER (FINANCE) DIRECTOR, FINANCIAL MANAGEMENT DIVISION DIRECTOR, QUALITY ASSURANCE DIRECTOR, STRATEGIC INVESTMENT DIVISIONNATIONAL AERONAUTICS AND OFFICE OF SAFETY AND DIRECTOR, SPACE ADMINISTRATION. MISSION ASSURANCE. INSTITUTIONAL SAFETY MANAGEMENT DIVISION. DIRECTOR, INDEPENDENT VERIFICATION AND VALIDATION PROGRAM. OFFICE OF THE ASSOCIATE ADMINISTRATOR. ADMINISTRATOR. DEPUTY ASSOCIATE ADMINISTRATOR. SENIOR ADVISOR. SENIOR ADVISOR TO THE DEPUTY ASSOCIATE ADMINISTRATOR. DIRECTOR FIELD OPERATIONS DIVISION. SENIOR ADVISOR TO THE ASSOCIATE ADMINISTRATOR. DIGITAL TRANSFORMATION OFFICER. DEPUTY DIGITAL TRANSFORMATION OFFICER AND CHIEF DATA OFFICER. STENNIS SPACE CENTER DIRECTOR, OFFICE OF SAFETY AND MISSION ASSURANCE. DIRECTOR, CENTER OPERATIONS DIRECTORATE. DEPUTY DIRECTOR, ENGINEERING AND TEST DIRECTORATE. CHIEF FINANCIAL OFFICER. DEPUTY DIRECTOR, STENNIS SPACE CENTER. DIRECTOR, ENGINEERING AND SCIENCE DIRECTORATE. ASSOCIATE DIRECTOR.OFFICE OF EARTH SCIENCE..... GODDARD SPACE FLIGHT DIRECTOR, SOLAR CENTER. SYSTEM EXPLORATION DIVISION. CHIEF, MECHANICAL SYSTEMS DIVISION. CHIEF, INSTRUMENT SYSTEMS AND TECHNOLOGY DIVISION. DEPUTY DIRECTOR FOR PLANNING AND BUSINESS MANAGEMENT. ASSOCIATE DIRECTOR FOR ASTROPHYSICS PROJECTS DIVISION. CENTER ASSOCIATE DIRECTOR. CHIEF, ELECTRICAL ENGINEERING DIVISION. DIRECTOR OF ENGINEERING AND TECHNOLOGY. DEPUTY DIRECTOR OF ENGINEERING AND TECHNOLOGY. CHIEF, SOFTWARE ENGINEERING DIVISION. DIRECTOR, EARTH SCIENCES DIVISION. CHIEF, GODDARD INSTITUTE FOR SPACE STUDIES. DIRECTOR, ASTROPHYSICS SCIENCE DIVISION. DIRECTOR OF THE OFFICE OF HUMAN CAPITAL MANAGEMENT. DIRECTOR OF FLIGHT PROJECTS. DIRECTOR OF MANAGEMENT OPERATIONS. DIRECTOR OF SAFETY AND MISSION ASSURANCE. DIRECTOR OFFICE OF PROCUREMENT.[[Page 21594]] DEPUTY DIRECTOR. DEPUTY DIRECTOR OF FLIGHT PROJECTS. DIRECTOR OF WALLOPS FLIGHT FACILITY. DEPUTY DIRECTOR OF SAFETY AND MISSION ASSURANCE. DIRECTOR OF SCIENCES AND EXPLORATION. CHIEF INFORMATION OFFICER AND DIRECTOR OF INFORMATION TECHNOLOGY AND COMMUNICATIONS DIRECTORATE. DEPUTY DIRECTOR WALLOPS FLIGHT FACILITY. DEPUTY ASSOCIATE DIRECTOR OF FLIGHT PROJECTS FOR JOINT POLAR SATELLITE SYSTEM (JPSS) FLIGHT. SPECIAL ASSISTANT FOR PROJECT MANAGEMENT TRAINING. ASSOCIATE DIRECTOR FOR SATELLITE SERVICING CAPABILITIES PROJECT. DEPUTY DIRECTOR FOR TECHNICAL MANAGEMENT. ASSOCIATE DIRECTOR OF FLIGHT PROJECTS FOR THE INSTRUMENT AND SPECIAL PROJECTS DIVISION. DEPUTY CHIEF FINANCIAL OFFICER. DIRECTOR, HELIOPHYSICS SCIENCE DIVISION. ASSOCIATE DIRECTOR FOR EXPLORATION AND SPACE COMMUNICATIONS PROJECTS DIVISION. ASSOCIATE DIRECTOR FOR EARTH SCIENCE PROJECTS DIVISION. CHIEF, MISSION ENGINEERING AND SYSTEMS ANALYSIS DIVISION. DEPUTY DIRECTOR FOR INSTITUTIONS, PROGRAMS, AND BUSINESS MANAGEMENT. DEPUTY DIRECTOR FOR TECHNOLOGY AND RESEARCH INVESTMENTS. DEPUTY DIRECTOR FLIGHT PROJECTS FOR PLANNING AND BUSINESS MANAGEMENT. CHIEF FINANCIAL OFFICER.OFFICE OF PUBLIC AFFAIRS.... OFFICE OF DEPUTY ASSOCIATE LEGISLATIVE AND ADMINISTRATOR FOR INTERGOVERNMENTAL LEGISLATIVE AND AFFAIRS. INTERGOVERNMENTAL AFFAIRS.OFFICE OF SMALL BUSINESS JOHNSON SPACE CENTER MANAGER, PROGRAM PROGRAMS. PLANNING AND CONTROL, ORION. MANAGER, CREW AND SERVICE MODULE OFFICE. DEPUTY MANAGER, FLIGHT DEVELOPMENT AND OPERATIONS, COMMERCIAL CREW PROGRAM. CHIEF FINANCIAL OFFICER. CHIEF, ASTROMATERIALS RESEARCH AND EXPLORATION SCIENCE (ARES). CHIEF, AVIONIC SYSTEMS DIVISION. MANAGER, OPERATIONS INTEGRATION, COMMERCIAL CREW PROGRAM. CHIEF, STRUCTURAL ENGINEERING DIVISION. MANAGER, SYSTEMS ENGINEERING AND INTEGRATION OFFICE, GATEWAY. DEPUTY MANAGER, GATEWAY PROGRAM. MANAGER, VEHICLE SYSTEMS INTEGRATION. DEPUTY MANAGER, INTERNATIONAL SPACE STATION PROGRAM (UTILIZATION).[[Page 21595]] PRODUCTION MANAGER, GATEWAY PROGRAM. DEPUTY CHIEF FINANCIAL OFFICER. DEPUTY MANAGER, INTERNATIONAL SPACE STATION PROGRAM (OPERATIONS). MANAGER, VEHICLE INTEGRATION OFFICE. DIRECTOR, EXTERNAL RELATIONS. CENTER ASSOCIATE DIRECTOR. DIRECTOR OF HUMAN RESOURCES. DEPUTY DIRECTOR, JOHNSON SPACE CENTER. KENNEDY SPACE CENTER DEPUTY DIRECTOR, JOHN F KENNEDY SPACE CENTER. ASSOCIATE DIRECTOR, TECHNICAL, JOHN F KENNEDY SPACE CENTER. CHIEF FINANCIAL OFFICER. DIRECTOR, PROCUREMENT. DEPUTY DIRECTOR, ENGINEERING. ASSOCIATE DIRECTOR, ENGINEERING. DIRECTOR, ENGINEERING. DEPUTY MANAGER, LAUNCH SERVICES PROGRAM. DEPUTY MANAGER, GROUND DEVELOPMENT AND OPERATIONS, COMMERCIAL CREW PROGRAM. MANAGER, COMMERCIAL CREW PROGRAM. CHIEF INFORMATION OFFICER, KENNEDY SPACE CENTER. MANAGER, EXPLORATION GROUND SYSTEMS PROGRAM. DEPUTY MANAGER, EXPLORATION GROUND SYSTEMS PROGRAM. PRINCIPAL ADVISOR FOR SPACE TRANSPORTATION. DEPUTY DIRECTOR, SAFETY AND MISSION ASSURANCE. DEPUTY DIRECTOR, SPACEPORT INTEGRATION AND SERVICES. ASSOCIATE DIRECTOR, MANAGEMENT. CHIEF, COMMERCIAL SYSTEMS DIVISION, ENGINEERING. CHIEF, EXPLORATION SYSTEMS AND OPERATIONS DIVISION, ENGINEERING. ASSOCIATE MANAGER, TECHNICAL, EXPLORATION GROUND SYSTEMS PROGRAM. MANAGER, DEEP SPACE GATEWAY, LOGISTICS ELEMENT. CHIEF, LABORATORIES AND TEST FACILITIES DIVISION, ENGINEERING. CHIEF, TECHNICAL PERFORMANCE AND INTEGRATION DIVISION, ENGINEERING. MARSHALL SPACE MANAGER, HABITATION FLIGHT CENTER. ELEMENT OFFICE, HUMAN EXPLORATION DEVELOPMENT AND OPERATIONS OFFICE. CHIEF FINANCIAL OFFICER. MANAGER, SCIENCE AND TECHNOLOGY OFFICE. ASSOCIATE MANAGER, SCIENCE AND TECHNOLOGY OFFICE. DIRECTOR, ENGINEERING DIRECTORATE. DEPUTY DIRECTOR, OFFICE OF CENTER OPERATIONS. MANAGER, SPACECRAFT/ PAYLOAD INTEGRATION AND EVOLUTION OFFICE, SPACE LAUNCH SYSTEM PROGRAM OFFICE. ASSOCIATE CENTER DIRECTOR. DIRECTOR, SAFETY AND MISSION ASSURANCE DIRECTORATE.[[Page 21596]] ASSOCIATE CHIEF INFORMATION OFFICER, APPLICATIONS DIVISION. MANAGER, PLANETARY MISSIONS PROGRAM OFFICE. MANAGER, BLOCK1B/ EXPLORATION UPPER STAGE DEVELOPMENT OFFICE. MANAGER, SYSTEMS ENGINEERING AND INTEGRATION OFFICE. PROGRAM MANAGER, HUMAN ***LANDING*** SYSTEM. DIRECTOR FOR ADVANCED TECHNOLOGY, SCIENCE AND TECHNOLOGY OFFICE. DEPUTY CENTER DIRECTOR. MANAGER, PROGRAM PLANNING AND CONTROL OFFICE, SPACE LAUNCH .SYSTEM PROGRAM OFFICE. ASSOCIATE PROGRAM MANAGER, SPACE LAUNCH SYSTEM PROGRAM OFFICE. DEPUTY DIRECTOR, ENGINEERING DIRECTORATE. DEPUTY DIRECTOR, SPACE SYSTEMS DEPARTMENT, ENGINEERING DIRECTORATE. DIRECTOR, SPACE SYSTEMS DEPARTMENT, ENGINEERING DIRECTORATE. DIRECTOR, MATERIALS AND PROCESSES LAB, ENGINEERING DIRECTORATE. DIRECTOR, PROPULSION SYSTEMS DEPARTMENT, ENGINEERING DIRECTORATE. DEPUTY DIRECTOR, PROPULSION SYSTEMS DEPT, ENGINEERING DIRECTORATE. DIRECTOR, TEST LABORATORY, ENGINEERING DIRECTORATE. DIRECTOR, SPACECRAFT AND VEHICLE SYSTEMS DEPARTMENT, ENGINEERING DIRECTORATE. DEPUTY DIRECTOR, SPACECRAFT AND VEHICLE SYSTEMS DEPARTMENT, ENGINEERING DIRECTORATE. DEPUTY DIRECTOR, SAFETY AND MISSION ASSURANCE DIRECTORATE. DIRECTOR, OFFICE OF HUMAN RESOURCES. CHIEF ENGINEER, OFFICE OF THE CHIEF ENGINEER, ENGINEERING DIRECTORATE. SPACE LAUNCH SYSTEM CHIEF SAFETY OFFICER, SAFETY AND MISSION ASSURANCE DIRECTORATE. DEPUTY MANAGER, SCIENCE AND TECHNOLOGY OFFICE. DIRECTOR, OFFICE OF STRATEGIC ANALYSIS AND COMMUNICATIONS. ASSOCIATE CENTER DIRECTOR, TECHNICAL. ASSOCIATE DIRECTOR FOR TECHNICAL OPERATIONS, ENGINEERING DIRECTORATE. DIRECTOR, MICHOUD ASSEMBLY FACILITY. DEPUTY MANAGER, OFFICE OF THE CHIEF ENGINEER, ENGINEERING DIRECTORATE. ASSOCIATE DIRECTOR FOR OPERATIONS, ENGINEERING DIRECTORATE. DIRECTOR, OFFICE OF CENTER OPERATIONS. MANAGER, SPACE LAUNCH SYSTEM PROGRAM OFFICE. DEPUTY MANAGER, SPACE LAUNCH SYSTEM PROGRAM OFFICE.[[Page 21597]] MANAGER, ENGINES OFFICE, SPACE LAUNCH SYSTEM PROGRAM OFFICE. MANAGER, STAGES OFFICE, SPACE LAUNCH SYSTEM PROGRAM OFFICE. MANAGER, BOOSTERS OFFICE, SPACE LAUNCH SYSTEM PROGRAM OFFICE. CHIEF ENGINEER, SPACE LAUNCH SYSTEM, ENGINEERING DIRECTORATE. DIRECTOR, OFFICE OF THE CHIEF INFORMATION OFFICER. DEPUTY MANAGER, HUMAN ***LANDING*** SYSTEM PROGRAM OFFICE. INTERNATIONAL SPACE STATION COST ACCOUNT MANAGER. MANAGER, SYSTEMS ENGINEERING AND INTEGRATION OFFICE, SPACE LAUNCH SYSTEM PROGRAM OFFICE. MANAGER, HUMAN EXPLORATION DEVELOPMENT AND OPERATIONS OFFICE. DEPUTY MANAGER, HUMAN EXPLORATION DEVELOPMENT AND OPERATIONS OFFICE.OFFICE OF THE ADMINISTRATOR. AERONAUTICS RESEARCH DIRECTOR OF AIRSPACE MISSION DIRECTORATE. OPERATIONS AND SAFETY PROGRAM OFFICE. DEPUTY ASSOCIATE ADMINISTRATOR FOR STRATEGY. DEPUTY ASSOCIATE ADMINISTRATOR FOR PROGRAMS. DEPUTY ASSOCIATE ADMINISTRATOR FOR POLICY. DEPUTY ASSOCIATE ADMINISTRATOR. DIRECTOR, PORTFOLIO ANALYSIS AND MANAGEMENT OFFICE. DIRECTOR OF TRANSFORMATIVE AERONAUTICS CONCEPTS PROGRAM OFFICE. DIRECTOR FOR INTEGRATED AVIATION SYSTEMS PROGRAM. DIRECTOR OF ADVANCED AIR VEHICLES PROGRAM OFFICE. CHIEF OF STAFF...... ASSOCIATE ADMINISTRATOR, STRATEGY AND PLANS. SENIOR ADVISOR, AGENCY ARCHITECTURES AND MISSION ALIGNMENT. HUMAN EXPLORATION DEPUTY ASSOCIATE AND OPERATIONS ADMINISTRATOR, MISSION DIRECTORATE. ADVANCED EXPLORATION SYSTEMS. MANAGER, ROCKET PROPULSION TEST PROGRAM OFFICE. ASSISTANT DEPUTY ASSOCIATE ADMINISTRATOR FOR SPACE COMMUNICATIONS AND NAVIGATION (SCAN) OFFICE. DIRECTOR, STRATEGIC INTEGRATION AND MANAGEMENT DIVISION. DEPUTY ASSOCIATE ADMINISTRATOR FOR HUMAN EXPLORATION AND OPERATIONS. GATEWAY PROGRAM MANAGER. DEPUTY ASSOCIATE ADMINISTRATOR FOR SYSTEMS ENGINEERING AND INTEGRATION. DEPUTY ASSOCIATE ADMINISTRATOR FOR ARTEMIS PHASE I/ PRODUCTION AND OPERATIONS. EXPLORATION SYSTEMS DEVELOPMENT SAFETY AND MISSION ASSURANCE MANAGER. DIRECTOR, BIOLOGICAL AND PHYSICAL SCIENCES DIVISION. DEPUTY DIRECTOR, STRATEGIC INTEGRATION AND MANAGEMENT. DEPUTY ASSOCIATE ADMINISTRATOR, MANAGEMENT.[[Page 21598]] SPECIAL ASSISTANT TO THE DEPUTY ASSOCIATE ADMINISTRATOR, SYSTEMS ENGINEERING AND INTEGRATION. ASSISTANT DEPUTY ASSOCIATE ADMINISTRATOR, ADVANCED EXPLORATION SYSTEMS. ASSISTANT DEPUTY ASSOCIATE ADMINISTRATOR, SYSTEMS ENGINEERING AND INTEGRATION. SPECIAL ASSISTANT TO THE ASSOCIATE ADMINISTRATOR, HUMAN EXPLORATION AND OPERATIONS. DEPUTY ASSOCIATE ADMINISTRATOR FOR MANAGEMENT. DIRECTOR, PROGRAM AND STRATEGIC INTEGRATION OFFICE. DIRECTOR, HUMAN RESEARCH PROGRAM. DIRECTOR, LAUNCH SERVICES OFFICE. DIRECTOR, NETWORK SERVICES. DIRECTOR, HUMAN SPACEFLIGHT CAPABILITIES DIVISION. ASSISTANT DEPUTY ASSOCIATE ADMINISTRATOR FOR EXPLORATION SYSTEMS DEVELOPMENT. DIRECTOR, RESOURCES MANAGEMENT OFFICE. DIRECTOR, COMMERCIAL SPACEFLIGHT DEVELOPMENT DIVISION. POWER PROPULSION ELEMENT, PROGRAM DIRECTOR. DEPUTY ASSOCIATE ADMINISTRATOR FOR SPACE COMMUNICATIONS AND NAVIGATION. DIRECTOR, INTERNATIONAL SPACE STATION. MISSION SUPPORT DEPUTY ASSOCIATE DIRECTORATE. ADMINISTRATOR FOR MISSION SUPPORT. ASSISTANT ASSOCIATE ADMINISTRATOR FOR RESOURCES AND PERFORMANCE. DEPUTY PROGRAM EXECUTIVE FOR MISSION SUPPORT FUTURE ARCHITECTURE PROGRAM (MAP). SENIOR ADVISOR FOR TRANSFORMATION (MAP). DEPUTY ASSOCIATE ADMINISTRATOR, MISSION SUPPORT. DEPUTY ASSOCIATE ADMINISTRATOR, MISSION SUPPORT TRANSFORMATION OFFICE. DIRECTOR, STRATEGY AND INTEGRATION OFFICE. DIRECTOR, RESOURCES AND PERFORMANCE MANAGEMENT OFFICE. DEPUTY ASSOCIATE ADMINISTRATOR FOR MANAGEMENT. NASA MANAGEMENT DEPUTY DIRECTOR, OFFICE. NASA MANAGEMENT OFFICE. OFFICE OF SENIOR ADVISOR FOR COMMUNICATIONS. TRANSFORMATION (MAP). DIRECTOR, PUBLIC ENGAGEMENT AND MULTIMEDIA. DEPUTY ASSOCIATE ADMINISTRATOR FOR MEDIA OPERATIONS AND TECHNOLOGY. DEPUTY ASSOCIATE ADMINISTRATOR FOR COMMUNICATIONS. STRATEGY AND ENGAGEMENT DIVISION DIRECTOR.[[Page 21599]] OFFICE OF SAFETY AND DEPUTY CHIEF SAFETY MISSION ASSURANCE. AND MISSION ASSURANCE OFFICER. CHIEF SAFETY AND MISSION ASSURANCE OFFICER. DIRECTOR, SAFETY AND ASSURANCE REQUIREMENTS DIVISION. DIRECTOR, NASA SAFETY CENTER. DIRECTOR, MISSION SUPPORT DIVISION. OFFICE OF STEM SENIOR ADVISOR ENGAGEMENT. (TRANSFORMATION). DEPUTY ASSOCIATE ADMINISTRATOR FOR STRATEGY AND INTEGRATION. DEPUTY ASSOCIATE ADMINISTRATOR FOR STEM ENGAGEMENT PROGRAM. OFFICE OF THE CHIEF DEPUTY CHIEF ENGINEER. ENGINEER. HUMAN EXPLORATION AND OPERATIONS MISSION DIRECTORATE CHIEF ENGINEER. OFFICE OF THE CHIEF DEPUTY CHIEF FINANCIAL OFFICER. FINANCIAL OFFICER. ASSOCIATE DEPUTY CHIEF FINANCIAL OFFICER (FINANCE). DEPUTY CHIEF FINANCIAL OFFICER (STRATEGY AND PERFORMANCE). OFFICE OF THE CHIEF ASSOCIATE CHIEF INFORMATION OFFICER. INFORMATION OFFICER FOR CAPITAL PLANNING AND GOVERNANCE. ASSOCIATE CHIEF INFORMATION OFFICER FOR TECHNOLOGY AND INNOVATION, CHIEF TECHNOLOGY OFFICER. ASSOCIATE CHIEF INFORMATION OFFICER FOR ENTERPRISE SERVICE AND INTEGRATION DIVISION. DEPUTY CHIEF INFORMATION OFFICER. DEPUTY CHIEF INFORMATION OFFICER FOR INFORMATION TECHNOLOGY SECURITY. OFFICE OF THE CHIEF CHIEF SCIENTIST. SCIENTIST. DEPUTY CHIEF SCIENTIST. OFFICE OF THE CHIEF DEPUTY CHIEF TECHNOLOGIST. TECHNOLOGIST. CHIEF TECHNOLOGIST. SCIENCE MISSION DEPUTY ASSOCIATE DIRECTORATE. ADMINISTRATOR FOR MANAGEMENT. DEPUTY ASSOCIATE ADMINISTRATOR FOR PROGRAMS. DEPUTY ASSOCIATE ADMINISTRATOR, SCIENCE MISSION DIRECTORATE. DEPUTY ASSOCIATE ADMINISTRATOR FOR RESEARCH. DIRECTOR, SCIENCE ENGAGEMENT AND PARTNERSHIPS. ASSOCIATE DIRECTOR OF FLIGHT PROJECTS FOR JAMES WEBB SPACE TELESCOPE (JWST). DEPUTY ASSOCIATE ADMINISTRATOR FOR EXPLORATION. DEPUTY DIRECTOR, EARTH SCIENCE DIVISION. DEPUTY DIRECTOR, PLANETARY SCIENCE DIVISION. DIRECTOR, MARS SAMPLE RETURN PROGRAM. PROGRAM DIRECTOR FOR FLIGHT PROGRAMS, ASTROPHYSICS DIVISION. ASSISTANT DEPUTY ASSOCIATE ADMINISTRATOR FOR MANAGEMENT. PROGRAM DIRECTOR FOR FLIGHT PROGRAMS, PLANETARY SCIENCE. DIRECTOR, NASA MANAGEMENT OFFICE.[[Page 21600]] OFFICE OF THE DEPUTY ARMSTRONG FLIGHT ASSISTANT DIRECTOR ADMINISTRATOR. RESEARCH CENTER. FOR STRATEGIC IMPLEMENTATION. DIRECTOR FOR RESEARCH AND ENGINEERING. CENTER ASSOCIATE DIRECTOR FOR MISSION SUPPORT. DIRECTOR FOR FLIGHT OPERATIONS. CHIEF FINANCIAL OFFICER. DIRECTOR FOR PROGRAMS. DIRECTOR, HUMAN RESOURCES. DIRECTOR FOR SAFETY AND MISSION ASSURANCE. DEPUTY CENTER DIRECTOR. DIRECTOR, MISSION OPERATIONS. OFFICE INTERNATIONAL DIRECTOR, EXPORT AND INTERAGENCY CONTROL AND RELATIONS. INTERAGENCY LIAISON DIVISION. DIRECTOR, ADVISORY COMMITTEE MANAGEMENT DIVISION. DEPUTY ASSOCIATE ADMINISTRATOR FOR INTERNATIONAL AND INTERAGENCY RELATIONS. DIRECTOR, SCIENCE DIVISION. DIRECTOR, AERONAUTICS AND CROSS AGENCY SUPPORT DIVISION. DIRECTOR, HUMAN EXPLORATION AND OPERATIONS DIVISION. DEPUTY DIRECTOR, EXPORT CONTROL AND INTERAGENCY LIAISON DIVISION. OFFICE OF DIVERSITY DIRECTOR, DIVERSITY AND EQUAL AND DATA/ANALYTICS OPPORTUNITY. DIVISION AND FIELD OPERATIONS. DIRECTOR, COMPLAINTS MANAGEMENT DIVISION. DIRECTOR, EQUAL OPPORTUNITY PROGRAMS DIVISION AND FIELD OPERATIONS. CHIEF OF STAFF (STRATEGY AND INTEGRATION). EMPLOYMENT OPPORTUNITY COMPLAINTS AND PROGRAMS DIVISION AND FIELD OPERATIONS. SPACE TECHNOLOGY TECHNOLOGY MISSION DIRECTORATE. MATURATION PROGRAM DIRECTOR. TECHNOLOGY DEMONSTRATIONS PROGRAM DIRECTOR. DIRECTOR, RESOURCE MANAGEMENT OFFICE. DEPUTY ASSOCIATE ADMINISTRATOR (STMD). DEPUTY ASSOCIATE ADMINISTRATOR FOR PROGRAMS. DEPUTY ASSOCIATE ADMINISTRATOR FOR MANAGEMENT. EARLY STAGE INNOVATIONS AND PARTNERSHIPS DIRECTOR.RESEARCH AND ENGINEERING COMMUNICATIONS AND CHIEF, DIRECTORATE. INTELLIGENT SYSTEMS COMMUNICATIONS AND DIVISION. INTELLIGENT SYSTEMS DIVISION. MATERIALS AND CHIEF, MATERIALS AND STRUCTURES DIVISION. STRUCTURES DIVISION. PROPULSION DIVISION. CHIEF, PROPULSION DIVISION. DEPUTY CHIEF, PROPULSION DIVISION. SYSTEMS ENGINEERING CHIEF, SYSTEMS AND ARCHITECTURE ENGINEERING AND DIVISION. ARCHITECTURE DIVISION.SAFETY AND MISSION ASSURANCE SAFETY AND MISSION DEPUTY DIRECTOR, ASSURANCE. SAFETY AND MISSION ASSURANCE. DIRECTOR, SAFETY AND MISSION ASSURANCE.SCIENCE MISSION DIRECTORATE. ASTROPHYSICS DIRECTOR, DIVISION. ASTROPHYSICS DIVISION. DEPUTY DIRECTOR, ASTROPHYSICS DIVISION.[[Page 21601]] EARTH SCIENCE DIRECTOR, EARTH DIVISION. SCIENCE DIVISION. ASSOCIATE DIRECTOR FOR FLIGHT PROGRAMS. DEPUTY DIRECTOR, EARTH SCIENCE DIVISION, NASA HQ. PROGRAM DIRECTOR RESEARCH AND ANALYSIS PROGRAM. HELIOPHYSICS DEPUTY, DIRECTOR, DIVISION. HELIOPHYISCS DIVISION DIRECTOR, HELIOPHYSICS DIVISION. JAMES WEBB SPACE SENIOR SCIENCE TELESCOPE PROGRAM ADVISOR. OFFICE. DIRECTOR, JAMES WEBB SPACE TELESCOPE PROGRAM. JOINT AGENCY DEPUTY DIRECTOR, SATELLITE DIVISION. JOINT AGENCY SATELLITE DIVISION. DIRECTOR, JOINT AGENCY SATELLITE DIVISION. PLANETARY SCIENCE DIRECTOR, PLANETARY DIVISION. SCIENCE DIVISION. DEPUTY DIRECTOR, PLANETARY SCIENCE DIVISION. MARS EXPLORATION PROGRAM DIRECTOR. RESOURCES MANAGEMENT DEPUTY ASSOCIATE DIVISION. ADMINISTRATOR FOR MANAGEMENT. DIRECTOR, RESOURCES MANAGEMENT DIVISION. STRATEGIC DIRECTOR, STRATEGIC INTEGRATION AND INTEGRATION AND MANAGEMENT DIVISION. MANAGEMENT DIVISION.NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OFFICE OF THE INSPECTOR GENERAL. NATIONAL AERONAUTICS DEPUTY INSPECTOR AND SPACE GENERAL. ADMINISTRATION ASSISTANT INSPECTOR OFFICE OF THE GENERAL FOR INSPECTOR GENERAL. INVESTIGATIONS. ASSISTANT INSPECTOR GENERAL FOR AUDITING. COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT AND PLANNING.NATIONAL ARCHIVES AND RECORDSARCHIVIST OF UNITED STATES CONGRESSIONAL DIRECTOR, AND DEPUTY ARCHIVIST OF THE AFFAIRS STAFF. CONGRESSIONAL AND UNITED STATES. LEGISLATIVE AFFAIRS. GENERAL COUNSEL..... GENERAL COUNSEL. OFFICE OF INNOVATION CHIEF INNOVATION OFFICER. OFFICE OF THE CHIEF CHIEF OF MANAGEMENT OF MANAGEMENT AND AND ADMINISTRATION. ADMINISTRATION. OFFICE OF THE CHIEF CHIEF OF STAFF. OF STAFF. OFFICE OF THE CHIEF CHIEF OPERATING OPERATING OFFICER. OFFICER.LEGISLATIVE ARCHIVES, OFFICE OF DEPUTY FOR PRESIDENTIAL LIBRARIES AND PRESIDENTIAL PRESIDENTIAL MUSEUM SERVICES. LIBRARIES. LIBRARIES.NATIONAL ARCHIVES AND ARCHIVIST OF UNITED DEPUTY ARCHIVIST OF RECORDS ADMINISTRATION. STATES AND DEPUTY THE UNITED STATES. ARCHIVIST OF THE UNITED STATES.OFFICE OF THE CHIEF OF BUSINESS SUPPORT BUSINESS SUPPORT MANAGEMENT AND SERVICES. SERVICES EXECUTIVE. ADMINISTRATION. INFORMATION SERVICES DEPUTY CHIEF INFORMATION OFFICER. INFORMATION SERVICES EXECUTIVE/CHIEF INFORMATION OFFICER. OFFICE OF HUMAN CHIEF HUMAN CAPITAL CAPITAL. OFFICER. OFFICE OF THE CHIEF CHIEF ACQUISITION ACQUISITION OFFICER. OFFICER. OFFICE OF THE CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER.OFFICE OF THE CHIEF AGENCY SERVICES..... DIRECTOR, NATIONAL OPERATING OFFICER. PERSONNEL RECORDS CENTER. CHIEF RECORDS OFFICER. DIRECTOR, NATIONAL DECLASSIFICATION CENTER. DIRECTOR, OFFICE OF GOVERNMENT INFORMATION SERVICES. DIRECTOR, INFORMATION SECURITY OVERSIGHT OFFICE.[[Page 21602]] AGENCY SERVICES EXECUTIVE. DIRECTOR, RECORDS CENTER PROGRAMS. LEGISLATIVE LEGISLATIVE ARCHIVES, ARCHIVES, PRESIDENTIAL PRESIDENTIAL LIBRARIES AND LIBRARIES AND MUSEUM SERVICES. MUSEUM SERVICES EXECUTIVE. OFFICE OF THE DIRECTOR OF THE FEDERAL REGISTER. FEDERAL REGISTER. RESEARCH SERVICES... DEPUTY EXECUTIVE FOR ARCHIVAL OPERATIONS. RESEARCH SERVICES EXECUTIVE.NATIONAL ARCHIVES AND RECORDS ADMINISTRATION OFFICE OF THE INSPECTOR GENERAL NATIONAL ARCHIVES ASSISTANT INSPECTOR AND RECORDS GENERAL FOR ADMINISTRATION AUDITING. OFFICE OF THE INSPECTOR GENERAL. INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS.NATIONAL CAPITAL PLANNING COMMISSION NATIONAL CAPITAL EXECUTIVE DIRECTOR. PLANNING COMMISSION STAFF.NATIONAL ENDOWMENT FOR THE ARTS NATIONAL ENDOWMENT DEPUTY CHAIRMAN FOR FOR THE ARTS. MANAGEMENT AND BUDGET. DIRECTOR, RESEARCH AND ANALYSIS. CHIEF INFORMATION OFFICER.NATIONAL ENDOWMENT FOR THE ARTS OFFICE OF THE INSPECTOR GENERAL NATIONAL ENDOWMENT INSPECTOR GENERAL. FOR THE ARTS OFFICE OF THE INSPECTOR GENERAL.NATIONAL ENDOWMENT FOR THE HUMANITIES NATIONAL ENDOWMENT ASSISTANT CHAIRMAN FOR THE HUMANITIES. FOR PLANNING AND OPERATIONS.NATIONAL LABOR RELATIONS BOARD NATIONAL LABOR DEPUTY ASSOCIATE RELATIONS BOARD. GENERAL COUNSEL, DIVISION OF ENFORCEMENT LITIGATION.DIVISION OF OPERATIONS REGIONAL OFFICES.... REGIONAL DIRECTOR, MANAGEMENT. REGION 31, LOS ANGELES, CALIFORNIA. REGIONAL DIRECTOR, REGION 10, ATLANTA, GEORGIA. REGIONAL DIRECTOR, REGION 27, DENVER, COLORADO. REGIONAL DIRECTOR REGION 2, NEW YORK. REGIONAL DIRECTOR, REGION 3, BUFFALO, NEW YORK. REGIONAL DIRECTOR, REGION 4, PHILADELPHIA, PENNSYLVANIA. REGIONAL DIRECTOR, REGION 5, BALTIMORE, MARYLAND. REGIONAL DIRECTOR, REGION 6, PITTSBURGH, PENNSYLVANIA. REGIONAL DIRECTOR, REGION 7, DETROIT, MICHIGAN. REGIONAL DIRECTOR, REGION 8, CLEVELAND, OHIO. REGIONAL DIRECTOR, REGION 9, CINCINNATI, OHIO. REGIONAL DIRECTOR, REGION 11, WINSTON SALEM, NORTH CAROLINA. REGIONAL DIRECTOR, REGION 13, CHICAGO, ILLINOIS. REGIONAL DIRECTOR, REGION 14, SAINT LOUIS, MISSOURI. REGIONAL DIRECTOR, REGION 15, NEW ORLEANS, LOUISIANA. REGIONAL DIRECTOR, REGION 16, FORT WORTH, TEXAS. REGIONAL DIRECTOR, REGION 17, KANSAS CITY, KANSAS.[[Page 21603]] REGIONAL DIRECTOR, REGION 18, MINNEAPOLIS, MINNESOTA. REGIONAL DIRECTOR, REGION 19, SEATTLE, WASHINGTON. REGIONAL DIRECTOR, REGION 20, SAN FRANCISCO, CALIFORNIA. REGIONAL DIRECTOR, REGION 21, LOS ANGELES, CALIFORNIA. REGIONAL DIRECTOR, REGION 22, NEWARK, NEW JERSEY. REGIONAL DIRECTOR, REGION 24, HATO REY, PUERTO RICO. REGIONAL DIRECTOR, REGION 25, INDIANAPOLIS, INDIANA. REGIONAL DIRECTOR, REGION 26, MEMPHIS, TENNESSEE. REGIONAL DIRECTOR, REGION 1, BOSTON, MASSACHUSETTS. REGIONAL DIRECTOR, REGION 28, PHOENIX, ARIZONA. REGIONAL DIRECTOR, REGION 29, BROOKLYN, NEW YORK. REGIONAL DIRECTOR, REGION 30, MILWAUKEE, WISCONSIN. REGIONAL DIRECTOR, REGION 32, OAKLAND, CALFORNIA.NATIONAL LABOR RELATIONS OFFICE OF THE BOARD REGIONAL DIRECTOR, BOARD MEMBERS. REGION 12, TAMPA, FLORIDA. DEPUTY EXECUTIVE SECRETARY. EXECUTIVE SECRETARY. DEPUTY CHIEF COUNSEL. CHIEF INFORMATION OFFICER. INSPECTOR GENERAL. OFFICE OF THE ASSOCIATE GENERAL GENERAL COUNSEL. COUNSEL (DAEO).OFFICE OF THE GENERAL DIVISION OF DIRECTOR, DIVISION COUNSEL. ADMINISTRATION. OF ADMINISTRATION. DIRECTOR OF ADMINISTRATION. DIVISION OF ADVICE.. DEPUTY ASSOCIATE GENERAL COUNSEL, DIVISION OF ADVICE. ASSOCIATE GENERAL COUNSEL, DIVISION OF LEGAL COUNSEL. DIVISION OF DEPUTY ASSOCIATE ENFORCEMENT GENERAL COUNSEL, LITIGATION. APPELLATE COURT BRANCH. DIRECTOR, OFFICE OF APPEALS. DIVISION OF ASSISTANT GENERAL OPERATIONS COUNSEL (2). MANAGEMENT. ASSISTANT TO GENERAL COUNSEL (2). DEPUTY ASSOCIATE GENERAL COUNSEL, DIVISION OF OPERATIONS-MANAGEME NT. ASSOCIATE TO THE GENERAL COUNSEL, DIVISION OF OPERATION-MANAGEMEN T.NATIONAL SCIENCE FOUNDATIONDIRECTORATE FOR ENGINEERING. DIVISION OF DEPUTY DIVISION ENGINEERING DIRECTOR. EDUCATION AND CENTERS. DIVISION OF DEPUTY DIVISION INDUSTRIAL DIRECTOR. INNOVATION AND PARTNERSHIPS.DIRECTORATE FOR GEOSCIENCES. DIVISION OF SECTION HEAD NCAR/ ATMOSPHERIC AND FACILITIES SECTION. GEOSPACE SCIENCES. DIVISION OF EARTH SECTION HEAD, SCIENCES. INTEGRATED ACTIVITIES SECTION. DIVISION OF OCEAN SECTION HEAD, SCIENCES. INTEGRATIVE PROGRAMS SECTION. OFFICE OF POLAR HEAD, SECTION FOR PROGRAMS. ANTARCTIC INFRASTRUCTURE AND LOGISTIC.DIRECTORATE FOR MATHEMATICAL DIVISION OF DEPUTY DIVISION AND PHYSICAL SCIENCES. ASTRONOMICAL DIRECTOR. SCIENCES.DIRECTORATE FOR SOCIAL, NATIONAL CENTER FOR DIVISION DIRECTOR. BEHAVIORAL AND ECONOMIC SCIENCE AND SCIENCES. ENGINEERING STATISTICS.NATIONAL SCIENCE FOUNDATION. DIRECTORATE FOR DEPUTY ASSISTANT BIOLOGICAL SCIENCES. DIRECTOR. DIRECTORATE FOR DEPUTY ASSISTANT COMPUTER AND DIRECTOR. INFORMATION SCIENCE AND ENGINEERING.[[Page 21604]] DIRECTORATE FOR DEPUTY ASSISTANT GEOSCIENCES. DIRECTOR. DIRECTORATE FOR DEPUTY ASSISTANT MATHEMATICAL AND DIRECTOR. PHYSICAL SCIENCES. DIRECTORATE FOR DEPUTY ASSISTANT SOCIAL, BEHAVIORAL DIRECTOR. AND ECONOMIC SCIENCES. OFFICE OF BUDGET, DEPUTY OFFICE HEAD. FINANCE AND AWARD CHIEF FINANCIAL MANAGEMENT. OFFICER AND HEAD, OFFICE OF BUDGET, FINANCE AND AWARD MANAGEMENT. OFFICE OF DEPUTY OFFICE HEAD. INFORMATION AND HEAD, OFFICE OF RESOURCE MANAGEMENT. INFORMATION AND RESOURCE MANAGEMENT AND CHIEF HUMAN CAPITAL OFFICER.OFFICE OF BUDGET, FINANCE BUDGET DIVISION..... DIVISION DIRECTOR. AND AWARD MANAGEMENT. DEPUTY DIRECTOR. DIVISION OF DIVISION DIRECTOR. ACQUISITION AND DEPUTY DIVISION COOPERATIVE SUPPORT. DIRECTOR. DIVISION OF CONTROLLER AND FINANCIAL DEPUTY DIVISION MANAGEMENT. DIRECTOR. DEPUTY CHIEF FINANCIAL OFFICER AND DIVISION DIRECTOR. DIVISION OF GRANTS DIVISION DIRECTOR. AND AGREEMENTS. DEPUTY DIVISION DIRECTOR. DIVISION OF DEPUTY DIVISION INSTITUTIONAL AND DIRECTOR AWARD SUPPORT. DIVISION DIRECTOR.OFFICE OF INFORMATION AND DIVISION OF DIVISION DIRECTOR. RESOURCE MANAGEMENT. ADMINISTRATIVE DEPUTY DIVISION SERVICES. DIRECTOR. DIVISION OF HUMAN DIVISION DIRECTOR. RESOURCE MANAGEMENT. DEPUTY DIVISION DIRECTOR. DIVISION OF DEPUTY DIVISION INFORMATION SYSTEMS. DIRECTOR.OFFICE OF THE DIRECTOR...... OFFICE OF DIVERSITY OFFICE HEAD. AND INCLUSION. OFFICE OF THE DESIGNATED AGENCY GENERAL COUNSEL. ETHICS OFFICIAL. DEPUTY GENERAL COUNSEL.NATIONAL SCIENCE FOUNDATION OFFICE OF THE INSPECTOR GENERAL NATIONAL SCIENCE ASSISTANT INSPECTOR FOUNDATION OFFICE GENERAL FOR OF THE INSPECTOR MANAGEMENT/CHIEF GENERAL. INFORMATION OFFICER. INSPECTOR GENERAL. DEPUTY INSPECTOR GENERAL AND COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. ASSISTANT INSPECTOR GENERAL FOR AUDIT.NATIONAL TRANSPORTATION SAFETY BOARDOFFICE OF BOARD MEMBERS..... OFFICE OF CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER. OFFICE OF SAFETY DEPUTY DIRECTOR, RECOMMENDATIONS AND OFFICE OF SAFETY COMMUNICATIONS. RECOMMENDATIONS AND COMMUNICATIONS. OFFICE OF THE DEPUTY MANAGING MANAGING DIRECTOR. DIRECTOR FOR INVESTIGATIONS. SENIOR ADVISOR FOR POLICY AND STRATEGIC INITIATIVES. PRINCIPAL DEPUTY MANAGING DIRECTOR.OFFICE OF THE MANAGING OFFICE OF DIRECTOR, OFFICE OF DIRECTOR. ADMINISTRATION. ADMINISTRATION. OFFICE OF AVIATION DEPUTY DIRECTOR, SAFETY. REGIONAL OPERATIONS. DEPUTY DIRECTOR, OFFICE OF AVIATION SAFETY. DIRECTOR OFFICE OF AVIATION SAFETY. OFFICE OF CHIEF CHIEF INFORMATION INFORMATION OFFICER. OFFICER. OFFICE OF HIGHWAY DIRECTOR, OFFICE OF SAFETY. HIGHWAY SAFETY. OFFICE OF MARINE DIRECTOR, OFFICE OF SAFETY. MARINE SAFETY. OFFICE OF RAILROAD, DIRECTOR, OFFICE OF PIPELINE AND RAILROAD, PIPELINE HAZARDOUS MATERIALS AND HAZARDOUS INVESTIGATIONS. MATERIALS INVESTIGATIONS.[[Page 21605]] OFFICE OF RESEARCH DEPUTY DIRECTOR AND ENGINEERING. OFFICE OF RESEARCH AND ENGINEERING. DIRECTOR OFFICE OF RESEARCH AND ENGINEERING.NUCLEAR REGULATORY COMMISSION OFFICE OF DIRECTOR, DIVISION ADMINISTRATION. OF FACILITIES AND SECURITY. DIRECTOR, ACQUISITION MANAGEMENT DIVISION. DEPUTY DIRECTOR, OFFICE OF ADMINISTRATION. OFFICE OF COMMISSION DIRECTOR, OFFICE OF APPELLATE COMMISSION ADJUDICATION. APPELLATE ADJUDICATION. OFFICE OF NUCLEAR DIRECTOR, DIVISION MATERIAL SAFETY AND OF RULEMAKING, SAFEGUARDS. ENVIRONMENTAL, AND FINANCIAL SUPPORT. DEPUTY DIRECTOR, DIVISION OF RULEMAKING, ENVIRONMENTAL, AND FINANCIAL SUPPORT. DIRECTOR, DIVISION OF MATERIALS SAFETY, STATE, TRIBAL, AND RULEMAKING PROGRAMS. DEPUTY DIRECTOR, DIVISION OF FUEL MANAGEMENT. DIRECTOR, DIVISION OF DECOMMISSIONING, URANIUM RECOVERY, AND WASTE PROGRAMS. DEPUTY DIRECTOR, DIVISION OF DECOMMISSIONING, URANIUM RECOVERY, AND WASTE PROGRAMS. DEPUTY DIRECTOR, DIVISION OF MATERIALS SAFETY, STATE, TRIBAL, AND RULEMAKING PROGRAMS. OFFICE OF NUCLEAR DEPUTY OFFICE REACTOR REGULATION. DIRECTOR FOR ENGINEERING. DEPUTY OFFICE DIRECTOR FOR REACTOR SAFETY PROGRAMS AND MISSION SUPPORT. DIRECTOR, DIVISION OF SAFETY SYSTEMS. DEPUTY DIRECTOR, DIVISION OF SAFETY SYSTEMS. DEPUTY DIRECTOR, DIVISION OF ENGINEERING AND EXTERNAL HAZARDS. DEPUTY OFFICE DIRECTOR FOR NEW REACTORS. DIRECTOR, DIVISION OF OPERATING REACTOR LICENSING. DEPUTY DIRECTOR, DIVISION OF OPERATING REACTOR LICENSING (2). DIRECTOR, DIVISION OF REACTOR OVERSIGHT. DIRECTOR, DIVISION OF RISK ASSESSMENT. DIRECTOR, DIVISION OF NEW AND RENEWED LICENSE. DIRECTOR, DIVISION OF ENGINEERING AND EXTERNAL HAZARDS. DEPUTY DIRECTOR, DIVISION OF NEW AND RENEWED LICENSES. DIRECTOR, VOGTLE 3 AND 4 PROJECT OFFICE. DEPUTY DIRECTOR, DIVISION OF ADVANCED REACTORS AND NON-POWER PRODUCTION AND UTILIZATION FACILITIES. DIRECTOR, DIVISION OF ADVANCED REACTORS AND NON- POWER PRODUCTION AND UTILIZATION FACILITIES. DEPUTY DIRECTOR, DIVISION OF REACTOR OVERSIGHT. DEPUTY DIRECTOR, DIVISION OF RISK ASSESSMENT.[[Page 21606]] OFFICE OF NUCLEAR DIRECTOR, DIVISION REGULATORY RESEARCH. OF ENGINEERING. DIRECTOR, DIVISION OF SYSTEMS ANALYSIS. DEPUTY DIRECTOR, DIVISION OF SYSTEMS ANALYSIS. DIRECTOR, DIVISION OF RISK ANALYSIS. DEPUTY DIRECTOR, DIVISION OF RISK ANALYSIS. DEPUTY DIRECTOR, DIVISION OF ENGINEERING. OFFICE OF NUCLEAR DEPUTY DIRECTOR, SECURITY AND DIVISION OF INCIDENT RESPONSE. SECURITY OPERATIONS. DEPUTY DIRECTOR, OFFICE OF NUCLEAR SECURITY AND INCIDENT RESPONSE. DIRECTOR, DIVISION OF PREPAREDNESS AND RESPONSE. DIRECTOR, DIVISION OF PHYSICAL AND CYBERSECURITY POLICY. DEPUTY DIRECTOR, DIVISION OF PHYSICAL AND CYBERSECURITY POLICY. DIRECTOR, DIVISION OF SECURITY OPERATIONS. DEPUTY DIRECTOR, DIVISION OF PREPAREDNESS AND RESPONSE. OFFICE OF SMALL DIRECTOR, OFFICE OF BUSINESS AND CIVIL SMALL BUSINESS AND RIGHTS. CIVIL RIGHTS. OFFICE OF THE CHIEF COMPTROLLER. FINANCIAL OFFICER. DEPUTY CHIEF FINANCIAL OFFICER. BUDGET DIRECTOR. OFFICE OF THE CHIEF DIRECTOR, GOVERNANCE INFORMATION OFFICER. AND ENTERPRISE MANAGEMENT SERVICES DIVISION. DIRECTOR, IT SERVICES DEVELOPMENT AND OPERATIONS DIVISION. REGION I............ DEPUTY REGIONAL ADMINISTRATOR. DIRECTOR, DIVISION OF REACTOR PROJECTS. DIRECTOR DIVISION OF REACTOR SAFETY. DEPUTY DIRECTOR, DIVISION OF REACTOR SAFETY. DIRECTOR, DIVISION OF NUCLEAR MATERIALS SAFETY. DEPUTY DIRECTOR, DIVISION OF REACTOR PROJECTS. REGION II........... DEPUTY DIRECTOR, DIVISION OF REACTOR PROJECTS. DIRECTOR, DIVISION OF REACTOR PROJECTS. DIRECTOR, DIVISION OF REACTOR SAFETY. DIRECTOR, DIVISION OF CONSTRUCTION OVERSIGHT. DEPUTY REGIONAL ADMINISTRATOR. DEPUTY DIRECTOR, DIVISION OF REACTOR SAFETY. REGION III.......... DEPUTY DIRECTOR, DIVISION OF REACTOR SAFETY. DEPUTY DIRECTOR, DIVISION OF REACTOR PROJECTS. DEPUTY REGIONAL ADMINISTRATOR. DIRECTOR, DIVISION OF REACTOR SAFETY. DIRECTOR, DIVISION OF REACTOR PROJECTS. DEPUTY DIRECTOR, DIVISION OF REACTOR SAFETY. DIRECTOR, DIVISION OF NUCLEAR MATERIALS SAFETY.[[Page 21607]] REGION IV........... DIRECTOR, DIVISION OF NUCLEAR MATERIALS SAFETY. DEPUTY DIRECTOR, DIVISION OF REACTOR PROJECTS. DIRECTOR DIVISION OF REACTOR PROJECTS. ASSISTANT TO THE REGIONAL ADMINISTRATOR. DEPUTY REGIONAL ADMINISTRATOR. DEPUTY DIRECTOR, DIVISION OF REACTOR SAFETY. DIRECTOR, DIVISION OF REACTOR SAFETY.NUCLEAR REGULATORY COMMISSION OFFICE OF THE INSPECTOR GENERAL NUCLEAR REGULATORY DEPUTY INSPECTOR COMMISSION OFFICE GENERAL. OF THE INSPECTOR GENERAL.NUCLEAR REGULATORY ASSISTANT INSPECTOR ASSISTANT INSPECTOR COMMISSION OFFICE OF THE GENERAL FOR AUDITS. GENERAL FOR AUDITS. INSPECTOR GENERAL. ASSISTANT INSPECTOR ASSISTANT INSPECTOR GENERAL FOR GENERAL FOR INVESTIGATIONS. INVESTIGATIONS.OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSIONOCCUPATIONAL SAFETY AND OFFICE OF THE EXECUTIVE DIRECTOR. HEALTH REVIEW COMMISSION. EXECUTIVE DIRECTOR.OFFICE OF GOVERNMENT ETHICS OFFICE OF GOVERNMENT DEPUTY GENERAL ETHICS. COUNSEL. CHIEF OF STAFF AND PROGRAM COUNSEL. DEPUTY DIRECTOR FOR COMPLIANCE.OFFICE OF MANAGEMENT AND BUDGETGENERAL GOVERNMENT PROGRAMS. HOUSING, TREASURY DEPUTY ASSOCIATE AND COMMERCE DIRECTOR FOR DIVISION. HOUSING, TREASURY AND COMMERCE. CHIEF, COMMERCE BRANCH. CHIEF, HOUSING BRANCH. CHIEF, TREASURY BRANCH TRANSPORTATION, CHIEF TRANSPORTATION HOMELAND, JUSTICE BRANCH. AND SERVICES CHIEF, JUSTICE DIVISION. BRANCH. CHIEF, TRANSPORTATION/ GENERAL SERVICES ADMINISTRATION BRANCH. DEPUTY ASSOCIATE DIRECTOR, TRANSPORTATION, HOMELAND, JUSTICE AND SERVICES. CHIEF, HOMELAND SECURITY BRANCH.HUMAN RESOURCE PROGRAMS..... HEALTH DIVISION..... DEPUTY ASSOCIATE DIRECTOR FOR HEALTH. CHIEF, MEDICARE BRANCH. CHIEF, MEDICAID BRANCH. CHIEF, HEALTH INSURANCE AND DATA ANALYSIS BRANCH. CHIEF, HEALTH AND HUMAN SERVICES BRANCH. CHIEF, PUBLIC HEALTH BRANCH.NATIONAL SECURITY PROGRAMS.. INTERNATIONAL CHIEF, STATE/UNITED AFFAIRS DIVISION. STATES INFORMATION AGENCY BRANCH. DEPUTY ASSOCIATE DIRECTOR FOR INTERNATIONAL AFFAIRS. CHIEF, ECONOMIC AFFAIRS BRANCH. NATIONAL SECURITY CHIEF, INTELLIGENCE DIVISION. PROGRAMS BRANCH. CHIEF, FORCE STRUCTURE AND INVESTMENT BRANCH. CHIEF, VETERANS AFFAIRS AND DEFENSE HEALTH BRANCH. CHIEF, DEFENSE OPERATIONS, PERSONNEL, AND SUPPORT. CHIEF OPERATIONS AND SUPPORT BRANCH. DEPUTY ASSOCIATE DIRECTOR FOR NATIONAL SECURITY.NATURAL RESOURCE PROGRAMS... ENERGY, SCIENCE AND CHIEF SCIENCE AND WATER DIVISION. SPACE PROGRAMS BRANCH. DEPUTY ASSOCIATE DIRECTOR FOR ENERGY, SCIENCE, AND WATER DIVISION.[[Page 21608]] CHIEF, ENERGY BRANCH. CHIEF, WATER AND POWER BRANCH. NATURAL RESOURCES CHIEF INTERIOR DIVISION. BRANCH. CHIEF, ENVIRONMENT BRANCH. DEPUTY ASSOCIATE DIRECTOR FOR NATURAL RESOURCES. CHIEF, ***AGRICULTURE*** BRANCH.OFFICE OF INFORMATION AND OFFICE OF E- CHIEF ARCHITECT. REGULATORY AFFAIRS. GOVERNMENT AND INFORMATION TECHNOLOGY.OFFICE OF MANAGEMENT AND OFFICE OF THE EXECUTIVE SECRETARY. BUDGET. DIRECTOR. SENIOR ADVISOR (3). STAFF OFFICES....... ASSISTANT DIRECTOR FOR MANAGEMENT AND OPERATIONS. DEPUTY ASSOCIATE DIRECTOR FOR ECONOMIC POLICY. DEPUTY ASSISTANT DIRECTOR FOR MANAGEMENT.OFFICE OF THE DIRECTOR...... BUDGET REVIEW....... CHIEF BUDGET ANALYSIS BRANCH. CHIEF, BUDGET CONCEPTS BRANCH ASSISTANT DIRECTOR FOR BUDGET REVIEW DEPUTY ASSISTANT DIRECTOR FOR BUDGET REVIEW CHIEF, BUDGET SYSTEMS BRANCH DEPUTY CHIEF BUDGET ANALYSIS BRANCH CHIEF, BUDGET REVIEW BRANCH DEPUTY CHIEF, BUDGET REVIEW BRANCH EDUCATION, INCOME CHIEF, LABOR BRANCH. MAINTENANCE AND CHIEF, EDUCATION LABOR PROGRAMS. BRANCH. DEPUTY ASSOCIATE DIRECTOR FOR EDUCATION, INCOME MAINTENANCE AND LABOR. CHIEF, INCOME MAINTENANCE BRANCH. LEGISLATIVE ASSISTANT DIRECTOR REFERENCE DIVISION. LEGISLATIVE REFERENCE. CHIEF, RESOURCES-- DEFENSE- INTERNATIONAL BRANCH. CHIEF, ECONOMICS, SCIENCE AND GOVERNMENT BRANCH. CHIEF, HEALTH, EDUCATION, VETERANS, AND SOCIAL PROGRAMS BRANCH. OFFICE OF FEDERAL CHIEF, FINANCIAL FINANCIAL INTEGRITY AND RISK MANAGEMENT. MANAGEMENT BRANCH. OFFICE OF FEDERAL ASSOCIATE PROCUREMENT POLICY. ADMINISTRATOR. DEPUTY ADMINISTRATOR FOR FEDERAL PROCUREMENT POLICY. OFFICE OF CHIEF, INFORMATION INFORMATION AND POLICY BRANCH. REGULATORY AFFAIRS. CHIEF STATISTICAL AND SCIENCE POLICY BRANCH. CHIEF, NATURAL RESOURCES AND ENVIRONMENT BRANCH. CHIEF, PRIVACY BRANCH. CHIEF, FOOD, HEALTH AND LABOR BRANCH.OFFICE OF NATIONAL DRUG CONTROL POLICY OFFICE OF MANAGEMENT ASSISTANT DIRECTOR AND ADMINISTRATION. FOR THE OFFICE OF MANAGEMENT AND ADMINISTRATION. OFFICE OF ASSISTANT DIRECTOR PERFORMANCE AND FOR OFFICE OF BUDGET. PERFORMANCE AND BUDGET. OFFICE OF SUPPLY ASSOCIATE DIRECTOR REDUCTION. FOR INTELLIGENCE.OFFICE OF PERSONNEL MANAGEMENT FACILITIES, SECURITY DIRECTOR, AND EMERGENCY FACILITIES, MANAGEMENT. SECURITY AND EMERGENCY MANAGEMENT. HEALTHCARE AND ASSISTANT DIRECTOR, INSURANCE. FEDERAL EMPLOYEE INSURANCE OPERATIONS. DEPUTY DIRECTOR, ACTUARY.[[Page 21609]] MERIT SYSTEM DEPUTY ASSOCIATE ACCOUNTABILITY AND DIRECTOR, MERIT COMPLIANCE. SYSTEM AUDIT AND COMPLIANCE. PRINCIPAL DEPUTY ASSOCIATE DIRECTOR. OFFICE OF DIRECTOR, OFFICE OF PROCUREMENT PROCUREMENT OPERATIONS. OPERATIONS. OFFICE OF THE CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER AND DEPUTY CHIEF MANAGEMENT OFFICER. ASSOCIATE CHIEF FINANCIAL OFFICER FINANCIAL SERVICES. DEPUTY CHIEF FINANCIAL OFFICER. RETIREMENT SERVICES. DEPUTY ASSOCIATE DIRECTOR, OPERATIONS. ASSOCIATE DIRECTOR, RETIREMENT SERVICES. DEPUTY ASSOCIATE DIRECTOR, RETIREMENT OPERATIONS.OFFICE OF PERSONNEL MANAGEMENT OFFICE OF THE INSPECTOR GENERALOFFICE OF MANAGEMENT........ OFFICE OF MANAGEMENT ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. CHIEF INFORMATION TECHNOLOGY OFFICER. DEPUTY ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT.OFFICE OF AUDITS............ OFFICE OF AUDITS.... DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDITS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDITS. ASSISTANT INSPECTOR GENERAL FOR AUDITS.OFFICE OF INVESTIGATIONS.... OFFICE OF ASSISTANT INSPECTOR INVESTIGATIONS. GENERAL FOR INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS.OFFICE OF LEGISLATIVE AND OFFICE OF ASSISTANT INSPECTOR LEGAL AFFAIRS. LEGISLATIVE AND GENERAL FOR LEGAL AFFAIRS. LEGISLATIVE AND LEGAL AFFAIRS.OFFICE OF THE INSPECTOR OFFICE OF ASSISTANT INSPECTOR GENERAL. EVALUATIONS. GENERAL FOR EVALUATIONS. OFFICE OF THE DEPUTY INSPECTOR INSPECTOR GENERAL. GENERAL.OFFICE OF SPECIAL COUNSEL HEADQUARTERS, OFFICE ASSOCIATE SPECIAL OF SPECIAL COUNSEL. COUNSEL FOR GENERAL LAW DIVISION. CHIEF FINANCIAL OFFICER AND DIRECTOR OF ADMINISTRATIVE SERVICES. ASSOCIATE SPECIAL COUNSEL FOR INVESTIGATION AND PROSECUTION. CHIEF OPERATING OFFICER. ASSOCIATE SPECIAL COUNSEL (GENERAL LAW). ASSOCIATE SPECIAL COUNSEL FOR INVESTIGATION AND PROSECUTION (HEADQUARTERS). DIRECTOR OF MANAGEMENT AND BUDGET. DIRECTOR, OFFICE OF PLANNING AND ANALYSIS. ASSOCIATE SPECIAL COUNSEL FOR INVESTIGATION AND PROSECUTION. SENIOR ASSOCIATE SPECIAL COUNSEL FOR INVESTIGATION AND PROSECUTION. ASSOCIATE SPECIAL COUNSEL FOR INVESTIGATION AND PROSECUTION. ASSOCIATE SPECIAL COUNSEL FOR LEGAL COUNSEL AND POLICY. OFFICE OF SPECIAL ASSOCIATE SPECIAL COUNSEL. COUNSEL FOR INVESTIGATION AND PROSECUTION (FIELD OFFICES).SURFACE TRANSPORTATION BOARD[[Page 21610]] SURFACE DIRECTOR, OFFICE OF TRANSPORTATION PROCEEDINGS. BOARD. DEPUTY DIRECTOR OFFICE OF PROCEEDINGS. DIRECTOR OF PUBLIC ASSISTANT GOVERNMENT AFFAIRS AND COMPLIANCE. GENERAL COUNSEL. MANAGING DIRECTOR. DIRECTOR, OFFICE OF ECONOMICS.OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE INDUSTRY, MARKET ASSISTANT UNITED ACCESS AND STATES TRADE TELECOMMUNICATIONS. REPRESENTATIVE FOR INDUSTRY, MARKET ACCESS AND TELECOMMUNICATIONS. LABOR............... ASSISTANT UNITED STATES TRADE REPRESENTATIVE FOR LABOR. MONITORING AND DIRECTOR OF ENFORCEMENT. INTERAGENCY CENTER FOR TRADE IMPLEMENTATION, MONITORING, AND ENFORCEMENT.RAILROAD RETIREMENT BOARD BOARD STAFF......... CHIEF OF TECHNOLOGY SERVICE. CHIEF ACTUARY. DIRECTOR OF FIELD SERVICE. DIRECTOR OF ADMINISTRATION. CHIEF FINANCIAL OFFICER. GENERAL COUNSEL. DIRECTOR OF PROGRAMS. CHIEF INFORMATION OFFICER. DIRECTOR OF OPERATIONS. DIRECTOR OF FISCAL OPERATIONS. DEPUTY GENERAL COUNSEL.RAILROAD RETIREMENT BOARD OFFICE OF THE INSPECTOR GENERALOFFICE OF INSPECTOR GENERAL. OFFICE OF INSPECTOR ASSISTANT TO THE GENERAL. INSPECTOR GENERAL FOR AUDIT. ASSISTANT TO THE INSPECTOR GENERAL FOR INVESTIGATIONS. GENERAL COUNSEL-- DEPUTY INSPECTOR GENERAL.SELECTIVE SERVICE SYSTEM SELECTIVE SERVICE ASSOCIATE DIRECTOR SYSTEM. FOR OPERATIONS. OFFICE OF THE ASSOCIATE DIRECTOR DIRECTOR. FOR OPERATIONS. SENIOR ADVISOR TO THE DIRECTOR.SMALL BUSINESS ADMINISTRATIONOFFICE OF MANAGEMENT AND OFFICE OF HUMAN DEPUTY CHIEF HUMAN ADMINISTRATION. RESOURCES SOLUTIONS. CAPITAL OFFICER CHIEF HUMAN CAPITAL OFFICER.OFFICE OF THE ADMINISTRATOR. OFFICE OF DEPUTY ASSOCIATE ENTREPRENEURIAL ADMINISTRATOR FOR DEVELOPMENT. ENTREPRENEURIAL DEVELOPMENT. OFFICE OF FIELD DISTRICT DIRECTOR OPERATIONS. WASHINGTON METRO AREA DISTRICT OFFICE. OFFICE OF GOVERNMENT DIRECTOR FOR POLICY CONTRACTING AND PLANNING AND BUSINESS LIAISON. DEVELOPMENT. DIRECTOR OF HUBZONE EMPOWERMENT PROGRAM. DEPUTY ASSOCIATE ADMINISTRATOR FOR GOVERNMENT CONTRACTING AND BUSINESS DEVELOPMENT. OFFICE OF HEARINGS ASSISTANT AND APPEALS. ADMINISTRATOR FOR HEARINGS AND APPEALS. OFFICE OF DEPUTY ASSOCIATE INTERNATIONAL TRADE. ADMINISTRATOR FOR INTERNATIONAL TRADE. OFFICE OF INVESTMENT DEPUTY ASSISTANT AND INNOVATION. ADMINISTRATOR FOR INVESTMENT AND INNOVATION. OFFICE OF THE CHIEF DEPUTY CHIEF FINANCIAL OFFICER. FINANCIAL OFFICER. CHIEF FINANCIAL OFFICER. OFFICE OF THE CHIEF DEPUTY CHIEF INFORMATION OFFICER. INFORMATION OFFICER.[[Page 21611]] OFFICE OF THE ASSOCIATE GENERAL GENERAL COUNSEL. COUNSEL FOR FINANCIAL LAW AND LENDER OVERSIGHT. ASSOCIATE GENERAL COUNSEL FOR GENERAL LAW. ASSOCIATE GENERAL COUNSEL FOR PROCUREMENT LAW. ASSOCIATE GENERAL COUNSEL LITIGATION.SMALL BUSINESS ADMINISTRATION OFFICE OF THE INSPECTOR GENERAL SMALL BUSINESS ASSISTANT INSPECTOR ADMINISTRATION GENERAL FOR OFFICE OF THE MANAGEMENT AND INSPECTOR GENERAL. OPERATIONS. COUNSEL TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. DEPUTY INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR AUDITS.SOCIAL SECURITY ADMINISTRATIONOFFICE OF ANALYTICS, REVIEW, OFFICE OF APPELLATE EXECUTIVE DIRECTOR, AND OVERSIGHT. OPERATIONS. OFFICE OF APPELLATE OPERATIONS. DEPUTY EXECUTIVE DIRECTOR, OFFICE OF APPELLATE OPERATIONS. OFFICE OF PROGRAM ASSOCIATE INTEGRITY. COMMISSIONER FOR PROGRAM INTEGRITY.OFFICE OF BUDGET, FINANCE, OFFICE OF ASSOCIATE AND MANAGEMENT. ACQUISITION AND COMMISSIONER FOR GRANTS. ACQUISITION AND GRANTS. DEPUTY ASSOCIATE COMMISSIONER FOR ACQUISITION AND GRANTS. OFFICE OF BUDGET.... ASSOCIATE COMMISSIONER FOR BUDGET. DEPUTY ASSOCIATE COMMISSIONER FOR BUDGET. OFFICE OF FINANCIAL DEPUTY ASSOCIATE POLICY AND COMMISSIONER OPERATIONS. FINANCIAL POLICY AND OPERATIONS. ASSOCIATE COMMISSIONER, OFFICE OF FINANCE POLICY AND OPERATIONS.OFFICE OF HUMAN RESOURCES... OFFICE OF CIVIL DEPUTY ASSOCIATE RIGHTS AND EQUAL COMMISSIONER FOR OPPORTUNITY. CIVIL RIGHTS AND EQUAL OPPORTUNITY. ASSOCIATE COMMISSIONER FOR CIVIL RIGHTS AND EQUAL OPPORTUNITY. OFFICE OF LABOR-- DEPUTY ASSOCIATE MANAGEMENT AND COMMISSIONER FOR EMPLOYEE RELATIONS. LABOR-MANAGEMENT AND EMPLOYEE RELATIONS. ASSOCIATE COMMISSIONER FOR LABOR--MANAGEMENT AND EMPLOYEE RELATIONS. OFFICE OF PERSONNEL. ASSOCIATE COMMISSIONER FOR PERSONNEL. DEPUTY ASSOCIATE COMMISSIONER FOR PERSONNEL.OFFICE OF OPERATIONS........ OFFICE OF DISABILITY DEPUTY ASSOCIATE DETERMINATIONS. COMMISSIONER FOR DISABILITY DETERMINATIONS. ASSOCIATE COMMISSIONER FOR DISABILITY DETERMINATIONS.OFFICE OF SYSTEMS........... OFFICE OF ASSOCIATE INFORMATION COMMISSIONER FOR SECURITY. INFORMATION SECURITY. OFFICE OF DEPUTY ASSOCIATE INFORMATION COMMISSIONER FOR TECHNOLOGY INFORMATION FINANCIAL TECHNOLOGY MANAGEMENT AND FINANCIAL SUPPORT. MANAGEMENT AND SUPPORT. ASSOCIATE COMMISSIONER FOR INFORMATION TECHNOLOGY FINANCIAL MANAGEMENT AND SUPPORT.[[Page 21612]] OFFICE OF SYSTEMS DEPUTY ASSOCIATE OPERATIONS AND COMMISSIONER FOR HARDWARE SYSTEMS OPERATIONS ENGINEERING. AND HARDWARE ENGINEERING (END USER). DEPUTY ASSOCIATE COMMISSIONER FOR SYSTEMS OPERATIONS AND HARDWARE ENGINEERING (OPERATIONS). ASSOCIATE COMMISSIONER FOR SYSTEMS OPERATIONS AND HARDWARE ENGINEERING. DEPUTY ASSOCIATE COMMISSIONER FOR SYSTEMS OPERATIONS AND HARDWARE ENGINEERING (INFRASTRUCTURE).OFFICE OF THE GENERAL OFFICE OF GENERAL ASSOCIATE GENERAL COUNSEL. LAW. COUNSEL FOR GENERAL LAW. DEPUTY ASSOCIATE GENERAL COUNSEL FOR GENERAL LAW. OFFICE OF PRIVACY EXECUTIVE DIRECTOR AND DISCLOSURE. FOR PRIVACY AND DISCLOSURE. OFFICE OF PROGRAM DEPUTY ASSOCIATE LAW. GENERAL COUNSEL FOR PROGRAM LAW.SOCIAL SECURITY OFFICE OF ANALYTICS, DEPUTY COMMISSIONER ADMINISTRATION. REVIEW, AND FOR ANALYTICS, OVERSIGHT. REVIEW, AND OVERSIGHT. ASSISTANT DEPUTY COMMISSIONER FOR ANALYTICS, REVIEW, AND OVERSIGHT. OFFICE OF BUDGET, ASSISTANT DEPUTY FINANCE, AND COMMISSIONER FOR MANAGEMENT. BUDGET, FINANCE, AND MANAGEMENT. OFFICE OF HEARINGS ASSISTANT DEPUTY OPERATIONS. COMMISSIONER FOR HEARINGS OPERATIONS (MISSION SUPPORT). DEPUTY COMMISSIONER FOR HEARINGS OPERATIONS. ASSISTANT DEPUTY COMMISSIONER FOR HEARINGS OPERATIONS (MISSION OPERATIONS). ASSISTANT DEPUTY COMMISSIONER FOR HEARINGS OPERATIONS. OFFICE OF THE CHIEF CHIEF ACTUARY. ACTUARY. DEPUTY CHIEF ACTUARY. OFFICE OF THE GENERAL COUNSEL. GENERAL COUNSEL. DEPUTY GENERAL COUNSEL (GENERAL LAW). DEPUTY GENERAL COUNSEL (PROGRAM LAW).SOCIAL SECURITY ADMINISTRATION OFFICE OF THE INSPECTOR GENERALSOCIAL SECURITY IMMEDIATE OFFICE OF CHIEF OF STAFF. ADMINISTRATION OFFICE OF THE INSPECTOR SPECIAL ADVISOR TO THE INSPECTOR GENERAL. GENERAL. THE INSPECTOR GENERAL. SENIOR ADVISOR TO THE INSPECTOR GENERAL (LE). DEPUTY INSPECTOR GENERAL. OFFICE OF AUDIT..... ASSISTANT INSPECTOR GENERAL FOR AUDIT. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (FINANCIAL AND INFORMATION TECHNOLOGY SYSTEMS AND OPERATIONS AUDITS). DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (PROGRAM AUDITS AND EVALUATIONS. OFFICE OF COUNSEL COUNSEL FOR FOR INVESTIGATIONS INVESTIGATIONS AND AND ENFORCEMENT. ENFORCEMENT. OFFICE OF COUNSEL TO COUNSEL TO THE THE INSPECTOR INSPECTOR GENERAL. GENERAL.[[Page 21613]] OFFICE OF DEPUTY ASSISTANT INVESTIGATIONS. INSPECTOR GENERAL FOR INVESTIGATIONS (WESTERN FIELD OPERATIONS). DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS (EASTERN FIELD OPERATIONS). ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS (WESTERN FIELD OPERATIONS). OFFICE OF RESOURCE ASSISTANT INSPECTOR MANAGEMENT. GENERAL FOR RESOURCE MANAGEMENT. DEPUTY ASSISTANT INSPECTOR GENERAL FOR RESOURCE MANAGEMENT.DEPARTMENT OF STATEOFFICE OF THE DEPUTY OFFICE OF UNITED MANAGING DIRECTOR. SECRETARY. STATES FOREIGN ASSISTANCE.OFFICE OF THE SECRETARY..... BUREAU OF OFFICE DIRECTOR. INTELLIGENCE AND RESEARCH. OFFICE OF THE UNDER ASSOCIATE DEAN. SECRETARY FOR DEPUTY DIRECTOR. MANAGEMENT. OMBUDSMAN. OFFICE OF THE UNDER PRINCIPAL DEPUTY SECRETARY FOR COORDINATOR. PUBLIC DIPLOMACY DEPUTY COORDINATOR AND PUBLIC AFFAIRS. FOR POLICY, PLANS, AND OPERATIONS.OFFICE OF THE UNDER BUREAU OF ARMS DIRECTOR, OFFICE OF SECRETARY FOR ARMS CONTROL CONTROL, STRATEGIC AND INTERNATIONAL SECURITY VERIFICATION, AND NEGOTIATIONS AND AFFAIRS. COMPLIANCE. IMPLEMENTATION. BUREAU OF DEPUTY ASSISTANT INTERNATIONAL SECRETARY. SECURITY AND OFFICE DIRECTOR (2). NONPROLIFERATION. BUREAU OF POLITICAL-- DEPUTY ASSISTANT MILITARY AFFAIRS. SECRETARY.OFFICE OF THE UNDER BUREAU OF OCEANS AND DEPUTY ASSISTANT SECRETARY FOR CIVILIAN INTERNATIONAL SECRETARY. SECURITY, DEMOCRACY, AND ENVIRONMENTAL AND HUMAN RIGHTS. SCIENTIFIC AFFAIRS.OFFICE OF THE UNDER BUREAU OF PROCUREMENT SECRETARY FOR MANAGEMENT. ADMINISTRATION. EXECUTIVE. BUREAU OF DIPLOMATIC SENIOR COORDINATOR. SECURITY. BUREAU OF GLOBAL HUMAN RESOURCES TALENT MANAGEMENT. OFFICER. OFFICE DIRECTOR. BUREAU OF OVERSEAS COMPTROLLER. BUILDINGS OPERATIONS.DEPARTMENT OF STATE OFFICE OF THE INSPECTOR GENERAL DEPARTMENT OF STATE DEPUTY ASSISTANT OFFICE OF THE INSPECTOR GENERAL INSPECTOR GENERAL. FOR EVALUATIONS AND SPECIAL PROJECTS. CHIEF OF STAFF.DEPARTMENT OF STATE OFFICE OFFICE OF INSPECTOR ASSISTANT INSPECTOR OF THE INSPECTOR GENERAL. GENERAL. GENERAL FOR ENTERPRISE RISK MANAGEMENT. DEPUTY INSPECTOR GENERAL. DEPUTY ASSISTANT INSPECTOR GENERAL FOR MIDDLE EAST REGIONAL OFFICE. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INSPECTIONS. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. DEPUTY GENERAL COUNSEL. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INSPECTIONS. ASSISTANT INSPECTOR GENERAL FOR EVALUATIONS AND SPECIAL PROJECTS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. ASSISTANT INSPECTOR GENERAL FOR INSPECTIONS. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. GENERAL COUNSEL TO THE INSPECTOR GENERAL.[[Page 21614]] ASSISTANT INSPECTOR GENERAL FOR AUDITS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDITS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS.TRADE AND DEVELOPMENT AGENCY TRADE AND DIRECTOR OF DEVELOPMENT AGENCY. MANAGEMENT OPERATIONS.OFFICE OF THE DIRECTOR...... OFFICE OF THE GENERAL COUNSEL. GENERAL COUNSEL. OFFICE OF THE DEPUTY DIRECTOR. DIRECTOR.DEPARTMENT OF TRANSPORTATIONASSISTANT SECRETARY FOR OFFICE OF THE SENIOR SENIOR PROCUREMENT ADMINISTRATION. PROCUREMENT EXECUTIVE. EXECUTIVE.ASSISTANT SECRETARY FOR OFFICE OF BUDGET AND DIRECTOR OFFICE OF BUDGET AND PROGRAMS. PROGRAM PERFORMANCE. BUDGET AND PROGRAM PERFORMANCE.ASSISTANT SECRETARY FOR OFFICE OF SAFETY, DIRECTOR, OFFICE OF TRANSPORTATION POLICY. ENERGY AND POLICY. ENVIRONMENT.ASSOCIATE ADMINISTRATOR FOR OFFICE OF DIRECTOR, OFFICE OF ENFORCEMENT AND PROGRAM ENFORCEMENT AND ENFORCEMENT AND DELIVERY. COMPLIANCE. COMPLIANCE.ASSOCIATE ADMINISTRATOR FOR OFFICE OF BUS AND DIRECTOR, OFFICE OF POLICY AND PROGRAM TRUCK STANDARDS AND BUS AND TRUCK DEVELOPMENT. OPERATIONS. STANDARDS AND OPERATIONS.ASSOCIATE ADMINISTRATOR FOR OFFICE OF LICENSING DIRECTOR, OFFICE FOR RESEARCH AND REGISTRATION. AND SAFETY LICENSING AND INFORMATION. SAFETY INFORMATION.FEDERAL HIGHWAY ASSOCIATE DIRECTOR, OFFICE OF ADMINISTRATION. ADMINISTRATOR FOR REAL ESTATE PLANNING, SERVICES. ENVIRONMENT AND REALTY. ASSOCIATE ASSOCIATE ADMINISTRATOR FOR ADMINISTRATOR FOR SAFETY. SAFETY. IMMEDIATE OFFICE OF EXECUTIVE DIRECTOR. THE ADMINISTRATOR. CHIEF INNOVATION OFFICER.FEDERAL MOTOR CARRIER SAFETY ASSOCIATE REGIONAL FIELD ADMINISTRATION. ADMINISTRATOR FOR ADMINISTRATOR, FIELD OPERATIONS. SOUTHERN REGION. REGIONAL FIELD ADMINISTRATOR, MIDWEST REGION. IMMEDIATE OFFICE OF CHIEF FINANCIAL THE ADMINISTRATOR. OFFICER. SENIOR ADVISOR. ASSISTANT ADMINISTRATOR/CHIEF SAFETY OFFICER.FEDERAL RAILROAD ASSOCIATE ASSOCIATE ADMINISTRATION. ADMINISTRATOR FOR ADMINISTRATOR FOR RAILROAD SAFETY.. RAILROAD SAFETY/ CHIEF SAFETY OFFICER. IMMEDIATE OFFICE OF EXECUTIVE DIRECTOR. THE ADMINISTRATOR. OFFICE OF THE CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER.IMMEDIATE OFFICE OF THE OFFICE OF THE CHIEF ADMINISTRATOR. FINANCIAL OFFICER.. DEPUTY CHIEF FINANCIAL OFFICER AND CHIEF BUDGET OFFICER.. CHIEF FINANCIAL OFFICER.. DIRECTOR, OFFICE OF ACQUISITION AND GRANTS MANAGEMENT..MARITIME ADMINISTRATION..... ASSOCIATE DEPUTY ASSOCIATE ADMINISTRATOR FOR ADMINISTRATOR FOR ENVIRONMENT AND ENVIRONMENT AND COMPLIANCE. COMPLIANCE. ASSOCIATE ADMINISTRATOR FOR ENVIRONMENT AND COMPLIANCE. ASSOCIATE DEPUTY ASSOCIATE ADMINISTRATOR FOR ADMINISTRATOR FOR STRATEGIC SEALIFT. MARITIME EDUCATION AND TRAINING. DEPUTY ASSOCIATE ADMINISTRATOR FOR FEDERAL SEALIFT. IMMEDIATE OFFICE OF EXECUTIVE SECRETARY, THE ADMINISTRATOR. COMMITTEE ON MARINE TRANSPORTATION SYSTEMS. EXECUTIVE DIRECTOR. OFFICE OF THE CHIEF DEPUTY CHIEF COUNSEL. COUNSEL.NATIONAL HIGHWAY TRAFFIC ASSOCIATE ASSOCIATE SAFETY ADMINISTRATION. ADMINISTRATOR FOR ADMINISTRATOR FOR ENFORCEMENT. ENFORCEMENT. DIRECTOR, OFFICE OF VEHICLE SAFETY COMPLIANCE. DIRECTOR, OFFICE OF DEFECTS INVESTIGATION.[[Page 21615]] ASSOCIATE ADMINISTRATOR FOR REGIONAL OPERATIONS AND PROGRAM DELIVERY.. ASSOCIATE ADMINISTRATOR FOR REGIONAL OPERATIONS AND PROGRAM DELIVERY.. IMMEDIATE OFFICE OF EXECUTIVE DIRECTOR. THE ADMINISTRATOR. OFFICE OF THE CHIEF DEPUTY CHIEF COUNSEL. COUNSEL.OFFICE OF THE SECRETARY..... ASSISTANT SECRETARY DEPUTY ASSISTANT FOR ADMINISTRATION. SECRETARY FOR ADMINISTRATION. ASSISTANT SECRETARY DEPUTY CHIEF FOR BUDGET AND FINANCIAL OFFICER. PROGRAMS. DEPUTY ASSISTANT SECRETARY FOR BUDGET AND PROGRAMS. OFFICE OF THE SECRETARY CHIEF FINANCIAL OFFICER. NATIONAL SURFACE EXECUTIVE DIRECTOR, TRANSPORTATION NATIONAL SURFACE INNOVATIVE FINANCE TRANSPORTATION BUREAU (BUILD INNOVATIVE FINANCE AMERICA BUREAU). BUREAU (BUILD AMERICA BUREAU). OFFICE OF DIRECTOR, OFFICE OF INTELLIGENCE, INTELLIGENCE, SECURITY AND SECURITY AND EMERGENCY RESPONSE. EMERGENCY RESPONSE. DEPUTY DIRECTOR. OFFICE OF THE CHIEF DEPUTY CHIEF INFORMATION OFFICER. INFORMATION OFFICER. CHIEF INFORMATION SECURITY OFFICER. CHIEF TECHNOLOGY OFFICER. OFFICE OF THE UNDER EXECUTIVE DIRECTOR SECRETARY OF FOR THE OFFICE OF TRANSPORTATION FOR THE UNDER SECRETARY POLICY. OF TRANSPORTATION FOR POLICY. SECRETARY........... SENIOR ADVISOR FOR STRATEGIC COMMUNICATIONS.PIPELINE AND HAZARDOUS IMMEDIATE OFFICE OF EXECUTIVE DIRECTOR. MATERIALS SAFETY THE ADMINISTRATOR. ADMINISTRATION. OFFICE OF CHIEF ASSISTANT SAFETY OFFICER. ADMINISTRATOR AND CHIEF SAFETY OFFICER. OFFICE OF HAZARDOUS ASSOCIATE MATERIALS SAFETY. ADMINISTRATOR FOR HAZARDOUS MATERIALS SAFETY. OFFICE OF PIPELINE DEPUTY ASSOCIATE SAFETY. ADMINISTRATOR FOR POLICY AND PROGRAMS. DEPUTY ASSOCIATE ADMINISTRATOR FOR FIELD OPERATIONS. ASSOCIATE ADMINISTRATOR FOR PIPELINE SAFETY. OFFICE OF THE CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER.SURFACE TRANSPORTATION BOARD OFFICE OF PUBLIC DIRECTOR OF PUBLIC ASSISTANCE, ASSISTANCE, GOVERNMENTAL GOVERNMENTAL AFFAIRS AND AFFAIRS AND COMPLIANCE. COMPLIANCE.DEPARTMENT OF TRANSPORTATION OFFICE OF THE INSPECTOR GENERALOFFICE OF INSPECTOR GENERAL OFFICE OF ASSISTANT ASSISTANT INSPECTOR IMMEDIATE OFFICE. INSPECTOR GENERAL GENERAL FOR FOR ADMINISTRATION ADMINISTRATION AND AND MANAGEMENT. MANAGEMENT. OFFICE OF ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR STRATEGIC STRATEGIC COMMUNICATIONS AND COMMUNICATIONS AND PROGRAMS. PROGRAMS. OFFICE OF CHIEF CHIEF COUNSEL. COUNSEL. OFFICE OF DEPUTY DEPUTY INSPECTOR INSPECTOR GENERAL. GENERAL. OFFICE OF PRINCIPAL PRINCIPAL ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR AUDITING AND AUDITING AND EVALUATION. EVALUATION. OFFICE OF PRINCIPAL PRINCIPAL ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR INVESTIGATIONS. INVESTIGATIONS.OFFICE OF PRINCIPAL OFFICE OF ASSISTANT ASSISTANT INSPECTOR ASSISTANT INSPECTOR GENERAL INSPECTOR GENERAL GENERAL FOR FOR AUDITING AND EVALUATION. FOR ACQUISITION AND ACQUISITION AND PROCUREMENT AUDITS. PROCUREMENT AUDITS. OFFICE OF ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR AUDIT FOR AUDIT OPERATIONS AND OPERATIONS AND SPECIAL REVIEWS. SPECIAL REVIEWS.[[Page 21616]] OFFICE OF ASSISTANT DEPUTY ASSISTANT INSPECTOR GENERAL INSPECTOR GENERAL FOR AVIATION AUDITS. FOR AVIATION AUDITS. ASSISTANT INSPECTOR GENERAL FOR AVIATION AUDITS. OFFICE OF ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR FINANCIAL FINANCIAL AUDITS. AUDITS. OFFICE OF ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR INFORMATION INFORMATION TECHNOLOGY AUDITS. TECHNOLOGY AUDITS. OFFICE OF ASSISTANT DEPUTY ASSISTANT INSPECTOR GENERAL INSPECTOR GENERAL FOR SURFACE FOR SURFACE TRANSPORTATION TRANSPORTATION AUDITS. AUDITS. ASSISTANT INSPECTOR GENERAL FOR SURFACE TRANSPORTATION AUDITS.OFFICE OF PRINCIPAL OFFICE OF DEPUTY DEPUTY ASSISTANT ASSISTANT INSPECTOR GENERAL ASSISTANT INSPECTOR INSPECTOR GENERAL FOR INVESTIGATIONS. GENERAL FOR FOR INVESTIGATIONS. INVESTIGATIONS.DEPARTMENT OF THE TREASURYASSISTANT SECRETARY (TAX ALCOHOL AND TOBACCO POLICY). TAX AND TRADE BUREAU. ASSISTANT ADMINISTRATOR, HEADQUARTER OPERATIONS.. ASSISTANT ADMINISTRATOR, MANAGEMENT/CHIEF FINANCIAL OFFICER.. DEPUTY ADMINISTRATOR, ALCOHOL AND TOBACCO TAX AND TRADE BUREAU.. ASSISTANT ADMINISTRATOR, FIELD OPERATIONS ASSISTANT ADMINISTRATOR, PERMITTING AND TAXATION ASSISTANT ADMINISTRATOR INFORMATION RESOURCES/CHIEF INFORMATION OFFICER ASSISTANT ADMINISTRATOR, EXTERNAL AFFAIRS/ CHIEF OF STAFF ADMINISTRATOR, ALCOHOL AND TOBACCO TAX AND TRADE BUREAUDEPARTMENT OF THE TREASURY.. ASSISTANT SECRETARY DIRECTOR, ECONOMIC (TAX POLICY). MODELING AND COMPUTER APPLICATIONS. ASSISTANT SECRETARY DEPUTY CHIEF FOR MANAGEMENT. FINANCIAL OFFICER. DIRECTOR, OFFICE OF PROCUREMENT. CHIEF DIVERSITY AND INCLUSION OFFICER. GENERAL COUNSEL..... CHIEF COUNSEL, FINANCIAL CRIMES ENFORCEMENT NETWORK. INTERNAL REVENUE DIRECTOR FIELD SERVICE. OPERATIONS (SOUTH CENTRAL), WESTERN COMPLIANCE. DIRECTOR FIELD OPERATIONS, FOREIGN PAYMENTS PRACTICE. FIELD DIRECTOR, SUBMISSION PROCESSING--FRESNO. DIRECTOR, COLLECTION--CAMPUS. DIRECTOR, INTERNATIONAL OPERATIONS. DIRECTOR FIELD OPERATIONS (WEST), WESTERN COMPLIANCE. AREA DIRECTOR, FIELD ASSISTANCE. CHIEF OF STAFF. DIRECTOR, MEDIA AND PUBLICATIONS (WASHINGTON, DC). DIRECTOR, HUMAN RESOURCES. PROJECT DIRECTOR. DIRECTOR, STRATEGY AND FINANCE. DIRECTOR, EXAMINATION--CAMPUS . FIELD DIRECTOR, SUBMISSION PROCESSING--OGDEN. DIRECTOR, COLLECTION SOUTHWEST. CHIEF, AGENCY-WIDE SHARED SERVICES. DIRECTOR OF FIELD OPERATIONS- WESTERN AREA, CRIMINAL INVESTIGATION. DIRECTOR, MICROSOFT INITIATIVES PROGRAM.[[Page 21617]] NATIONAL DIRECTOR LEGISLATIVE AFFAIRS. DIRECTOR, ENTERPRISE ARCHITECTURE. DEPUTY ASSOCIATE CHIEF INFORMATION OFFICER FOR APPLICATIONS DEVELOPMENT. DIRECTOR, REFUNDABLE CREDITS EXAMINATION OPERATIONS. DEPUTY CHIEF INFORMATION OFFICER FOR STRATEGY/ MODERNIZATION. DIRECTOR, E-FILE SERVICES. DEPUTY CHIEF PROCUREMENT OFFICER. DIRECTOR, KNOWLEDGE DEVELOPMENT AND APPLICATION. SPECIAL AGENT IN CHARGE, CRIMINAL INVESTIGATION. PROJECT DIRECTOR. DIRECTOR, OPERATIONS POLICY AND SUPPORT. DIRECTOR, FACILITIES MANAGEMENT AND SEC SERVICES. DIRECTOR, WORKLIFE, BENEFITS AND PERFORMANCE. DIRECTOR, SECURITY OPERATIONS AND STANDARDS. DIRECTOR, COLLECTION--HEADQUA RTERS. DEPUTY ASSOCIATE CHIEF INFORMATION OFFICER FOR CYBERSECURITY. DIRECTOR, EXAMINATION SOUTHWEST AREA. DIRECTOR, COLLECTION APPEALS. DIRECTOR, DEMAND MANAGEMENT AND PROJECT GOVERNANCE. PROJECT DIRECTOR. DIRECTOR, COLLECTION--QUALITY AND TECHNICAL SUPPORT. DIRECTOR, COLLECTION. SPECIAL ASSISTANT. DIRECTOR, DATA MANAGEMENT DIVISION. DIRECTOR, CROSS BORDER ACTIVITIES. ASSOCIATE CHIEF INFORMATION OFFICER FOR APPLICATIONS DEVELOPMENT. SENIOR ADVISOR AND TECHNOLOGY ADVISOR. DIRECTOR, SPECIALIZED EXAMINATION PROGRAMS AND REFERRALS. PROJECT DIRECTOR FOR DEPUTY COMMISSIONER SERVICES AND ENFORCEMENT. DIRECTOR, MODERNIZATION, DEVELOPMENT AND DELIVERY. DIRECTOR, DATA MANAGEMENT SERVICES AND SUPPORT. DIRECTOR, SERVICEWIDE OPERATIONS. DIRECTOR, ENTERPRISE ACTIVITIES. ASSISTANT DEPUTY COMMISSIONER FOR SERVICES AND ENFORCEMENT. DIRECTOR, COLLECTION AREA--GULF STATE. DIRECTOR, COLLECTION--CENTRAL . DIRECTOR, EXAMINATION--CENTRA L. DIRECTOR, OFFICE OF PROFESSIONAL RESPONSIBILITY. DIRECTOR, COLLECTION--SPECIAL . DIRECTOR, REFUNDABLE CREDITS POLICY AND PROGRAM MANAGEMENT. ASSOCIATE CHIEF INFORMATION OFFICER FOR USER AND NETWORK SERVICES. SPECIAL AGENT IN CHARGE, CRIMINAL INVESTIGATION.[[Page 21618]] DIRECTOR, SOLUTION ENGINEERING. DIRECTOR, MAINFRAME SUPPORT AND SERVICES. SPECIAL ASSISTANT TO THE CHIEF, APPEALS. DIRECTOR, AFFORDABLE CARE ACT. DIRECTOR, CAMPUS COLLECTION FRESNO. IRS IDENTITY ASSURANCE EXECUTIVE. DEPUTY DIRECTOR, SUBMISSION PROCESSING. SUBMISSION PROCESSING FIELD DIRECTOR. DIRECTOR, OPERATIONS SUPPORT. ASSOCIATE CHIEF INFORMATION OFFICER, ENTERPRISE INFORMATION TECHNOLOGY PROGRAM MANAGEMENT. SENIOR DIRECTOR FOR OPERATIONS, AFFORDABLE CARE ACT. DIRECTOR, INFRASTRUCTURE SERVICES. DIRECTOR, UNIFIED COMMUNICATIONS. ACIO, AFFORDABLE CARE ACT PMO. DIRECTOR, ENTERPRISE NETWORKS OPERATIONS. DIRECTOR, ONLINE SERVICES. DEPUTY COMMISSIONER, WAGE AND INVESTMENTS. DIRECTOR, TECHNOLOGY SOLUTIONS. DEPUTY DIRECTOR, RETURN INTEGRITY AND CORRESPONDENCE SERVICES. DIRECTOR, SERVICE DELIVERY MANAGEMENT. COMPLIANCE SERVICES FIELD DIRECTOR. DIRECTOR, CAMPUS OPERATIONS. DIRECTOR, IMPLEMENTATION AND TESTING. DIRECTOR, BUSINESS PLANNING AND RISK MANAGEMENT. EXECUTIVE DIRECTOR, BUSINESS MODERNIZATION. DIRECTOR, COLLECTION STRATEGY AND ORGANIZATION. DIRECTOR OF FIELD OPERATIONS, HEAVY MANUFACTURING AND PHARMACEUTICALS, SOUTHEAST.. DIRECTOR, FIELD OPERATIONS, ENGINEERING. COUNSELOR TO THE COMMISSIONER OF INTERNAL REVENUE SERVICES. ASSISTANT DEPUTY COMMISSIONER COMPLIANCE INTEGRATION. DIRECTOR, ADVANCED PRICING AND MUTUAL AGREEMENT. DIRECTOR, RETURN INTEGRITY AND COMPLIANCE SERVICES. DIRECTOR, CYBERSECURITY POLICY AND PROGRAMS. DIRECTOR, FIELD OPERATIONS, RETAIL FOOD, PHARMACEUTICALS, AND HEALTHCARE-- WEST. DIRECTOR, CONTACT CENTER SUPPORT DIVISION. EXECUTIVE DIRECTOR, INVESTIGATIVE AND ENFORCEMENT OPERATIONS. DIRECTOR, EXAMINATION AREA-- NORTH ATLANTIC. DIRECTOR, STRATEGIC SUPPLIER MANAGEMENT. DIRECTOR, DATA DELIVERY SERVICES. PROJECT DIRECTOR. DIRECTOR, COMPLIANCE STRATEGY AND POLICY.[[Page 21619]] DIRECTOR, STRATEGY, RESEARCH AND PROGRAM PLANNING. DIRECTOR, PRIVACY AND INFORMATION PROTECTION. DIRECTOR, NETWORK ENGINEERING. DEPUTY DIRECTOR, SUBMISSION PROCESSING. DIRECTOR, EXAMINATION--SPECIA LITY TAX. DEPUTY ASSOCIATE CHIEF FINANCIAL OFFICER FOR FINANCIAL MANAGEMENT. DIRECTOR, CUSTOMER SERVICE AND STAKEHOLDERS. DIRECTOR, TAX FORMS AND PUBLICATIONS. ASSISTANT DEPUTY COMMISSIONER GOVERNMENT ENTITIES AND SHARED SERVICES. DIRECTOR, CASE AND OPERATIONS SUPPORT. DEPUTY DIRECTOR, RETURN PREPARER OFFICE. ACCOUNTS MANAGEMENT FIELD DIRECTOR. DIRECTOR, FILING AND PREMIUM TAX CREDIT. ASSISTANT DEPUTY COMMISSIONER (INTERNATIONAL). DIRECTOR, EMERGING PROGRAMS AND INITIATIVES. DIRECTOR, FIELD OPERATIONS, NATURAL RESOURCES AND CONSTRUCTION--WEST. DIRECTOR, CAMPUS COMPLIANCE OPERATIONS. DIRECTOR, PRODUCT MANAGEMENT. DIRECTOR, FIELD OPERATIONS, RETAILERS, FOOD, TRANSPORTATION AND HEALTHCARE--EAST. DIRECTOR, REFUND CRIMES. AREA DIRECTOR, STAKEHOLDER PARTNERSHIP, EDUCATION, AND COMMUNICATION. DIRECTOR, EXAMINATION FIELD. DEPUTY COMMISSIONER, OPERATIONS SUPPORT. DIRECTOR, OPERATIONS SERVICE SUPPORT. DEPUTY DIRECTOR, STRATEGY AND FINANCE. DIRECTOR, RETURN PREPARER OFFICE. DIRECTOR, EXAMINATION AREA MIDWEST. DIRECTOR, FINANCIAL MANAGEMENT SERVICES. AREA DIRECTOR, FIELD ASSISTANCE. DIRECTOR, EXAMINATION AREA. DIRECTOR, CUSTOMER SERVICE. DIRECTOR, APPEALS POLICY AND VALUATION. ASSOCIATE CHIEF INFORMATION OFFICER, STRATEGY AND PLANNING. DIRECTOR, BUSINESS SYSTEMS PLANNING. DEPUTY CHIEF OF STAFF. ASSOCIATE CHIEF INFORMATION OFFICER FOR ENTERPRISE OPERATIONS. DIRECTOR, COLLECTION POLICY. DEPUTY DIRECTOR, SUBMISSION PROCESSING. DEPUTY DIVISION COUNSEL #2 (OPERATIONS)/SMALL BUSINESS AND SELF EMPLOYED.[[Page 21620]] DEPUTY COMMISSIONER (DOMESTIC), LARGE BUSINESS AND INTERNATIONAL. DEPUTY ASSOCIATE CHIEF INFORMATION OFFICER, ENTERPRISE OPERATIONS. DIRECTOR, REPORTING COMPLIANCE. SPECIAL AGENT IN CHARGE--CRIMINAL INVESTIGATION. DIRECTOR, FIELD OPERATIONS EAST. DEPUTY CHIEF INFORMATION OFFICER FOR OPERATIONS. ASSOCIATE CHIEF INFORMATION OFFICER, CYBERSECURITY. DIRECTOR, OFFICE OF PRIVACY, INFORMATION PROTECTION AND DATA SECURITY. DIRECTOR, PASS- THROUGH ENTITIES. PROGRAM MANAGER. DIRECTOR, SUBMISSION PROCESSING. DIRECTOR, INTERNAL MANAGEMENT. DIRECTOR, CORPORATE DATA. DIRECTOR, ENTERPRISE SYSTEMS TESTING. DIRECTOR, EXAMINATION MIDWEST AREA. SPECIAL AGENT IN CHARGE. DIRECTOR, WHISTLEBLOWER OFFICE. SUBMISSION PROCESSING FIELD DIRECTOR. PROJECT DIRECTOR, ENTERPRISE PROGRAM MANAGEMENT. ACCOUNTS MANAGEMENT FIELD DIRECTOR. DIRECTOR, EXAMINATION--GULF STATES. DIRECTOR, EMPLOYEE PLANS, RULINGS, AND AGREEMENTS. DIRECTOR, EXAMINATION HEADQUARTERS. DIRECTOR, JOINT OPERATIONS CENTER. DEPUTY CHIEF HUMAN CAPITAL OFFICER, INTERNAL REVENUE SERVICE.. DIRECTOR, COLLECTION--FIELD. DIRECTOR, COLLECTION--ATLANTA . DIRECTOR, COLLECTION--ANDOVER . DIRECTOR, EXAMINATION AREA. DIRECTOR, EXAMINATION--OGDEN. DIRECTOR, EXAMINATION SOUTHWEST AREA. SPECIAL AGENT IN CHARGE. DEPUTY COMMISSIONER, SMALL BUSINESS/SELF- EMPLOYED. PROJECT DIRECTOR. DIRECTOR, STAKEHOLDER, PARTNERSHIP, EDUCATION AND COMMUNICATIONS. CHIEF FINANCIAL OFFICER, INTERNAL REVENUE SERVICE. CHIEF, CRIMINAL INVESTIGATION. DIRECTOR, RESEARCH AND ORGANIZATIONAL. DIRECTOR, ENTERPRISE TECHNOLOGY IMPLEMENTATION. AREA DIRECTOR, FIELD ASSISTANCE--ATLANTA DIRECTOR OF FIELD OPERATIONS. CHIEF, COMMUNICATIONS AND LIAISON. DEPUTY CHIEF FINANCIAL OFFICER. DIRECTOR, ACCOUNTS MANAGEMENT, WAGE AND INVESTMENT. DIRECTOR, DATA SOLUTIONS. COMMISSIONER, SMALL BUSINESS AND SELF EMPLOYED.[[Page 21621]] COMMISSIONER, LARGE AND MID-SIZED BUSINESS DIVISION. CHIEF INFORMATION OFFICER. CHIEF HUMAN CAPITAL OFFICER, INTERNAL REVENUE SERVICE. DEPUTY DIRECTOR, ENTERPRISE COMPUTING CENTER. DEPUTY CHIEF, CRIMINAL INVESTIGATION. INDUSTRY DIRECTOR-- FINANCIAL SERVICES-- LARGE AND MID-SIZE BUSINESS. DIRECTOR, BUSINESS SYSTEMS PLANNING-- LARGE AND MID-SIZE BUSINESS. DEPUTY CHIEF, APPEALS. DEPUTY DIVISION COMMISSIONER, TAX EXEMPT AND GOVERNMENT ENTITIES. EXECUTIVE DIRECTOR, CASE ADVOCACY INTAKE AND TECHNICAL SUPPORT. EXECUTIVE DIRECTOR, OFFICE OF EQUITY, DIVERSITY, AND INCLUSION. DEPUTY DIRECTOR, FACILITIES MANAGEMENT AND SECURITY SERVICES. CHIEF, APPEALS. CHIEF RISK OFFICER AND SENIOR ADVISOR. DIRECTOR, ADVANCE PRICING AND MUTUAL AGREEMENT. ACCOUNTS MANAGEMENT FIELD DIRECTOR-- ANDOVER. DIRECTOR, CUSTOMER ACCOUNT SERVICES-- WAGE AND INVESTMENT. DIRECTOR, COMMUNICATION, ASSISTANCE, RESEARCH AND EDUCATION.. DIRECTOR, FIELD ASSISTANCE--WAGE AND INVESTMENT. DIRECTOR, RESEARCH, APPLIED ANALYTICS AND STATISTICS. DEPUTY NATIONAL TAXPAYER ADVOCATE. COMMISSIONER, TAX EXEMPT AND GOVERNMENT ENTITIES DIVISION. DIRECTOR, EXEMPT ORGANIZATIONS. COMMISSIONER, WAGE AND INVESTMENT. DIRECTOR, OPERATIONS SUPPORT. DIRECTOR, EMPLOYEE PLANS. DIRECTOR, ENTERPRISE CASE MANAGEMENT. PROJECT DIRECTOR. DIRECTOR, INTERNET DEVELOPMENT SERVICES. DIRECTOR, SERVER SUPPORT AND SERVICES. DIRECTOR, PROCUREMENT. ASSOCIATE CHIEF FINANCIAL OFFICER FOR INTERNAL FINANCIAL MANAGEMENT--NATIONA L HEADQUARTERS. DIRECTOR, IDENTITY THEFT VICTIM ASSISTANCE. DIRECTOR, STATISTICS OF INCOME. SECRETARY OF THE DIRECTOR, OFFICE OF TREASURY. SMALL AND DISADVANTAGED BUSINESS UTILIZATION. UNITED STATES MINT.. CHIEF ADMINISTRATIVE OFFICER. ASSOCIATE DIRECTOR FOR MANUFACTURING. DIRECTOR, OFFICE OF COIN STUDIES. ASSOCIATE DIRECTOR FOR SALES AND MARKETING. ASSOCIATE DIRECTOR, ENVIRONMENT, SAFETY AND HEALTH. PLANT MANAGER, PHILADELPHIA.[[Page 21622]] ASSOCIATE DIRECTOR FOR INFORMATION TECHNOLOGY (CHIEF INFORMATION OFFICER). ASSOCIATE DIRECTOR FOR FINANCIAL MANAGEMENT/CHIEF FINANCIAL OFFICER.FISCAL ASSISTANT SECRETARY.. BUREAU OF THE FISCAL ASSISTANT SERVICE. COMMISSIONER (SHARED SERVICES). DEPUTY ASSISTANT COMMISSIONER FOR PROGRAM SOLUTIONS AND SUPPORT (TREASURY SECURITIES SERVICES). ASSISTANT COMMISSIONER (OFFICE OF MANAGEMENT SERVICES). DEPUTY CHIEF INFORMATION OFFICER. DEPUTY ASSISTANT COMMISSIONER, PAYMENT MANAGEMENT. ASSISTANT COMMISSIONER, PAYMENT MANAGEMENT. DEPUTY ASSISTANT COMMISSIONER FOR INFRASTRUCTURE AND OPERATIONS (OFFICE OF INFORMATION AND SECURITY SERVICES). DEPUTY COMMISSIONER, ACCOUNTING AND SHARED SERVICES. DEPUTY COMMISSIONER, FINANCE AND ADMINISTRATION. DEPUTY COMMISSIONER, FINANCIAL SERVICES AND OPERATIONS. COMMISSIONER, BUREAU OF THE FISCAL SERVICE. DEPUTY ASSISTANT COMMISSIONER FOR INFORMATION SERVICES. DEPUTY ASSISTANT COMMISSIONER (FISCAL ACCOUNTING OPERATIONS). DIRECTOR, DEBT MANAGEMENT SERVICES OPERATIONS, WEST. DEPUTY ASSISTANT COMMISSIONER FOR SECURITIES MANAGEMENT (TREASURY SECURITIES SERVICES). DEPUTY ASSISTANT COMMISSIONER (WHOLESALE SECURITIES SERVICES). ASSISTANT COMMISSIONER, WHOLESALE SECURITIES SERVICES. DEPUTY ASSISTANT COMMISSIONER (ACCOUNTING SUPPORT AND OUTREACH). SENIOR ADVISOR (SERVICES AND PROGRAMS). DEPUTY ASSISTANT COMMISSIONER, COMPLIANCE AND REPORTING GROUP. EXECUTIVE DIRECTOR (DO NOT PAY BUSINESS CENTER STAFF). DIRECTOR, DEBT MANAGEMENT SERVICES OPERATIONS, EAST. DEPUTY ASSISTANT COMMISSIONER (MANAGEMENT). ASSISTANT COMMISSIONER, INFORMATION AND SECURITY SERVICES (CHIEF INFORMATION OFFICER). DEPUTY ASSISTANT COMMISSIONER (SHARED SERVICES). DEPUTY ASSISTANT COMMISSIONER (DATA TRANSPARENCY). DEPUTY ASSISTANT COMMISSIONER (RETAIL SECURITIES SERVICES). EXECUTIVE DIRECTOR (KANSAS CITY). ASSISTANT COMMISSIONER (RETAIL SECURITIES SERVICES). DEPUTY ASSISTANT COMMISSIONER, DEBT MANAGEMENT SERVICES. ASSISTANT COMMISSIONER, DEBT MANAGEMENT SERVICES. ASSISTANT COMMISSIONER, PUBLIC DEBT ACCOUNTING.[[Page 21623]] DIRECTOR, REGIONAL FINANCIAL CENTER (PHILADELPHIA). DIRECTOR, REGIONAL FINANCIAL CENTER (KANSAS CITY) ASSISTANT COMMISSIONER, MANAGEMENT (CHIEF FINANCIAL OFFICER). DIRECTOR, REVENUE COLLECTION GROUP. ASSISTANT COMMISSIONER, FEDERAL FINANCE. EXECUTIVE DIRECTOR, GOVERNMENT SECURITIES REGULATIONS. DIRECTOR, REGIONAL FINANCIAL CENTER (SAN FRANCISCO).INTERNAL REVENUE SERVICE.... INTERNAL REVENUE DEPUTY ASSOCIATE SERVICE CHIEF CHIEF COUNSEL #2 COUNSEL. (INCOME TAX AND ACCOUNTING). DEPUTY DIVISION COUNSEL (LARGE AND MID-SIZE BUSINESS). DEPUTY ASSOCIATE CHIEF COUNSEL (PROCEDURE AND ADMINISTRATION). ASSOCIATE CHIEF COUNSEL (INCOME TAX AND ACCOUNTING). DEPUTY DIVISION COUNSEL/DEPUTY ASSISTANT CHIEF COUNSEL (CRIMINAL TAX). ASSOCIATE CHIEF COUNSEL (PROCEDURE AND ADMINISTRATION). ASSOCIATE CHIEF COUNSEL (CORPORATE). DEPUTY ASSOCIATE CHIEF COUNSEL (FINANCE AND MANAGEMENT). AREA COUNSEL (LARGE AND MID-SIZE BUSINESS) (AREA 2) (HEAVY MANUFACTURING, CONSTRUCTION AND TRANSPORTATION). AREA COUNSEL (LARGE AND MID-SIZE BUSINESS) (AREA 4) (NATURAL RESOURCES). AREA COUNSEL (LARGE BUSINESS AND INTERNATIONAL). DEPUTY DIVISION COUNSEL (SMALL BUSINESS AND SELF EMPLOYED). AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED)--PHILADEL PHIA. AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED)--JACKSONV ILLE. AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED)--CHICAGO. AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED). AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED)--DENVER. AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED)--LOS ANGELES. AREA COUNSEL (SMALL BUSINESS AND SELF EMPLOYED) (AREA 7). DIVISION COUNSEL/ ASSOCIATE CHIEF COUNSEL (CRIMINAL TAX). DEPUTY DIVISION COUNSEL/DEPUTY ASSOCIATE CHIEF COUNSEL (TAX EXEMPT AND GOVERNMENT ENTITIES). AREA COUNSEL (LARGE BUSINESS AND INTERNATIONAL) (AREA 1). DEPUTY ASSOCIATE CHIEF COUNSEL (FINANCIAL INSTITUTIONS AND PRODUCTS). DIVISION COUNSEL (WAGE AND INVESTMENT). DEPUTY ASSOCIATE CHIEF COUNSEL (GENERAL LEGAL SERVICES) (LABOR AND PERSONNEL LAW). DEPUTY CHIEF COUNSEL (OPERATIONS). SPECIAL COUNSEL TO THE NATIONAL TAXPAYER ADVOCATE.[[Page 21624]] DEPUTY ASSOCIATE CHIEF COUNSEL (INTERNATIONAL TECHNICAL). DEPUTY CHIEF COUNSEL (TECHNICAL). ASSOCIATE CHIEF COUNSEL (GENERAL LEGAL SERVICES). DIVISION COUNSEL (SMALL BUSINESS AND SELF EMPLOYED). AREA COUNSEL, LARGE AND MID-SIZE BUSINESS (AREA 3) (FOOD, MASS RETAILERS, AND PHARMACEUTICALS). ASSOCIATE CHIEF COUNSEL (FINANCE AND MANAGEMENT). DEPUTY ASSOCIATE CHIEF COUNSEL (FINANCIAL INSTITUTIONS AND PRODUCTS). SPECIAL COUNSEL TO THE CHIEF COUNSEL. DEPUTY DIVISION COUNSEL AND DEPUTY ASSOCIATE CHIEF COUNSEL (TAX EXEMPT AND GOVERNMENT ENTITIES). DEPUTY DIVISION COUNSEL/DEPUTY ASSOCIATE CHIEF COUNSEL. DEPUTY ASSOCIATE CHIEF COUNSEL (INTERNATIONAL FIELD SERVICE AND LITIGATION). AREA COUNSEL, SMALL BUSINESS AND SELF EMPLOYED, AREA 9. DEPUTY TO THE SPECIAL COUNSEL TO THE CHIEF COUNSEL. HEALTHCARE COUNSEL (OFFICE OF HEALTHCARE). DEPUTY ASSOCIATE CHIEF COUNSEL (GENERAL LEGAL SERVICES). DIVISION COUNSEL/ ASSOCIATE CHIEF COUNSEL (NATIONAL TAXPAYER ADVOCATE PROGRAM). DEPUTY ASSOCIATE CHIEF COUNSEL (PROCEDURE AND ADMINISTRATION). DEPUTY ASSOCIATE CHIEF COUNSEL (PROCEDURE AND ADMINISTRATION). DEPUTY ASSOCIATE CHIEF COUNSEL, (PASSTHROUGHS AND SPECIAL INDUSTRIES). ASSOCIATE CHIEF COUNSEL (TAX EXEMPT AND GOVERNMENT ENTITIES). DEPUTY ASSOCIATE CHIEF COUNSEL, OPERATIONS AND INTERNATIONAL PROGRAMS. DEPUTY DIVISION COUNSEL, INTERNATIONAL (LARGE BUSINESS AND INTERNATIONAL). DEPUTY ASSOCIATE CHIEF COUNSEL (CORPORATE). ASSOCIATE CHIEF COUNSEL, (INTERNATIONAL). DIVISION COUNSEL (TAX EXEMPT AND GOVERNMENT ENTITIES) DC. NATIONAL STRATEGIC LITIGATION COUNSEL, DIVISION COUNSEL (LARGE BUSINESS AND INTERNATIONAL). DEPUTY DIVISION COUNSEL (OPERATIONS), SMALL BUSINESS/SELF EMPLOYED DIVISION. DEPUTY ASSOCIATE CHIEF COUNSEL, LITIGATION (INTERNATIONAL). DIVISION COUNSEL, LARGE BUSINESS AND INTERNATIONAL. ASSOCIATE CHIEF COUNSEL (PASSTHROUGHS AND SPECIAL INDUSTRIES). AREA COUNSEL, SMALL BUSINESS AND SELF EMPLOYED (AREA 1). ASSOCIATE CHIEF COUNSEL (FINANCIAL INSTITUTIONS AND PRODUCTS).[[Page 21625]] DEPUTY ASSOCIATE CHIEF COUNSEL (IT AND A).UNDER SECRETARY FOR DOMESTIC ASSISTANT SECRETARY DIRECTOR, FEDERAL FINANCE. FOR FINANCIAL INSURANCE OFFICE. INSTITUTIONS. DEPUTY DIRECTOR, FEDERAL INSURANCE OFFICE. FISCAL ASSISTANT FISCAL ASSISTANT SECRETARY. SECRETARY. DEPUTY ASSISTANT SECRETARY FOR FISCAL OPERATIONS AND POLICY. DEPUTY ASSISTANT SECRETARY, OFFICE OF ACCOUNTING POLICY AND FINANCIAL TRANSPARENCY.UNDER SECRETARY FOR TERRORISM AND FINANCIAL INTELLIGENCE ASSISTANT SECRETARY DEPUTY ASSISTANT FOR INTELLIGENCE SECRETARY FOR AND ANALYSIS. SECURITY AND COUNTERINTELLIGENCE . ASSISTANT SECRETARY DIRECTOR, EXECUTIVE FOR TERRORIST OFFICE FOR ASSET FINANCING. FORFEITURE. FINANCIAL CRIMES DIRECTOR, FINANCIAL ENFORCEMENT NETWORK. CRIMES ENFORCEMENT NETWORK. DEPUTY DIRECTOR ASSOCIATE DIRECTOR, ENFORCEMENT DIVISION ASSOCIATE DIRECTOR, INTELLIGENCE DIVISION ASSOCIATE DIRECTOR, MANAGEMENT PROGRAMS DIVISION ASSOCIATE DIRECTOR, LIAISON DIVISION ASSOCIATE DIRECTOR, TECHNOLOGY SOLUTIONS AND SERVICES DIVISION/ CHIEF INFORMATION OFFICER ASSOCIATE DIRECTOR, POLICY DIVISION.DEPARTMENT OF THE TREASURY OFFICE OF THE INSPECTOR GENERALDEPARTMENT OF THE TREASURY OFFICE OF AUDIT..... DEPUTY ASSISTANT OFFICE OF THE INSPECTOR INSPECTOR GENERAL GENERAL. FOR AUDIT (FINANCIAL SECTOR AUDITS). DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (FINANCE MANAGEMENT AND TRANSPARENCY AUDIT). ASSISTANT INSPECTOR GENERAL FOR AUDIT (2). DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (PROGRAM AUDITS). DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (FINANCIAL MANAGEMENT). OFFICE OF COUNSEL... COUNSEL TO THE INSPECTOR GENERAL. OFFICE OF DEPUTY ASSISTANT INVESTIGATIONS. INSPECTOR GENERAL FOR INVESTIGATIONS. OFFICE OF MANAGEMENT ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT.DEPARTMENT OF THE TREASURY SPECIAL INSPECTOR GENERAL FOR THE TROUBLED ASSET RELIEF PROGRAM DEPARTMENT OF THE DEPUTY SPECIAL TREASURY SPECIAL INSPECTOR GENERAL INSPECTOR GENERAL AUDIT. FOR THE TROUBLED ASSISTANT DEPUTY ASSET RELIEF SPECIAL INSPECTOR PROGRAM. GENERAL FOR AUDIT AND EVALUATION ASSISTANT DEPUTY SPECIAL INSPECTOR GENERAL FOR INVESTIGATIONS ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT DEPUTY SPECIAL INSPECTOR GENERAL DEPUTY SPECIAL INSPECTOR GENERAL, INVESTIGATIONS GENERAL COUNSEL.DEPARTMENT OF THE TREASURY TAX ADMINISTRATION OFFICE OF THE INSPECTOR GENERAL[[Page 21626]] DEPARTMENT OF THE ASSISTANT INSPECTOR TREASURY TAX GENERAL FOR ADMINISTRATION INVESTIGATIONS--FIE OFFICE OF THE LD. INSPECTOR GENERAL. DEPUTY INSPECTOR GENERAL FOR INSPECTIONS AND EVALUATIONS ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS, FIELD DIVISIONS DEPUTY CHIEF COUNSEL ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS ASSISTANT INSPECTOR GENERAL FOR AUDIT, COMPLIANCE AND ENFORCEMENT OPERATIONS CHIEF INFORMATION OFFICER DEPUTY INSPECTOR GENERAL FOR AUDIT ASSISTANT INSPECTOR GENERAL FOR AUDIT, MANAGEMENT SERVICES AND EXEMPT ORGANIZATIONS ASSISTANT INSPECTOR GENERAL FOR AUDIT, SECURITY AND INFORMATION TECHNOLOGY SERVICES ASSISTANT INSPECTOR GENERAL FOR AUDIT, MANAGEMENT, PLANNING AND WORKFORCE DEVELOPMENT ASSISTANT INSPECTOR GENERAL FOR AUDIT, RETURNS PROCESSING AND ACCOUNTING SERVICES DEPUTY INSPECTOR GENERAL FOR INVESTIGATIONS DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS, THREAT, AGENT SAFETY AND SENSITIVE INVESTIGATIONS DIRECTORATE ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS, CYBER OPERATIONS AND INVESTIGATIVE SUPPORT DIRECTORATE CHIEF COUNSEL DEPUTY INSPECTOR GENERAL FOR MISSION SUPPORT AND CHIEF FINANCIAL OFFICER DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS-- FIELDUNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENTOFFICE OF THE ADMINISTRATOR. BUREAU FOR CHIEF FINANCIAL MANAGEMENT. OFFICER. DEPUTY CHIEF FINANCIAL OFFICER CHIEF INFORMATION OFFICER DIRECTOR, OFFICE OF MANAGEMENT, POLICY, BUDGET AND PERFORMANCE DIRECTOR, OFFICE OF ACQUISITION AND ASSISTANCE DEPUTY DIRECTOR, ACCOUNTABILITY, COMPLIANCE, TRANSPARENCY AND SYSTEM SUPPORT. OFFICE OF BUDGET AND DIRECTOR, BUDGET AND RESOURCE MANAGEMENT. RESOURCE MANAGEMENT. OFFICE OF HUMAN CHIEF HUMAN CAPITAL CAPITAL AND TALENT OFFICER. MANAGEMENT. DEPUTY CHIEF HUMAN CAPITAL OFFICER. OFFICE OF SECURITY.. DIRECTOR, OFFICE OF SECURITY. DEPUTY DIRECTOR, OFFICE OF SECURITY. OFFICE OF SMALL AND DIRECTOR, OFFICE OF DISADVANTAGED SMALL AND BUSINESS DISADVANTAGED UTILIZATION. BUSINESS UTILIZATION. OFFICE OF THE ASSISTANT GENERAL GENERAL COUNSEL. COUNSEL, ETHICS AND ADMINISTRATION. CHIEF INNOVATION COUNSEL. DEPUTY GENERAL COUNSEL.UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT OFFICE OF THE INSPECTOR GENERAL[[Page 21627]] UNITED STATES AGENCY ASSISTANT INSPECTOR FOR INTERNATIONAL GENERAL FOR AUDIT. DEVELOPMENT OFFICE DEPUTY ASSISTANT OF THE INSPECTOR INSPECTOR GENERAL GENERAL. FOR MANAGEMENT. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT. DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDIT (2). DEPUTY INSPECTOR GENERAL. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS. COUNSELOR TO THE INSPECTOR GENERAL. ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS.UNITED STATES INTERNATIONAL TRADE COMMISSIONOFFICE OF OPERATIONS........ OFFICE OF ECONOMICS. DIRECTOR OFFICE OF ECONOMICS. OFFICE OF INDUSTRIES DIRECTOR OFFICE OF INDUSTRIES. OFFICE OF DIRECTOR, OFFICE OF INVESTIGATIONS. INVESTIGATIONS. OFFICE OF TARIFF DIRECTOR, OFFICE AFFAIRS AND TRADE TARIFF AFFAIRS AND AGREEMENTS. TRADE AGREEMENTS. OFFICE OF UNFAIR DIRECTOR, OFFICE OF IMPORT UNFAIR IMPORT INVESTIGATIONS. INVESTIGATIONS.UNITED STATES INTERNATIONAL OFFICE OF CHIEF ADMINISTRATIVE TRADE COMMISSION. ADMINISTRATIVE OFFICER. SERVICES. OFFICE OF EXTERNAL DIRECTOR, OFFICE OF RELATIONS. EXTERNAL RELATIONS. OFFICE OF OPERATIONS DIRECTOR OFFICE OF OPERATIONS. OFFICE OF THE CHIEF OF STAFF. CHAIRMAN. OFFICE OF THE CHIEF CHIEF FINANCIAL FINANCIAL OFFICER. OFFICER. OFFICE OF THE CHIEF CHIEF INFORMATION INFORMATION OFFICER. OFFICER. OFFICE OF THE GENERAL COUNSEL. GENERAL COUNSEL. OFFICE OF THE INSPECTOR GENERAL. INSPECTOR GENERAL.DEPARTMENT OF VETERANS AFFAIRS DEPARTMENT OF EXECUTIVE DIRECTOR, VETERANS AFFAIRS. IT BUDGET AND FINANCE. BOARD OF VETERANS' VICE CHAIRMAN. APPEALS. DEPUTY VICE CHAIRMAN (2). DEPUTY VICE CHAIRMAN, BOARD OF VETERANS APPEALS. DEPUTY VICE CHAIRMAN. CHIEF COUNSEL, BOARD OF VETERANS APPEALS. NATIONAL CEMETERY DEPUTY UNDER ADMINISTRATION. SECRETARY FOR FINANCE AND PLANNING. OFFICE OF EXECUTIVE DIRECTOR, ACQUISITION, CONSTRUCTION. LOGISTICS AND EXECUTIVE DIRECTOR, CONSTRUCTION. OFFICE OF ACQUISITION AND LOGISTICS. ASSOCIATE EXECUTIVE DIRECTOR, PROGRAMS AND PLANS. ASSOCIATE EXECUTIVE DIRECTOR, STRATEGIC ACQUISITION CENTER. ASSOCIATE EXECUTIVE DIRECTOR, FACILITIES ACQUISITIONS. EXECUTIVE DIRECTOR, CONSTRUCTION AND FACILITIES MANAGEMENT. ASSOCIATE EXECUTIVE DIRECTOR, PROCUREMENT POLICY, SYSTEMS AND OVERSIGHT. ASSOCIATE EXECUTIVE DIRECTOR, FACILITIES PLANNING. ASSOCIATE EXECUTIVE DIRECTOR, TECHNOLOGY ACQUISITION CENTER. ASSOCIATE EXECUTIVE DIRECTOR, RESOURCE MANAGEMENT. ASSOCIATE EXECUTIVE DIRECTOR, OFFICE OF DESIGN AND CONSTRUCTION. ASSOCIATE EXECUTIVE DIRECTOR, NATIONAL HEALTHCARE ACQUISITION. ASSOCIATE EXECUTIVE DIRECTOR, ACQUISITION PROGRAM SUPPORT.[[Page 21628]] OFFICE OF THE DEPUTY ASSISTANT ASSISTANT SECRETARY SECRETARY, FOR ACCOUNTABILITY ACCOUNTABILITY AND AND WHISTLEBLOWER WHISTLEBLOWER PROTECTION. PROTECTION. EXECUTIVE DIRECTOR, COMPLIANCE AND OVERSIGHT. EXECUTIVE DIRECTOR, INVESTIGATIONS (2). OFFICE OF THE EXECUTIVE DIRECTOR, ASSISTANT SECRETARY FIELD SECURITY FOR INFORMATION AND SERVICE. TECHNOLOGY. EXECUTIVE DIRECTOR, INFORMATION SECURITY POLICY AND STRATEGY. DEPUTY CHIEF INFORMATION OFFICER, STRATEGIC SOURCING. EXECUTIVE DIRECTOR, ACQUISITION STRATEGY AND CATEGORY MANAGEMENT. CHIEF FINANCIAL OFFICER, IT BUDGET AND FINANCE. DEPUTY ASSISTANT SECRETARY, CHIEF INFORMATION SECURITY OFFICER. EXECUTIVE DIRECTOR, INFRASTRUCTURE OPERATIONS. DEPUTY CHIEF INFORMATION OFFICER, QUALITY, PERFORMANCE, AND RISK/CHIEF RISK OFFICER. EXECUTIVE DIRECTOR, INFORMATION SECURITY OPERATIONS. OFFICE OF THE EXECUTIVE DIRECTOR, ASSISTANT SECRETARY FINANCIAL SERVICES FOR MANAGEMENT. CENTER, OFFICE OF FINANCE. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR FINANCIAL BUSINESS OPERATIONS, OFFICE OF FINANCE PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR MANAGEMENT EXECUTIVE DIRECTOR, OFFICE OF ACQUISITION OPERATIONS DEPUTY ASSISTANT SECRETARY FINANCIAL MANAGEMENT BUSINESS TRANSFORMATION, OFFICE OF FINANCE. ASSOCIATE DEPUTY ASSISTANT SECRETARY, FINANCIAL MANAGEMENT BUSINESS TRANSFORMATION SERVICE SYSTEMS. ASSOCIATE DEPUTY ASSISTANT SECRETARY, FINANCIAL MANAGEMENT BUSINESS TRANSFORMATION OPERATIONS. EXECUTIVE DIRECTOR, OFFICE OF BUSINESS OVERSIGHT. ASSOCIATE DEPUTY ASSISTANT SECRETARY, BUDGET OPERATIONS. ASSOCIATE DEPUTY ASSISTANT SECRETARY, PROGRAM BUDGETS. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR FINANCE, OFFICE OF FINANCE. EXECUTIVE DIRECTOR, DEBT MANAGEMENT CENTER. EXECUTIVE DIRECTOR, ASSET ENTERPRISE MANAGEMENT. ADAS FOR FINANCIAL PROCESS IMPROVEMENT AND AUDIT READINESS, OFFICE OF FINANCE. DEPUTY EXECUTIVE DIRECTOR ASSET ENTERPRISE MANAGEMENT. DEPUTY ASSISTANT SECRETARY FOR FINANCE, OFFICE OF FINANCE. DEPUTY ASSISTANT SECRETARY FOR BUDGET. ASSOCIATE DEPUTY ASSISTANT SECRETARY FOR FINANCIAL POLICY, OFFICE OF FINANCE.[[Page 21629]] OFFICE OF THE CHIEF COUNSEL, GENERAL COUNSEL. DISTRICT CONTRACTING. CHIEF COUNSEL COLLECTIONS NATIONAL PRACTICE GROUP. CHIEF COUNSEL, LOAN GUARANTY. CHIEF COUNSEL, INFORMATION LAW GROUP. CHIEF COUNSEL COURT OF APPEALS FOR VETERANS CLAIMS LITIGATION GROUP. CHIEF COUNSEL, BENEFITS LAW GROUP. DEPUTY GENERAL COUNSEL VETERANS PROGRAMS. DEPUTY GENERAL COUNSEL, GENERAL LAW. ASSISTANT CHIEF COUNSEL, COURT OF APPEALS FOR VETERANS CLAIMS LITIGATION GROUP. SENIOR COUNSEL TO THE GENERAL COUNSEL. CHIEF COUNSEL, ETHICS LAW GROUP. CHIEF COUNSEL, SOUTHEAST DISTRICT- NORTH. CHIEF COUNSEL NORTH ATLANTIC DISTRICT NORTH. COUNSELOR/ADVISOR. CHIEF COUNSEL, PERSONNEL LAW GROUP. CHIEF COUNSEL CONTINENTAL DISTRICT--WEST. DEPUTY GENERAL COUNSEL, LEGAL OPERATIONS. CHIEF COUNSEL (2). CHIEF COUNSEL MIDWEST DISTRICT EAST. CHIEF COUNSEL MIDWEST DISTRICT WEST. CHIEF COUNSEL NORTH ATLANTIC DISTRICT SOUTH. CHIEF COUNSEL PACIFIC DISTRICT SOUTH. EXECUTIVE DIRECTOR, OFFICE OF ACCOUNTABILITY REVIEW. CHIEF COUNSEL REAL PROPERTY LAW GROUP. CHIEF COUNSEL, PROCUREMENT LAW GROUP. CHIEF COUNSEL HEALTH LAW GROUP. OFFICE OF THE EXECUTIVE DIRECTOR, SECRETARY AND EMPLOYEE DEPUTY. DISCRIMINATION COMPLIANCE. EXECUTIVE DIRECTOR, OFFICE OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION. DEPUTY EXECUTIVE DIRECTOR, OFFICE OF SMALL AND DISADVANTAGED BUSINESS UTILIZATION. DEPUTY EXECUTIVE DIRECTOR, ACCOUNTABILITY AND WHISTLEBLOWER PROTECTION. VETERANS BENEFITS SENIOR ADVISOR, ADMINISTRATION. FISCAL STEWARDSHIP. DEPUTY CHIEF FINANCIAL OFFICER. DEPUTY EXECUTIVE DIRECTOR FOR POLICY AND PROCEDURES. EXECUTIVE DIRECTOR, LOAN GUARANTY SERVICE. DEPUTY EXECUTIVE DIRECTOR FOR OPERATIONS. EXECUTIVE DIRECTOR, PERFORMANCE ANALYSIS AND INTEGRITY. CHIEF FINANCIAL OFFICER.[[Page 21630]] VETERANS HEALTH EXECUTIVE DIRECTOR, ADMINISTRATION. SERVICE AREA (EAST). EXECUTIVE DIRECTOR SERVICE AREA (CENTRAL). EXECUTIVE DIRECTOR, SERVICE AREA (WEST). ASSOCIATE CHIEF FINANCIAL OFFICER, VETERANS HEALTH ADMINISTRATION. DEPUTY CHIEF PROCUREMENT OFFICER, VETERANS HEALTH ADMINISTRATION. 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DEPUTY ASSISTANT INSPECTOR GENERAL FOR AUDITS AND EVALUATIONS (HEADQUARTERS MANAGEMENT AND INSPECTIONS). OFFICE OF THE DEPUTY ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR HEALTHCARE HEALTHCARE INSPECTIONS. INSPECTIONS. ASSISTANT INSPECTOR GENERAL FOR HEALTHCARE INSPECTIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR HEALTHCARE INSPECTIONS.[[Page 21631]] OFFICE OF THE ASSISTANT INSPECTOR ASSISTANT INSPECTOR GENERAL FOR GENERAL FOR INVESTIGATIONS. INVESTIGATIONS. DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS (FIELD OPERATIONS)(2). DEPUTY ASSISTANT INSPECTOR GENERAL FOR INVESTIGATIONS (HEADQUARTERS OPERATIONS). OFFICE OF THE DEPUTY ASSISTANT ASSISTANT INSPECTOR INSPECTOR GENERAL GENERAL FOR FOR MANAGEMENT AND MANAGEMENT AND ADMINISTRATION--CHI ADMINISTRATION. EF TECHNOLOGY OFFICER. ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT AND ADMINISTRATION. DEPUTY ASSISTANT INSPECTOR GENERAL FOR MANAGEMENT AND ADMINISTRATION. OFFICE OF THE ASSISTANT INSPECTOR ASSISTANT INSPECTOR GENERAL FOR SPECIAL GENERAL FOR SPECIAL REVIEWS. REVIEWS.------------------------------------------------------------------------ Authority: 5 U.S.C 3132.Office of Personnel Management.Alexys Stanley,Regulatory Affairs Analyst.[FR Doc. 2021-08389 Filed 4-21-21; 8:45 am] BILLING CODE 6325-39-P

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[***Federal Register: Environmental Quality Incentives Program Pages 67637 - 67648 [FR DOC #2020-23437]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:615N-JS51-F0YC-N31C-00000-00&context=1516831)

Impact News Service

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF AGRICULTURECommodity Credit Corporation7 CFR Part 1466[Docket ID NRCS-2019-0009]RIN 0578-AA68Environmental Quality Incentives ProgramAGENCY: Natural Resources Conservation Service (NRCS) and the Commodity Credit Corporation (CCC), United States Department of ***Agriculture*** (USDA).ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: This final rule adopts, with minor changes, an interim rule published in the Federal Register on December 17, 2019, that made changes to the NRCS's Environmental Quality Incentives Program (EQIP). The changes were made to be consistent with the ***Agriculture*** Improvement Act of 2018 (the 2018 Farm Bill) and implemented administrative improvements and clarifications. NRCS received input from 197 commenters who provided 598 comments in response to the interim rule. This final rule makes permanent those changes appearing in the interim rule, responds to comments, and makes further adjustments in response to some of the comments received.DATES: Effective: October 26, 2020.FOR FURTHER INFORMATION CONTACT: Michael Whitt; phone: (202) 690-2267; or email: [*michael.whitt@usda.gov*](mailto:michael.whitt@usda.gov) Persons with disabilities who require alternative means for communication should contact the USDA ***Target*** Center at (202) 720-2600 (voice).SUPPLEMENTARY INFORMATION:Background On December 17, 2019, NRCS published an interim rule with request for comments in the Federal Register (84 FR 69272-69293) to implement mandatory changes made by the 2018 Farm Bill and administrative improvements and clarifications. This final rule adopts, with minor changes, the amendments made by the interim rule. These changes are in response to public comment as explained in the summary of EQIP comments below.Discussion of EQIP (7 CFR Part 1466) Through EQIP, NRCS incentivizes ***agricultural*** producers to conserve and enhance soil, water, air, plants, animals (including wildlife), energy, and related natural resources on their ***land***. EQIP promotes ***agricultural*** production, ***forest*** management, and environmental quality as compatible goals, and optimizes environmental benefits by assisting producers in addressing resource concerns on their operations. EQIP also helps ***agricultural*** producers meet Federal, State, and local environmental requirements and avoid the need for new requirements. Eligible ***lands*** include cropland, grassland, rangeland, pasture, wetlands, nonindustrial private ***forest*** ***land***, and other ***land*** on which ***agricultural*** or ***forest***-related products or livestock are produced and natural resource concerns may be addressed. Participation in EQIP is voluntary. The Secretary of ***Agriculture*** delegated authority to the Chief, NRCS, to administer EQIP on behalf of CCC. The interim rule: Incorporated the addition of new or expected resource concerns to EQIP program purposes, adapting to and mitigating against increasing weather volatility, and drought resiliency measures. Amended how EQIP interacts with the Regional Conservation Partnership Program (RCPP) since RCPP is now a stand-alone program. Amended some definitions and added others to address changes made by the 2018 Farm Bill, including-- [cir] Animal feeding operation (AFO); [cir] Eligible ***land***; [cir] Estimated income foregone; [cir] ***Forest*** management plan; [cir] High priority area; [cir] Incentive practice; [cir] Priority resource concern; [cir] Semipublic; [cir] Soil remediation; [cir] Soil testing; and [cir] Water management entity (WME). Added ``increased weather volatility'' as a resource concern under the national priorities identified in the regulation. Added to outreach responsibilities the requirement to notify historically underserved producers about the availability to elect to receive advance payments. Addressed EQIP contract provisions associated with WMEs and certain water conservation projects. Removed the requirement that a participant must implement and develop a comprehensive nutrient management plan (CNMP) by the end of the contract and replaced it with the following: Any conservation practices in the EQIP plan of operation must be implemented consistent with a CNMP. Incorporated the ability to waive the $450,000 regulatory contract limitation and establish a $900,000 regulatory contract limitation for certain projects with joint operations, group projects, or contracts where NRCS has waived the payment limitation for a WME. Increased payment rates for certain high-priority practices and increased payment rates for practices that address source water protection. Updated the statutory payment limitations for general EQIP contracts and contracts entered into under the National Organic Initiative. Clarified provisions related to contract administration, including procedures for contract modification and termination. Relocated provisions related to administration of Conservation Innovation Grants (CIGs) to its own subpart and incorporated the addition of On-farm Conservation Innovation Trials (On-farm Trial), which include the Soil Health Demonstration (SHD) Trial. Added a new subpart to address EQIP incentive contracts, which are a new enrollment option created by section 2304 of the 2018 Farm Bill. Relocated the General Administration provisions from subpart C to a new subpart E and updated language addressing environmental markets to reflect changes made by the 2018 Farm Bill.Summary of EQIP Comments The interim rule had a 60-day comment period ending February 18, 2020. NRCS received 598 comments from 197 commenters in response to the rule. In addition, one organization submitted a spreadsheet with 12,852 comments. NRCS reviewed these comments and categorized and[[Page 67638]]summarized them according to the topics identified below. The topics that generated the greatest response include conservation practices, contract limits, and national priorities. In this rule, the comments have been organized in alphabetic order by topic. The topics include: Administration; Advance payments; Applicability; CIG--On-farm Trials, Other, and SHD Trials; Conservation Practices--High Priority Practices, Incentive Practices, Other, Prairie Pothole Wildlife Practice, Soil Health, and Source Water Protection; Contract Administration; Contract Limits Unrelated to WMEs; Contract Requirements; Contracts with WMEs--Adjusted Gross Income (AGI) and Payment Limitation Waiver, ***Land*** Eligibility Criteria, and Other; Definitions--Eligible ***Land***, High Priority Area, Priority Resource Concern, Soil Testing, and WMEs; Eligibility; Environmental Assessment; EQIP Plan of Operations--Comprehensive Nutrient Management Plan; Fund Allocations; General; Incentive Contracts--Selection Criteria; National Priorities; Outreach Activities; Payment Limits; Payment Rates; and Ranking. Of the 598 comments raised by the 197 commenters, 47 were general in nature and most expressed support for EQIP or how EQIP has benefitted particular operations. NRCS also received 21 comments that were not relevant to the EQIP interim rule. Seven comments criticized the regulation for not strengthening EQIP's impact on climate resilience or soil health. Six comments requested NRCS technical assistance for existing and potential projects. Several of these comments conveyed frustration with the process or specific working relationships. NRCS is committed to providing the highest quality service to its customers and partners, and these comments have been forwarded to the appropriate staff. In general, comments focusing on topics that were outside the scope of the regulation will not be addressed. In response to the request that public comment be submitted through email, NRCS reminds the public that all comments should be submitted to the agency dockets on Regulations.gov and any comments that are received by another method will be posted on regulations.gov for public access to all of the comments in one place. In following the rulemaking process, NRCS seeks to provide equal consideration to all who wish to provide feedback. Submission of public comment through Regulations.gov provides a more equitable and reliable system by which to collect comments within the stated timeframes. NRCS also received 24 comments that expressed nonspecific dissatisfaction with EQIP or the interim rule and 47 comments that supported EQIP or the interim rule. These comments do not include any recommendations for change. This final rule responds to the comments received by the public comment deadline and makes minor clarifying and related changes.Administration Comment: NRCS received comment related to EQIP administration, including comment addressing outreach, organic production, input from State advisory committees, funding ***targets***, expanding the Working ***Lands*** for Wildlife model, additional training to employees, and allowing grazing on all ***land*** uses. Response: NRCS appreciates the suggestions for improving outreach and operations and will incorporate suggestions when updating outreach plans and EQIP policies. No change is being made to the regulation in response to this issue.Advance Payments Comment: NRCS received comment recommending making advance payments mandatory or changing their timing, including making the advance payment when the producer is ready to begin the practice or to begin the 90-day clock upon practice installation. Response: NRCS built criteria into business tools that must be met prior to approving an advance payment, including verification that the request is for an immediate need and that a final design has been accepted by the participant. NRCS cannot change the start time for the 90-day clock since statute specifies that the clock starts on the date that the advance payment is received by the participant. The participant's receipt of the advance payment, and NRCS's expenditure of funds, commences the 90-day clock. NRCS offers advance payments to all historically underserved producers and records, by contract item, the producer decision to receive advance payments on the EQIP schedule of operations. No change is being made to the regulation in response to this issue.Applicability Comment: NRCS received comment recommending changes to EQIP's purpose, scope, and objectives as discussed in the Applicability section, Sec. 1466.1, including identifying that EQIP participation should also avoid the need for regulatory programs, identifying that the EQIP purpose includes financial and technical assistance to organic producers, adding that new or expected resource concerns relate also to organic producers, and suggesting that assisting producers with transitioning from an expiring Conservation Reserve Program (CRP) contract should be an EQIP priority in order to keep ***land*** in grass and maintain financial and resource investments. Response: The final rule focuses on the purposes spelled out in statute, including referencing assistance related to organic production and helping producers transition from CRP and, in doing so, keeping ***land*** in grass and thereby maintaining financial and resource investments. The regulatory text has been modified at Sec. 1466.1(a) and Sec. 1466.20(b) to address these concerns. No other changes are being made to the regulation in response to this issue.CIGsCIG On-Farm Trials Comment: NRCS received comment supporting CIG On-farm Trials testing of new technologies at the field level, including recommending that NRCS clearly state that on-farm conservation research is authorized under CIG, and that soil health testing be required of all On-farm Trials to determine impacts to soil health. Response: On-farm Trials ``facilitate and incentivize experimentation and testing of new and innovative conservation approaches.'' If research falls within the scope of ``experimentation and testing,'' it is an authorized activity for On-farm Trials. Soil health testing is not a required part of every On-farm Trials project, although NRCS may apply the extent to which an On-farm Trial seeks to measure or improve soil health as a ranking consideration in the context of funding opportunities. No change is being made to the regulation in response to this issue.Other Comment: NRCS received comment recommending changes to other aspects of CIG, requesting NRCS waive its one-[[Page 67639]]to-one match requirement for grants that assist historically underserved producers, reword the 10 percent funding for grants that assist historically underserved producers to require that no less than 10 percent of CIG funding be awarded to historically underserved producers, expand the purpose of CIG to specifically mention on-farm practical field research as a purpose, and directing a CIG study for new and innovative manure management. Response: This final rule allows a reduction of match requirements for historically underserved producers on a case-by-case basis and sets forth the criteria for granting such a match reduction. NRCS has consistently met the 10 percent funding goal for historically underserved producers and is committed to improving outreach to this demographic. No changes are made regarding the funding goal in the final rule. This rule is expanding the purposes language in the regulation to include practical field research and is continuing to work with producers and partners to develop innovative practices for manure management through multiple avenues, including CIG.SHD Trials Comment: NRCS received comment recommending that NRCS add language to the rule to diversify participation in SHD Trials--for example, by farm type, size, location, and underrepresented producers. Comment also recommended funding for soil testing. Response: The final rule provides for a process that results in diverse CIG participation. NRCS is developing a soil test activity which could be utilized in CIG contracts with producers. If an SHD Trial results in a reliable, efficient, and cost-effective process for soil health testing, NRCS will consider it in developing the soil test activity noted above. No additional language was added to the regulation in response to this issue.Conservation PracticesHigh-Priority Practices Comment: NRCS received comment recommending specific ***targets*** and specific habitat and area restoration plans (such as prioritizing practices with a high environmental benefit but low adoption rate or offering longer contracts with additional payments for foregone income for practices that benefit wildlife). Response: The EQIP regulation gives States the greatest flexibility to adapt to local needs and determine high-priority practices in consultation with State technical committees and local working groups. States currently have the authority to prioritize practices that have a high environmental benefit but low adoption rate to increase practice adoption. In addition, EQIP provides the opportunity for producers to enter into contracts of up to 10 years, and NRCS currently allows States to assign higher significance to wildlife habitat development and other natural resource concerns when determining rates for estimated foregone income. No change is being made to the regulation in response to this issue.Incentive Practices Comment: NRCS received comment recommending prioritizing EQIP incentive practices that are compatible with ecosystem services markets; prioritizing applications with at least two priority resource concerns; allowing EQIP grazing practices on cover crops and other grass-based practices that have wildlife benefits; prioritizing payments for management practices to encourage long-term, beneficial changes to production systems; and using longer-term incentive contracts in certain circumstances, such as with wildlife projects. Response: Incentive practices are a relatively new area for NRCS, and NRCS is continuing to work with State, local, and Tribal groups to develop practices that are best suited for incentive payments in each high-priority area. As NRCS develops those practices, it is considering compatibility with ecosystem services markets, multiplicity of benefits, wildlife benefits, long-term benefits, and term length where appropriate and within the bounds of statute. No change is being made to the regulation in response to this issue.Other Comment: NRCS received comment recommending incorporating new technologies and advancements in conservation practice standards, creating interim standards where beneficial, and encouraging flexibility to better address State and local needs. Response: NRCS will continue to adapt and innovate the application of science and technology to provide the best resource conservation possible through each of its programs, including EQIP. These adaptations and innovations will be reflected in future NRCS practice standards. No change is being made to the regulation in response to this issue.Prairie Pothole Wildlife Practice Comment: NRCS received comment recommending prioritizing longer wildlife habitat contracts to benefit such areas as the Prairie Pothole Region and rice-producing areas. The EQIP statute (section 1240B(g)(3)), provides for longer-term (up to 10 year) contracts that benefit wildlife and includes postharvest flooding practices or practices that maintain the hydrology of temporary and seasonal wetlands. Response: NRCS recognizes the importance of wildlife protection in the Prairie Pothole Region and rice-producing areas. State and regional priorities determine how best to implement strategies for ensuring the most appropriate contract terms are in place to protect wildlife. No change is being made to the regulation in response to this issue.Soil Health Comment: NRCS received comment requesting that NRCS provide more soil health practice options, including suites or bundles of soil health practices through outreach efforts and asked that NRCS consider additional ranking points for applicants using suites or bundles of soil health practices. Comment also asked that NRCS develop soil health planning protocols for cropland, grazing ***land***, and other ***agricultural*** ***lands***; that these protocols be widely available through EQIP technical and financial assistance; and that soil health testing be required for any contract supporting the adoption of soil health practices and that grazing of cover crops be permitted to enhance soil health conditions. Response: Improving and maintaining soil function is a priority for, and a foundation of, NRCS's programs and maintaining or developing relevant measures to promote soil health is a focus of the agency. Regarding the overall process of additional soil health conservation practice options, NRCS follows a formal process to review each national conservation practice standard at least once every 5 years from its date of issuance or review. Interim conservation practice standards serve as mechanisms for field testing new technology. Interim conservation practices that prove successful are either developed into national conservation practice standards or incorporated into existing practice standards, as appropriate. States may modify national practice standards to meet State or local needs. The National Technical Guide Committee publishes a notice in the Federal Register requesting comments on all additions or revisions to conservation practices in the NRCS National Handbook of Conservation Practice Standards. The comment[[Page 67640]]period is not less than 30 days from the date of notice publication. The NRCS Conservation Practice Standard Cover Crop (Code 340) provides guidance for grazing cover crops. Grazing of cover crops may be permitted depending on such factors as the soil condition and growth state of the cover crop. When addressing conditions such as soil health and organic matter content, cover crop species will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil. Grazing must not cause negative impact to the site (for example, erosion or compaction). No change is being made to the regulation in response to these issues.Source Water Protection Comment: NRCS received comment suggesting that wetland practices, such as wetland restoration and buffers, count as source water protection practices. Comment noted the importance of involving State technical committees in designating source water protection areas and eligible source water protection practices. Response: NRCS will continue to work closely with State technical committees, which are crucial in designating source water protection areas and eligible source water protection practices. As determined by NRCS in collaboration with the State technical committees, wetland restoration and buffers will be source water protection practices. No change is being made to the regulation in response to this issue.Contract Administration Comment: NRCS received comment encouraging that NRCS use the longest possible contract lengths (up to 10 years) for wildlife conservation, especially for wildlife practices that require high levels of site preparation and maintenance. Comment also highlighted that EQIP requires applicants to obtain the written concurrence of the landowner to apply a conservation practice, while Colorado state law allows ditch owners to install water pipelines to replace open-air ditches without the landowner's consent. Response: States already may offer contracts with a term of up to 10 years with one or more annual management practices to restore, develop, protect, and improve wildlife habitat. Regarding the difference between State law and Federal regulation, the EQIP requirement to obtain landowner permission to apply a conservation practice cannot be waived. However, if the holder of the right of way has the property rights necessary to install water pipelines without consent of the fee title landowner, then NRCS considers the holder of the right of way the landowner for consent purposes. No change is being made to the regulation in response to this issue.Contract Limits Unrelated to Water Management Entities Comment: NRCS received comment recommending ***removing*** joint operations and confined animal feed operations (CAFOs) from the list of operations for which a waiver can be requested to exceed the $450,000 contract limit. The specific change requested was to amend the rule by striking Sec. 1466.21(e)(1)(ii)(A) and the words or individual member thereof from Sec. 1466.6(d)(3)(iii). While the higher contract limit does not relate specifically to CAFOs, the comment associated CAFOs with joint operations and the availability of higher levels of program assistance. Comment also recommended that EQIP not fund CAFOs at all. Response: By statute, EQIP has an aggregate $450,000 payment limitation per person or legal entity, directly or indirectly, for all contracts entered into during fiscal years (FYs) 2019 through 2023. The overall program payment limitation may not be waived; further, NRCS does not have the discretion to automatically disqualify CAFOs from EQIP assistance. Under payment limitation requirements that apply to NRCS and Farm Service Agency programs, joint operations are able to receive a payment up to the maximum amount specified for a person or legal entity multiplied by the number of persons or legal entities that comprise ownership of that joint operation (see 7 CFR part 1400). When a joint operation consisting of two or more members enters into an EQIP contract, the EQIP contract with the joint operation may receive funding of up to $900,000. Without a contract limit, joint operations could receive very large payments under an EQIP contract. To address concerns related to large contracts with joint operations, NRCS in 2009 imposed a regulatory contract limit that corresponded with the EQIP payment limit. The 2009 interim rule did not adjust the contract limit for joint operations, and this system was maintained in the EQIP regulation through the 2014 Farm Bill. The $450,000 limit does not, therefore, represent a change to EQIP brought about in the 2019 interim rule. To clarify, the overall program payment limitation may not be waived. No member of a joint operation may receive more than $450,000 in payment through EQIP for program years 2019 through 2023. But, when a joint operation consisting of two or more members enters into an EQIP contract, the EQIP contract with the joint operation may receive funding of up to $900,000. EQIP is using this flexibility to help streamline contract administration for these types of arrangements. Unlike the Conservation Stewardship Program (CSP), EQIP does not require enrollment of the entire operation. Each operation may receive multiple contracts for EQIP; therefore, the purpose of contract limits in EQIP differs from that in CSP. No change is being made to the regulation in response to these issues.Contract Requirements Comment: NRCS received comment recommending provisions for NRCS to incorporate into the EQIP contracts with producers, including requiring participants to report EQIP environmental outcomes to NRCS; ensuring that the eligibility of irrigation districts for EQIP contracts does not alter the annual funding allocation to States; strengthening support for best grazing management practices; limiting contracts to only 1 year; and requiring consideration as to how irrigation projects and practices could inadvertently negatively impact wildlife habitats and wetlands and increase water consumption by bringing additional ***land*** into production or converting ***land*** to more water-intensive crops. Response: NRCS provides an assessment of resource concerns, including impacts to wildlife and water conservation, before a practice or activity is implemented, and determines any potential effects and expected environmental outcomes through the ranking process prior to approving EQIP contracts. In accordance with statutory limitations, NRCS does not provide supplemental allocations to States for WME projects. Contract terms are up to 10 years with the actual term determined by the producer and agreed to by NRCS. No change is being made to the regulation in response to this issue.Contracts With Water Management EntitiesAdjusted Gross Income and Payment Limitation Waiver Comment: NRCS received comment related to AGI and payment limitation waiver criteria with respect to contracts with WMEs, including: General support[[Page 67641]]for the $900,000 payment limit; support for increasing the payment limitation amount to over $900,000 as long as it adheres to specific, narrow cases allowed by statute; and support for increasing the payment limit to at least 10 times the individual limit (over $4.5 million) to address large-scale irrigation infrastructure projects. Other comment suggested waiver criteria, such as if the contract addressed multiple natural resource concerns outlined in statute, service to multiple farm operations, or benefitted historically underserved producers. Some comment expressed a desire that individual producers maintain access to funds within State EQIP allocations, either by maintaining the $900,000 payment limit, reducing it to the standard $450,000, by establishing a separate national allocation pool for WME projects or continuing to fund WMEs thorough RCPP. Other comment recommended separating the AGI waiver and payment limitation waiver. Response: NRCS appreciates the diverse array of views. When a WME establishes through its program application that it deserves an AGI waiver using the criteria established in the interim rule (and retained in this final rule), it also establishes that it needs an increased contract limit. The contract limit of $900,000 is an appropriate size to draw a distinction between EQIP and other programs that may protect watersheds, such as RCPP or Watershed Operation Assistance under public law 83-566. No change is being made to the regulation in response to this issue.***Land*** Eligibility Criteria Comment: NRCS received comment expressing general support for contracts with WMEs; recommending expanding the definition of adjacent ***land*** to include ***lands*** that create a direct connection between the infrastructure under the control of a WME and the producer's ***land*** (i.e , any ***land*** over which the WME holds an easement); limiting the scope of adjacent ***land*** to ***land*** that abuts an EQIP-eligible farm or ranch and is necessary for the practice or system being implemented by the WME; limiting recipients of EQIP funds to existing ***agricultural*** producers; and, ensuring that EQIP contracts do not enable water spreading, increase consumptive use, or put new ***land*** into ***agricultural*** production. Response: The term ``adjacent'' is not defined in the interim rule or in this final rule. However, the adjacent ***land*** must meet several criteria in order to be eligible for enrollment in a contract with a WME, including that it must be ``necessary to support the installation of a conservation practice or system on eligible ***land***.'' This supports an expansive interpretation of ``adjacent'' while ensuring that the adjacent ***land***'s enrollment supports the installation of a practice or system on eligible ***land***. No change is being made to the regulation in response to this issue.Other Comment: NRCS received comment supporting the expansion of EQIP eligibility to WMEs, including ***land*** grant--mercedes, and recommended streamlined processes, clarification on eligibility, and guidance for WMEs on application. Response: Streamlining and clarification will be addressed through additional outreach and communication to stakeholders. No change is being made to the regulation in response to this issue. The regulation in Sec. 1466.6, ``Program requirements,'' includes additional criteria for WME eligibility, consistent with statutory direction, to ensure water conservation projects typical of ***land*** grant--mercedes can be considered for assistance.DefinitionsEligible ***Land*** Comment: NRCS received comment recommending including reference to wildlife under the definition for eligible ***land*** to incentivize stewardship of ***land*** managed for wildlife and expanding the definition of associated ***agricultural*** ***lands*** to include neighboring properties as eligible ***lands*** to both support ***agriculture*** and wildlife habitat. Response: NRCS appreciates the interest in EQIP from wildlife and conservation stakeholders. The purpose of EQIP is to provide financial and technical assistance to ***agricultural*** producers on eligible ***agricultural*** and nonindustrial private ***forest*** ***land***. No change is being made to the regulation in response to this issue.High-Priority Area Comment: NRCS received comment on the definition of high-priority areas, including recommending how to conduct a robust consultation process with the State technical committees and other stakeholders, selecting areas that cover broad and diverse areas of ***agricultural*** production and resource concerns, and also selecting areas based on a narrower, prioritized implementation approach. Response: NRCS will continue to work cooperatively with State technical committees through the local working group process to select high-priority areas consistent with national, State, and local priorities. No change is being made to the regulation in response to this issue.Priority Resource Concern Comment: NRCS received comment supporting the local role of the State in setting priority resource concerns, including wildlife practices and high-priority practices. Response: NRCS will continue to work cooperatively with State technical committees to select priority resource concerns consistent with national, State, and local priorities. No change is being made to the regulation in response to this issue.Soil Testing Comment: NRCS received comment that supported identifying appropriate soil health testing protocols, requiring the protocols in all EQIP contracts related to soil health, and quantifying the environmental outcomes of EQIP contracts on soil health. Response: NRCS appreciates the attention that the public has given to soil health. NRCS continues to develop activities designed around soil health and soil testing, which are likely to receive recognition in local, State, or national priorities for ranking or other purposes. No change is being made to the regulation in response to this issue.Water Management Entities Comment: NRCS received comment recommending that the definition of ``water management entity'' include mutual ditch, irrigation, and canal companies as ``similar entities'' due to their similarities to acequias in their purpose, size, legal status, and organizational structure. Comment also supported limiting EQIP funding for WMEs to contracts where the water users are farmers and ranchers. Response: NRCS will keep the current definition of WME in Sec. 1466.3, since this definition does not exclude ditch and related companies. Ditch and related companies may be eligible WMEs if they are a semipublic organization with the purpose of assisting private ***agricultural*** producers manage water distribution or conservation systems. No change is being made to the regulation in response to this issue.Eligibility Comment: NRCS received comment recommending EQIP eligibility language reflect grazing rights on public ***lands*** better, make entities that do not have direct control of the ***land*** and members of Internal Revenue Code (IRC) Section[[Page 67642]]501(d) religious organizations eligible for participation, and expand eligibility for On-farm Trials to organizations that conduct business related to conservation on ***agricultural*** ***lands***. Response: Control of ***land*** is a necessary requirement for participant eligibility. The participant must be able to implement the requirements of the EQIP contract, which is demonstrated through control of the ***land***. Regarding publicly-owned ***land***, NRCS considers whether the ***land*** is within the applicant's control (in other words, that the applicant can implement the terms of the EQIP contract), whether the ***land*** is a working component of the producer's ***agricultural*** or forestry operation (for example, that the producer uses the ***land*** for grazing), and whether conservation practices to be implemented on the public ***land*** are necessary and will contribute to an improvement in the identified resource concern. If all three criteria are met, the ***land*** may be eligible. Religious organizations are not excluded from eligibility. A legal entity organized under IRC Section 501(d) meets the definition of legal entity in Sec. 1466.3 provided it owns ***land*** or an ***agricultural*** commodity, product, or livestock or produces an ***agricultural*** commodity, product, or livestock. An eligible entity for the purposes of On-farm Trials includes a third-party private entity, the primary business of which is related to ***agriculture***. This includes organizations that conduct business related to conservation on ***agricultural*** ***lands***. No change is being made to the regulation in response to this issue.Environmental Assessment Comment: NRCS received comment related to the Programmatic Environmental Assessment (EA). Comment asserted: The current ``no action'' alternative is not a legally permissible outcome; the Programmatic EA must indicate which decisions are discretionary or mandatory; for discretionary decisions, NRCS must list at least two legally permissible alternatives; and because the Programmatic EA is insufficient, the Finding of No Significant Impact (FONSI) is also insufficient. Comment also indicated that data collection is a key input to assessing environmental impact, suggesting that NRCS incentivize producer participation in third-party data collection services to track environmental benefits of conservation practices. Response: NRCS prepares its programmatic National Environmental Policy Act (NEPA) documents to provide broad-scale analyses to which site-specific program actions may tier, when appropriate, for purposes of complying with NEPA. NEPA does not require Federal agencies to consider alternatives that have substantially similar consequences; rather, it is clearly intended to help agencies avoid significant adverse impacts. The ``no action'' alternative describes continuation of EQIP under its previous regulations. NEPA regulations require analysis of a no action alternative for comparative reasons. Conservation activities associated with each EQIP contract undergo additional site-specific environmental review and analysis designed to avoid, minimize, rectify, reduce, eliminate, or compensate for any potential adverse impacts. No change is being made to the regulation in response to this issue.EQIP Plan of Operations--Comprehensive Nutrient Management Plan Comment: NRCS received comment about progressive implementation of a CNMP, asserting that the interim rule only requires development of a CNMP and does not require progressive implementation and thus is contrary to the intent of Congress. Response: NRCS understands these comments to suggest that the interim rule is ambiguous regarding CNMP implementation. This rule revises the regulation to add clarity. From a practical standpoint, a producer implementing EQIP-funded conservation practices consistent with CNMP is progressively implementing CNMP. However, some EQIP contracts are for development of CNMP as a conservation activity plan only. There are no practices to implement progressively under these contracts other than the plan itself. In addition, this rule clarifies that CNMP will address all ``applicable'' natural resources since natural resource issues are site-specific. In this manner, NRCS hopes to avoid any confusion about the scope of CNMP while maintaining core aspects that have been in the CNMP definition since 2003.Fund Allocations Comment: NRCS received comment recommending that NRCS address the funding allocation for wildlife conservation practices, including that NRCS: Ensure the 10 percent allocation is a ``floor'' and not a ``ceiling'' for wildlife practice funding; set the 10 percent allocations at the State rather than national level; make a narrower list of practices that count toward the 10 percent allocation or including State partners in determining which practices should count in that State; and exclude EQIP contracts from the 10 percent allocation that involve either the Working ***Lands*** for Wildlife model or interagency cooperation with the U.S Fish and Wildlife Service. Comment also expressed a desire for increased collaboration with State and local partners for ***targeting*** wildlife habitat and conservation. Other comment addressed the funding allocation for livestock practices, including disapproval of the statutory change from 60 percent to 50 percent, opinion that the 50 percent mandate was far too high, and request about how the national mandate is implemented on a State-by-State basis. Comment also addressed other fund allocation topics as follows: Concern over whether NRCS was making equitable allocations to States by citing a 2017 U.S Government Accountability Office report suggesting that NRCS was using historical allocation data rather than seeking to optimize environmental benefits. Recommendation to create a national initiative for ***targeted*** funding for small-scale operations based on existing State-level initiatives. Concern that allocations of funds to WMEs would take conservation dollars away from producers, so they requested that NRCS add language ensuring that producers would be the ultimate beneficiaries of EQIP funding for contracts with WMEs. Note that Congress did not want contracts with irrigation districts to adjust State funding allocations. Suggestion that contracts with WMEs should increase allocations for western States. Request that NRCS link funding allocations to accountability mechanisms so that activities with limited conservation benefits are not funded. Response: NRCS will consider these comments in its allocation process. The breadth and depth of these comments indicate the importance of fund allocations to EQIP stakeholders and partners. EQIP implementation, including the allocation of funding, is complex in nature because the statute provides for multiple goals and requirements. All statutory goals must be addressed even though some desired outcomes are difficult or impossible to quantify given current information availability. Through local input, combined with the use of the Conservation Effect Assessment Project (CEAP) and other important data, USDA seeks to enable program managers and[[Page 67643]]leaders to achieve the most effective and efficient program outcomes across the entire range of statutory goals. State technical committees and local work groups, with the knowledge and expertise of their members, also provide additional sources of data and information. Their membership includes leaders in ***agriculture***, conservation, producers, and other stakeholders and their input provides a means of ensuring EQIP allocations are made according to the resource concern, ***targeted*** to the local conditions, and relevant to and contributing to national resource priorities. These State and local sources provide valuable information and data on environmental concerns not otherwise available, thus giving allocation decisions far more depth and granularity. The State technical committee regulation and standard operating procedures address this process and thus no change is being made to the EQIP regulation in response to this issue.General Comment: NRCS received comment requesting a modification to how the changes made by the 2018 Farm Bill appear in the interim rule preamble. Response: The interim rule preamble provides a summary and is not intended to represent a comprehensive description of the 2018 Farm Bill changes. NRCS encourages reviewers to read the 2018 Farm Bill if additional perspective is sought. No change is being made to the regulation in response to this issue.Incentive Contracts--Selection Criteria Comment: NRCS received comment recommending NRCS modify the incentive contract selection criteria, giving priority to applications aiming to make the participant eligible for CSP at the end of the contract period. Response: Incentive contracts are designed to serve as a bridge between EQIP and CSP. State technical committees and other local stakeholders designate priority resource concerns and high-priority areas and assist in determining priority resource concerns for CSP. The final rule maintains language in the interim rule to maximize local control over what EQIP practices are best suited for the applicant to transition to CSP. No change is being made to the regulation in response to this issue.National Priorities Comment: NRCS received comment recommending the addition of soil health, climate resilience, and drought resiliency to the list of national priorities in Sec. 1466.4(a), indicating that Congress made soil testing and soil health planning qualified activities for EQIP support in the 2018 Farm Bill, and that Congress spoke to the need to focus on climate resilience by making addressing weather variability and drought resilience new purposes for EQIP. Response: Rather than increasing the number of national priorities from 8 to 10, this rule adds concepts of soil health and climate resiliency to existing national priorities. In particular NRCS incorporates concepts of climate resiliency through the addition of the language ``increased resilience against drought and weather volatility'' in Sec. 1466.4(a)(4) and incorporates ``improvement of soil health'' in Sec. 1466.4(a)(6).Outreach Activities Comment: NRCS received comment recommending a variety of different actions with respect to its outreach activities, including: Requesting a focus on the conservation benefits of wildlife practices; ***targeting*** diverse farming operations; additional outreach at the local level; adding information on advance payment options in outreach to historically underserved producers to increase EQIP participation; and using USDA and other data to inform producers of the potential economic impact of adopting conservation practices. Comment recommended that NRCS track and provide annual information to the public on the results of the allocations for wildlife practices and the use of native plants. Other comment offered general support for NRCS activities. Response: NRCS is committed to providing high-quality service across the Nation. Outreach strategies and efforts are in place at the national, State, and local levels, with those at the State and local level tailored to the needs of the specific area. In addition, ***targeted*** outreach efforts are underway for historically underserved producers and Tribes. In the regulation, Sec. 1466.5 contains special outreach authorization for historically underserved producers and a paragraph including outreach and documentation to historically underserved producers pertaining to advance payments. Regarding economic impacts, NRCS considers estimated economic impact in its conservation planning process, including in the development of conservation practice standards. The 2018 Farm Bill also requires the Secretary to identify available data sets within USDA that link the use of conservation practices to farm and ranch profitability (including crop yields, soil health, and other risk-related factors). NRCS tracks EQIP investment and performance. In addition to the 2018 Farm Bill's emphasis on reporting EQIP outcomes, the agency has an interest in understanding the impact of the statutory increase of the wildlife allocation from 5 to 10 percent. Regarding publicly available reports, the Soil and Water Resources Conservation Act (RCA) provides broad natural resource strategic assessment and planning authority for USDA. Information about NRCS's conservation programs at the State, regional, and national level, is available on the RCA interactive data viewer ([*https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/ida/*](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/ida/)). No changes have been made to the regulation in response to these comments.Payment Limits Comment: NRCS received comment related to payment limits, including opposition to the increased payment limit for participants in the organic initiative, request for ***removal*** of the $200,000 payment limit for incentive contracts, and support for keeping the aggregate payment limit of $450,000. Response: NRCS provides financial and technical assistance, through the National Organic Initiative, to help organic or transitioning-to-organic producers. In the interim rule, in Sec. 1466.24, NRCS updated the payment limitations for organic production from annual limits to an aggregate limit from FY 2019 through 2023, as required by the 2018 Farm Bill. Economic analysis indicates little impact as organic initiative contracts are usually well below the multiyear payment limit of $80,000 previously set by the 2014 Farm Bill. In the past, organic participants who exceed the organic initiative payment limit use other EQIP funding mechanisms. With the increased limit, more organic applicants will be able to make use of the organic initiative and consequently need only compete with other organic operations for funding. The 2018 Farm Bill's introduction of EQIP incentive contracts provides a new option for participation. In Sec. 1466.44 of the interim rule NRCS established criteria for incentive payments, including establishing a regulatory $200,000 payment limit similar to CSP, and ensuring that incentive contracts support a participant's ability to transition to CSP eligibility. While there were no comments submitted that opposed the $200,00 payment limit in this section, NRCS may consider setting[[Page 67644]]a contract limit on EQIP incentive contracts in the future. No change is being made to the regulation in response to this issue.Payment Rates Comment: NRCS received comment on the topic of payment rates, including adding the cost of third-party measurement of environmental benefits of adopted practices to payment rates as well as soil testing and data collection costs associated with using emerging sustainability tools and platforms and emerging ecosystem markets; using additional financial incentives (for example, through increased foregone income payments or higher cost-share percentages for high-priority practices) to meet the funding goal for wildlife practices; concern that payments received by participants may exceed the actual costs associated with the practice; and recommending that States, not regions, set payment rates, as project costs can vary widely from State to State. Response: NRCS follows a methodical approach and will consider each comment in developing payment schedules. The 2018 Farm Bill authorized increased payment rates for certain high-priority practices and for practices that address source water protection. Further, States can designate high-priority practices that will be eligible for higher payment rate at the State level. Policy requires soliciting input from State technical committees and the posting of payment schedules on a public website. In addition, as NRCS develops the functionality of digital tools, such as the Conservation Assessment and Ranking Tool (CART), the process of determining payment rate alignment with statutory factors will be refined. NRCS incorporates all statutory payment factors into regulations and ensures that payment rates are consistent between EQIP and CSP. No change is being made to the regulation in response to this issue.Ranking Comment: NRCS received comment recommending criteria changes to ranking and the weighting of ranking factors including that: Ranking focus on the net benefit to stream flows; preference be given to operators who have demonstrated ``best practices'' (with a focus on nonpoint source pollution); accountability mechanisms be built to ensure practices are achieving the maximum benefit; States prioritize practices addressing multiple resource concerns; and priority for EQIP enrollment be provided to ***land*** transitioned through the CRP Transition Incentive Program (CRP-TIP) (see 16 U.S.C 3835(f)(1)(E)). Response: NRCS will continue to work cooperatively with its State and local partners to develop ranking criteria that fit national, State, and local priorities. These priorities may include net benefit to stream flows, nonpoint source pollution, the feasibility of requiring accountability mechanisms in contract implementation, or multiplicity of conservation benefits. However, NRCS is not requiring these specific ranking factors in every situation. State Conservationists, in consultation with State technical committees, determine how many extra points to provide CRP-TIP in ranking. NRCS is committed to protecting CRP-TIP ***land*** in transition to a covered farmer or rancher and has incorporated this statutory priority in this final rule by adding language to Sec. Sec. 1466.1 and 1466.20(b). No other changes are made to the regulation in response to this issue.Paperwork Reduction Act and Effective Date In general, the Administrative Procedure Act (APA) (5 U.S.C 553) requires that a notice of proposed rulemaking be published in the Federal Register and interested persons be given an opportunity to participate in the rulemaking through submission of written data, views, or arguments with or without opportunity for oral presentation, except when the rule involves a matter relating to public property, loans, grants, benefits, or contracts. This rule involves matters relating to benefits and therefore is exempt from the APA requirements. Further, the regulations to implement the programs of chapter 58 of title 16 of the U.S Code, as specified in 16 U.S.C 3846, and the administration of those programs, are-- To be made as an interim rule effective on publication, with an opportunity for notice and comment, Exempt from the Paperwork Reduction Act (44 U.S.C ch. 35), and To use the authority under 5 U.S.C 808 related to Congressional review. Consistent with the use of the authority under 5 U.S.C 808 related to Congressional review for the immediate effect date of the interim rule, this rule is also effective on the date of publication in the Federal Register.Executive Orders 12866, 13563, 13771, and 13777 Executive Order 12866, ``Regulatory Planning and Review,'' and Executive Order 13563, ``Improving Regulation and Regulatory Review,'' direct agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health and safety effects, distributive impacts, and equity). Executive Order 13563 emphasized the importance of quantifying both costs and benefits, reducing costs, harmonizing rules, and promoting flexibility. The requirements in Executive Orders 12866 and 13573 for the analysis of costs and benefits apply to rules that are determined to be significant. Executive Order 13777, ``Enforcing the Regulatory Reform Agenda,'' established a Federal policy to alleviate unnecessary regulatory burdens on the American people. The Office of Management and Budget (OMB) designated this rule as economically significant under Executive Order 12866, and therefore, OMB has reviewed this rule. The costs and benefits of this rule are summarized below in the next section of this rule. The full regulatory impact analysis is available on [*https://www.regulations.gov/*](https://www.regulations.gov/). Executive Order 13771, ``Reducing Regulation and Controlling Regulatory Costs,'' requires that, to manage the private costs required to comply with Federal regulations for every new significant or economically significant regulation issued, the new costs must be offset by the savings from deregulatory actions. This rule involves transfer payments and is not required to comply with Executive Order 13771. In general response to the requirements of Executive Order 13777, USDA created a Regulatory Reform Task Force, and USDA agencies were directed to ***remove*** barriers, reduce burdens, and provide better customer service both as part of the regulatory reform of existing regulations and as an on-going approach. NRCS reviews regulations and makes changes to improve any provision that was determined to be outdated, unnecessary, or ineffective.Cost Benefit Analysis Most of this rule's impacts consist of transfer payments to producers for completed conservation practices under EQIP contracts. There are also costs and benefits, which are described after a discussion of the transfers. The 2018 Farm Bill increases EQIP funding over 2014 Farm Bill funding by 15 percent on average to $1.84 billion per year. From FY 2014 through 2018, EQIP was authorized at $8.0 billion, but annual funding restrictions resulted in actual authority being $7.51 billion, for an[[Page 67645]]annual average amount of $1.50 billion. In contrast, the authorized level for EQIP for FY 2019 through 2023 is $9.18 billion (assuming future funding is set at authorized amounts). Additionally, EQIP funds remain available until expended, meaning that any unobligated balance at the end of a fiscal year is available for obligation in the subsequent year. NRCS recognizes that a participant incurs costs in gaining access to EQIP. These costs are in addition to the participant's share of the cost of implementing conservation activities under EQIP. NRCS estimates the total cost of accessing the program over 5 years to be $17.7 million. The cost to participants of implementing conservation practices over 5 years is estimated at $4.46 billion and total transfers (NRCS funds) over 5 years are estimated at $9.18 billion. Given a 3 percent discount rate, this translates into a projected annualized real cost to producers for implementing conservation practices of $855.10 million and projected annualized real transfers of $1.76 billion (Table 1). In addition, participants incur $3.5 million in access costs in nominal terms. Table 1--Annual Estimated Costs, Benefits, and Transfers------------------------------------------------------------------------ Category Annual estimate------------------------------------------------------------------------Participant costs: Access a............................................. $3,549,676. Implementation b..................................... 855,100,000.Benefits............................................... Qualitative.Transfers c............................................ $1,760,000,000.------------------------------------------------------------------------a All estimates are discounted at 3 percent to 2019 $ except for the participant access cost, which is nominal.b Imputed cost of applicant time to gain access to EQIP.c Participant share of the cost of implementing conservation practices under EQIP. The costs associated with this rule consist of the administrative costs of applying for EQIP funding and are described in the full regulatory impact analysis. The benefits of this rule are the environmental improvements that are due to the increased conservation practices over and above those that farmers privately undertake. Conservation practices funded through EQIP will continue to: Contribute to improvements in soil health and reductions in water and wind erosion on cropland, pasture and rangeland; reduce nutrient losses to streams, rivers, lakes and estuaries; increase wildlife habitat; and provide other environmental benefits. Further, continued implementation of practices which treat and manage animal waste through EQIP will directly contribute to improvements in water quality and improvements in air quality (such as reduced risk of algal blooms or reduction in methane ***emissions***, respectively). NRCS estimates that the expenditures, from both public and private sources, of implementing EQIP conservation practices will be $13.6 billion dollars (FY 2019 through 2023), assuming a historical average participant cost of 40 percent and a technical assistance share of 27 percent. Changes in funding levels for EQIP livestock and wildlife practices will alter to a minor extent the types of conservation practices that are funded. From FY 2014 through 2018, wildlife practices accounted for 7.6 percent of EQIP funds through wildlife and landscape initiatives and 16 designated wildlife conservation practices. The 2.4 percent increase in funding for wildlife to meet the new 10 percent level will likely occur through greater support for existing wildlife initiatives and may ***target*** additional wildlife habitat development efforts through new initiatives. With respect to livestock, over 60 percent of EQIP funds went to livestock-related practices during FY 2014 through 2018, but the 2018 Farm Bill reduced this ***target*** to 50 percent for each of fiscal years 2019 through 2023. With greater EQIP funding overall, the amount of funding being provided for the implementation of livestock conservation practices should not change significantly. To address increasing demands on the nation's water supply, the 2018 Farm Bill expands EQIP eligibility to WMEs like irrigation districts, ground water management districts, and acequias, along with providing the Secretary with the authority to waive AGI and payment limits to encourage continued efforts in ***agricultural*** water conservation. In some states, particularly in the West, these WMEs may increase competition for funding and enhance conservation benefits per dollar spent. The impacts, however, on the allocation of EQIP funding will be limited. The 2018 Farm Bill directs NRCS to maintain current funding allocations to states, limiting the impact nationally. Also, NRCS in the interim rule established a payment limit of $900,000 on all contracts with WMEs. The 2018 Farm Bill establishes conservation incentive contracts to address up to three priority resource concerns for each ***land*** use within a given watershed, or other region, or area. Contracts will range from a minimum of 5 years to up to 10 years in length and provide an annual payment and incentive practice payments. NRCS has established a payment limit of $200,000 to align with CSP. The impact of these new conservation incentive contracts is uncertain, particularly regarding benefits per dollar. Overall, given the current demand for regular enrollment in EQIP, and the currently uncertain impacts that conservation incentive contracts will have, the aggregate benefits from these new conservation incentive contracts may be limited. Increasing the payment limit for participants in the organic initiative to $140,000 over the period FY 2019 through 2023, will likely have little impact on EQIP performance. This is because existing organic initiative contracts are usually well below the existing multi-year payment limit of $80,000 set by 2014 Farm Bill. Currently, organic participants who exceed the organic initiative payment limit use other EQIP funding mechanisms. The increase in the organic initiative limit to $140,000 may attract producers who have higher organic practice costs or perhaps larger operations, and EQIP participants may make greater use of the organic initiative and designated funding pool.Regulatory Flexibility Act The Regulatory Flexibility Act (5 U.S.C 601-612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), generally requires an agency to prepare a regulatory analysis of any rule whenever an agency is required by APA or any other law to publish a proposed rule, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule is not subject to the Regulatory Flexibility Act because this rule is exempt from notice and comment rulemaking requirements of the APA and no other law requires that a proposed rule be published for this rulemaking initiative.Environmental Review The environmental impacts of this rule have been considered in a manner consistent with the provisions of NEPA (42 U.S.C 4321-4347), the regulations of the Council on Environmental Quality (40 CFR 1500 through 1508), and the NRCS regulations for compliance with NEPA (7 CFR part 650). NRCS conducted an analysis of the EQIP interim rule, which determined there will not be a significant impact to the human environment and as a result, an environmental impact statement (EIS) is not required to be prepared (40 CFR 1508.1(l)). The 2018 Farm Bill requires minor changes to NRCS conservation programs, and there are no[[Page 67646]]changes to the basic structure of the programs. The analysis has determined there will not be a significant impact to the human environment and as a result, an EIS is not required to be prepared (40 CFR 1508.1(l)). While OMB has designated this rule as ``economically significant'' under Executive Order 12866, ``. . . economic or social effects are not intended by themselves to require preparation of an environmental impact statement'' (40 CFR 1502.16(b)), when not interrelated to natural or physical environmental effects. The EA and FONSI were available for review and comment for 30 days from the date of publication of the interim rule in the Federal Register. NRCS considered this input and updated the EA and FONSI with information relevant to environmental concerns and bearing on the proposed action.Executive Order 12372 Executive Order 12372, ``Intergovernmental Review of Federal Programs,'' requires consultation with State and local officials that would be directly affected by proposed Federal financial assistance. The objectives of the Executive Order are to foster an intergovernmental partnership and a strengthened Federalism, by relying on State and local processes for State and local government coordination and review of proposed Federal financial assistance and direct Federal development. For reasons specified in the final rule-related notice regarding 7 CFR part 3015, subpart V (48 FR 29115, June 24, 1983), the program and activities in this rule are excluded from the scope of Executive Order 12372.Executive Order 12988 This rule has been reviewed under Executive Order 12988, ``Civil Justice Reform.'' This rule will not preempt State or local laws, regulations, or policies unless they represent an irreconcilable conflict with this rule. Before any judicial actions may be brought regarding the provisions of this rule, the administrative appeal provisions of 7 CFR part 11 are to be exhausted.Executive Order 13132 This rule has been reviewed under Executive Order 13132, ``Federalism.'' The policies contained in this rule do not have any substantial direct effect on States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, except as required by law. Nor does this rule impose substantial direct compliance costs on State and local governments. Therefore, consultation with the States is not required.Executive Order 13175 This rule has been reviewed in accordance with the requirements of Executive Order 13175, ``Consultation and Coordination with Indian Tribal Governments.'' Executive Order 13175 requires federal agencies to consult and coordinate with Tribes on a Government-to-Government basis on policies that have Tribal implications, including regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on one or more Indian Tribes, on the relationship between the Federal Government and Indian Tribes, or on the distribution of power and responsibilities between the Federal Government and Indian Tribes. The USDA's Office of Tribal Relations (OTR) has assessed the impact of this rule on Indian Tribes and determined that this rule does not, to their knowledge, have Tribal implication that require Tribal consultation under Executive Order 13175. Tribal consultation for this rule was included in the two 2018 Farm Bill Tribal consultations held on May 1, 2019, at the National Museum of the American Indian, in Washington, DC, and on June 26-28, 2019, in Sparks, NV. For the May 1, Tribal consultation, the portion of the Tribal consultation relative to this rule was conducted by Bill Northey, USDA Under Secretary for the Farm Production and Conservation mission area, as part of the Title II session. There were no specific comments from Tribes on the EQIP rule during the Tribal consultation. If a Tribe requests consultation, NRCS will work with OTR to ensure meaningful consultation is provided where changes, additions, and modifications identified here in this rule are not expressly mandated by legislation. OTR has determined that Tribal consultation for this rule is not required at this time. Separate from Tribal consultation, communication, and outreach efforts are in place to assure that all producers, including Tribes (or their members), are provided information about the regulation changes. Specifically, NRCS obtains input through Tribal Conservation Advisory Councils. A Tribal Conservation Advisory Council may be an existing Tribal committee or department and may also constitute an association of member Tribes organized to provide direct consultation to NRCS at the State, regional, and national levels to provide input on NRCS rules, policies, programs, and impacts on Tribes. Tribal Conservation Advisory Councils provide a venue for agency leaders to gather input on Tribal interests. Additionally, NRCS held several sessions with Indian Tribes and Tribal entities across the country in FY 2019 to describe the 2018 Farm Bill changes to NRCS conservation programs, obtain input about how to improve Tribal and Tribal member access to NRCS conservation assistance, and make any appropriate adjustments to the regulations that will foster such improved access. NRCS will continue to conduct these sessions with Indian Tribes and Tribal entities.Unfunded Mandates Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) (Pub. L. 104-4), requires federal agencies to assess the effects of their regulatory actions on State, local, and Tribal Governments or the private sector. Agencies generally must prepare a written statement, including cost-benefits analysis, for proposed and final rules with Federal mandates that may result in expenditures of $100 million or more in any 1 year for State, local or Tribal Governments, in the aggregate, or to the private sector. UMRA generally requires agencies to consider alternatives and adopt the more cost-effective or least burdensome alternative that achieves the objectives of the rule. This rule contains no Federal mandates, as defined under Title II of UMRA, for State, local, and Tribal Governments or the private sector. Therefore, this rule is not subject to the requirements of UMRA.Federal Assistance Programs The title and number of the Federal Domestic Assistance Programs in the Catalog of Federal Domestic Assistance to which this rule applies: 10.912--Environmental Quality Incentives Program.E-Government Act Compliance NRCS and CCC are committed to complying with the E-Government Act, to promote the use of the internet and other information technologies to provide increased opportunities for citizen access to Government information and services, and for other purposes.List of Subjects in 7 CFR Part 1466 Administrative practice and procedure, Animal welfare, Natural resources, Soil conservation, Water resources. Accordingly, for the reasons stated above, the interim rule amending 7 CFR part 1466, which was published at 84[[Page 67647]]FR 69272 on December 17, 2019, is adopted as final with the following changes:PART 1466--ENVIRONMENTAL QUALITY INCENTIVES PROGRAM01. The authority citation for part 1466 continues to read as follows: Authority: 15 U.S.C 714b and 714c; and 16 U.S.C 3839aa-3839-8.02. Amend Sec. 1466.1 by revising paragraphs (a)(2) through (4) to read as follows:Sec. 1466.1 Applicability. (a) \* \* \* (2) Through EQIP, NRCS provides technical and financial assistance to eligible ***agricultural*** producers, including nonindustrial private ***forest*** (NIPF) landowners and Indian Tribes, to help implement conservation practices that address resource concerns related to organic production; soil, water, and air quality; wildlife habitat; nutrient management associated with crops and livestock; pest management; ground and surface water conservation; irrigation management; drought resiliency measures; adapting to and mitigating against increasing weather volatility; energy conservation; and related resource concerns. (3) EQIP's financial and technical assistance helps: (i) Producers comply with environmental regulations and enhance ***agricultural*** and ***forested*** ***lands*** in a cost-effective and environmentally beneficial manner; and (ii) To the maximum extent practicable, avoid the need for resource and regulatory programs. (4) The purposes of EQIP are achieved by planning and implementing conservation practices on eligible ***land*** to address identified, new, or expected resource concerns, including such resource concerns related to ***lands*** enrolled under a Conservation Reserve Program contract that are transitioning into production as specified in 16 U.S.C 3835(f).\* \* \* \* \*03. Amend Sec. 1466.3 by revising the definition for ``Comprehensive nutrient management plan (CNMP)'' to read as follows:Sec. 1466.3 Definitions.\* \* \* \* \* Comprehensive nutrient management plan (CNMP) means a conservation plan that is specifically for an AFO. A CNMP identifies conservation practices and management activities that, when implemented as part of a conservation system, will manage sufficient quantities of manure, waste water, or organic by-products associated with a waste management facility. A CNMP incorporates practices to use animal manure and organic by-products as a beneficial resource while protecting all applicable natural resources including water and air quality associated with an AFO. A CNMP is developed to assist an AFO owner or operator in meeting all applicable local, Tribal, State, and Federal water quality goals or regulations. For nutrient-impaired stream segments or water bodies, additional management activities or conservation practices may be required by local, Tribal, State, or Federal water quality goals or regulations.\* \* \* \* \*04. Amend Sec. 1466.4 by revising paragraph (a) to read as follows:Sec. 1466.4 National priorities. (a) The national priorities in paragraphs (a)(1) through (8) of this section, consistent with statutory resources concerns, include soil quality, water quality and quantity, plants, energy, wildlife habitat, air quality, increased weather volatility, and related natural resource concerns, that may be used in EQIP implementation are: (1) Reductions of nonpoint source pollution, such as nutrients, sediment, pesticides, or excess salinity in impaired watersheds consistent with total maximum daily loads (TMDL) where available; (2) The reduction of ground and surface water contamination; (3) The reduction of contamination from ***agricultural*** sources, such as animal feeding operations; (4) Conservation of ground and surface water resources, including improvement of irrigation efficiency and increased resilience against drought and weather volatility; (5) Reduction of ***emissions***, such as particulate matter, nitrogen oxides, volatile organic compounds, and ozone precursors and depleters that contribute to air quality impairment violations of the National Ambient Air Quality Standards; (6) Reduction in soil erosion and sedimentation from unacceptable levels and improvement of soil health on eligible ***land***; (7) Promotion of at-risk species habitat conservation including development and improvement of wildlife habitat; and (8) Energy conservation to help save fuel, improve efficiency of water use, maintain production, and protect soil and water resources by more efficiently using fertilizers and pesticides.\* \* \* \* \*05. Amend Sec. 1466.6 by revising paragraph (d)(1) to read as follows:Sec. 1466.6 Program requirements.\* \* \* \* \* (d) \* \* \* (1) Notwithstanding paragraphs (b) and (c) of this section, NRCS may enter into an EQIP contract with a water management entity provided the criteria in paragraphs (d)(1)(i), (ii), and (iii) of this section can be met: (i) The entity is a public or semipublic agency or organization, (ii) Its purpose is to assist private ***agricultural*** producers manage water distribution or conservation systems, and (iii) The water conservation or irrigation practices support a water conservation project under Sec. 1466.20(c) that will effectively conserve water, provide fish and wildlife habitat, or provide for drought-related environmental mitigation, as determined by the Chief.\* \* \* \* \*06. Amend Sec. 1466.7 by revising paragraph (d) to read as follows:Sec. 1466.7 EQIP plan of operations.\* \* \* \* \* (d) If an EQIP plan of operations includes an animal waste storage or treatment facility to be implemented on an AFO, the participant must agree to: (1) Develop a CNMP by the end of the contract period; and (2) Implement any applicable conservation practices in the EQIP plan of operation consistent with an approved CNMP.\* \* \* \* \*07. Amend Sec. 1466.20 as follows:0a. In paragraph (b)(2)(viii), ***remove*** the word ``and'';0b. Add paragraph (b)(2)(ix); and0c. Redesignate paragraph (b)(2)(xi) as paragraph (b)(2)(x). The addition reads as follows:Sec. 1466.20 Application for contracts and selecting applications.\* \* \* \* \* (b) \* \* \* (2) \* \* \* (ix) The ***land*** is enrolled under a CRP contract transitioning to a covered farmer or rancher as specified in 16 U.S.C 3835(f); and\* \* \* \* \*08. Amend Sec. 1466.31 by revising paragraph (a) to read as follows:[[Page 67648]]Sec. 1466.31 Purpose and scope. (a) The purpose of Conservation Innovation Grants (CIG) is to stimulate the development and adoption of innovative conservation approaches and technologies, including field research, while leveraging Federal investment in environmental enhancement and protection in conjunction with ***agricultural*** production. Notwithstanding any limitation of this part, NRCS administers CIG in accordance with this subpart. Unless otherwise provided for in this subpart, grants under CIG are subject to the provisions of 2 CFR part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.\* \* \* \* \*09. Amend Sec. 1466.32 by redesignating paragraphs (c) and (d) as paragraphs (d) and (e), respectively, and by adding a new paragraph (c) to read as follows:Sec. 1466.32 Conservation innovation grant funding.\* \* \* \* \* (c) Authority to reduce matching requirement. The Chief may reduce the matching requirements of paragraphs (b)(1) and (2) of this section, provided that the applicant is: (1) An historically underserved producer; (2) A community-based organization comprised of, representing, or exclusively working with historically underserved producers on a CIG project; (3) Developing an innovative conservation approach or technology specifically ***targeting*** historically underserved producers' unique needs and limitations; or (4) An 1890 or 1994 ***land*** grant institution (7 U.S.C 3222 et seq.), Hispanic-serving institution (20 U.S.C 1101a), or other minority-serving institution, such as an historically Black college or university (20 U.S.C 1061), a tribally controlled college or university (25 U.S.C 1801), or Asian American and Pacific Islander-serving institution (20 U.S.C 1059g).\* \* \* \* \*Kevin Norton,Acting Chief, Natural Resources Conservation Service.Robert Stephenson,Executive Vice President, Commodity Credit Corporation.[FR Doc. 2020-23437 Filed 10-23-20; 8:45 am]BILLING CODE 3410-16-P

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**Body**

Much has changed in the last 10 years since the Nature Climate Change inaugural issue in April 2011. The effects of climate change are now more apparent, global leaders have reached a climate agreement, and public awareness and engagement, particularly in the younger generation, continues to grow. Here, ten researchers discuss advances in their field, highlighting the progress and drawing attention to what still needs to be done.

Veronika Eyring: machine learning-based physics-aware climate modelling

Over 20 years ago, the Coupled Model Intercomparison Project (CMIP) of the World Climate Research Programme (WCRP) started with the coordination of a handful of early-generation atmospheric models coupled to a dynamic ocean, a simple ***land*** surface and thermodynamic sea ice. CMIP has since evolved over six phases into a major international research activity central to climate change assessment reports. Across the years, climate models have continued to be developed, and the number of CMIP models has substantially increased. In the past decade, many have been extended into Earth system models that, in addition to physical climate, simulate interactive carbon and other biogeochemical cycles important to climate change. Compared to earlier generations, CMIP6 models have increased spatial resolution (~100 km in the horizontal) and improved physical process representation (like clouds and ***land*** biogeochemistry), and they include additional Earth system processes (for example, nutrient limitations on the terrestrial carbon cycle) and components (such as ice sheets). Benchmarked with an increasing wealth of observations, the simulation of recent mean climate has improved in CMIP6 compared to previous CMIP phases.

Nevertheless, uncertainties in climate projections remain. For example, the range of simulated effective climate sensitivity — the change in global mean surface temperature for a doubling of atmospheric CO2 — has not decreased since the 1970s. It is still between 2.1 and 4.7 °C, even increasing in CMIP6. A major cause of this is differences in the representation of clouds and other processes occurring at small spatial scales. These need to be approximated through parameterizations that represent the statistical effect of that process at the grid scale of the model. Additional uncertainty arises from the carbon cycle’s response to climate warming and to increased atmospheric CO2. This impacts models’ ability to accurately project global and regional climate change, climate variability, extremes and impacts on ecosystems and biogeochemical cycles.

New approaches are required that exploit opportunities from increasing computational power while building on the knowledge gained from theory and observations, and continually including missing processes in models. I expect breakthroughs in particular from the combination of three research areas: high-resolution simulations that can resolve small-scale and fast processes, the wealth of observational data and machine-learning (ML) techniques.

Combining multi-disciplinary expertise in ML and process-based modelling has huge potential. High-resolution, cloud-resolving models (horizontal grid resolution of a few kilometres) alleviate many biases of coarse-resolution models for deep clouds and convection, wave propagation and precipitation, but they cannot be run at climate timescales of multiple decades or longer due to computational costs. And even these simulations still use parameterizations for smaller-scale processes like shallow clouds, turbulence or microphysics, which are key to the Earth’s energy balance and climate. Yet, short simulations from high-resolution models together with observations can serve as information to develop ML-based parameterizations that are then incorporated into Earth system models. This combination can drive a paradigm shift in current Earth system modelling and analyses towards a new data-driven, yet still physics-aware, science. The key goal is a hybrid modelling approach that maintains physical consistency and realistically extrapolates to unseen climate regimes while reducing climate projection uncertainties and improving Earth system understanding.

The application of ML to better understand and model the Earth system is still in its infancy. It is a promising field that requires a new generation of scientists being trained at the interface of climate science and artificial intelligence. I cannot wait to see their contribution!

Vimal Mishra: hydroclimate and its changing extremes

A warmer atmosphere holds more water vapour, and this thermodynamic relationship is important for understanding the global hydrological cycle’s response to warming. The past decade of research has confirmed that global water vapour is increasing at ~7% per ºC, but that global precipitation increases less, around 1–3%. Research aimed at understanding this discrepancy has afforded some of the most robust and theoretically supported predictions for hydroclimate: at the global scale, these moisture changes make the tropics and polar regions wetter, and the subtropics drier. As a result, subtropical dry zones are expanding and pushing the adjacent extratropical storm tracks poleward.

The past decade has also highlighted that at the regional scale, hydroclimate changes are still highly uncertain, mainly driven by climate model disagreement in how regional climates respond to warming. Placing better constraints on future circulation patterns and storm systems will alleviate some of this uncertainty. Particularly important at these scales are precipitation extremes; the heaviest rainfall events are exponentially more sensitive to warming, and this is a product of changes to both temperature (thermodynamics) and regional circulation (dynamics). Understanding how local precipitation will change or intensify with warming relies on continued improvement in observations and climate modelling.

Another important aspect that has come out of the last decade of research is a more fundamental understanding of, and appreciation for, ***land***–atmosphere interactions, including the response of vegetation to higher temperatures and atmospheric CO2. This is exemplified by prolonged droughts that impact local water availability. Several regions, including the intensively irrigated Indo-Gangetic Plain, have witnessed frequent droughts in the past decade; continued work on the connections between the biosphere and atmosphere is necessary to more accurately estimate future water availability and demand.

The past decade has also seen important advances in understanding the impact of hydroclimate on the ***land*** surface. Flash floods, particularly in urban regions, can affect transportation, infrastructure and local economies. Atmospheric rivers and prolonged wet spells cause large-scale floods that impact ***agriculture***. ***Land*** surface conditions, including soil moisture, play an essential role in these outcomes, and the role of climate change on flood extremes is better understood thanks to improved hydrological modelling and observational networks. An important next step here is constraining the sensitivity of streamflow and surface water to warming, particularly in mountain regions where seasonal runoff can comprise a large fraction of local water resources.

Reflecting on this last decade, three advances typify the gains that I find most exciting in hydroclimate research. First, new in situ and satellite-based measurements of the hydrological cycle have helped the field more comprehensively understand the hydrological cycle’s sensitivity to warming. The Gravity Recovery and Climate Experiment (GRACE) and the follow-on (GRACE-FO) mission, for example, have allowed researchers to see underground and measure changes in groundwater storage. Second, a recent and growing focus on urban hydrology has enabled researchers to better describe and study the interactions between hydroclimate and the built environment. Third, ongoing developments related to improvements in physical processes and resolution in global climate and impact models have helped answer some of the most challenging questions on changing risks to hydrological cycle extremes in a warmer world. Together, these areas will continue to progress our understanding of regional hydroclimate change and its impacts in the decade to come.

Aaron Foster/The Image Bank/Getty

Gary Griffith: coming to recognize marine ecosystems as complex adaptive systems

The last decade has seen revolutionary advances in understanding how climate change impacts — including ocean warming and acidification, sea-level rise and the intensification of extreme events — affect marine ecosystems and the essential services they provide to human society. The encouraging advance that resonates with me is that marine ecosystems and human interactions with them are becoming increasingly recognized as complex adaptive systems in which small changes from climate change threats and human stressors can be magnified through non-linear interactions that scale up and play out across space and time, and ecological and social organization. This calls into question the fundamental paradigm of a stable linear world that guides current conservation and sustainable marine management. Instead, in the changing world, the possibility of sudden and unexpected shifts in marine resources, an increased potential for tipping points, alternative stable states and the emergence of novel adaptation and evolutionary strategies can be expected.

During this next decade, a big question for me is how to evolve the complex adaptive systems’ perspective to understand how to increase the resilience of marine ecosystems that provide critical sustainable (for example, fisheries) or conservation (for example, marine protected areas) ecosystem services. Resilience in this context is the emergent adaptive capacity of the ecosystem to absorb the cumulative effects of global climate change and human stressors. Key questions remain on how resilience scales in time and space with the complex interactions of both climate change (for example, ocean warming, ocean acidification and sea-level rise) and local human stressors (for example, fisheries, pollution and human-induced introduction of alien species). Can some of the exciting data-driven causal inference methods and developments from network science be sensibly applied to tease out those key causal interactions? It remains to be understood which of those causal interactions will result in amplified or mitigating effects, whether they are stable or dynamically changing, and how that impacts on positive feedback interactions. Continuing advances in ocean robotics and the combination of remote and in situ observations with research initiatives such as the Decade of Ocean Science will provide the quality and amount of data for the sophisticated mathematical approaches needed to consider dynamic complexity.

I also see that the complex adaptive systems framework and its evolving techniques can help us understand questions related to difficult ‘triage’ decisions on the allocation of finite resources to preserving critical ecosystem services. A feature of anthropogenic climate change realized from the last decade of research is that previous strategies to escape climate change effects through evolutionary adaptation, refugia and migrations may not work. Understanding whether many of our current and planned conservation strategies such as ‘safe operating spaces’ or ‘climate refugia’ are appropriate is a critical question.

I am excited that, in the next decade, it seems increasingly possible to step out of our comfort zone and focus on addressing the complex changes. In my own area of research, I anticipate that changing our conservation and sustainable management paradigm to also include dynamic complexity will help us develop realistic strategies to avoid further erosion of marine biodiversity and help rebuild critical marine life.

Lei Chen: phenology and climate change, looking back and moving forward

Phenology is the study of the relations between climate and periodic biological events. Because phenology is especially sensitive to climate variations, changes in phenology — including shifts in flower and leaf opening in plants, and changes in animal migration timing — has provided the first clear visible signals of how global climate change influences living organisms.

Over the past decade, one of the most notable developments has been the increasing numbers of phenological data networks all over the world. It is exciting to see local citizens sharing numerous timely phenological observations online via notebooks or mobiles. These site-monitoring observations provide detailed insights into organisms’ phenological responses to climate change, from small to broad spatial scales. For example, by 2020, citizen scientists have contributed more than 24 million phenological records of plants (for example, leaf-out and flowering) and animals (for example, bird migration and frog calling) to the USA National Phenology Network.

In addition, phenological records are far more diverse and comprehensive than previously expected. For instance, automatic digital pheno-cameras and camera traps are increasingly being used over a broad spatial scale, improving data reliability and quantification. Advances in remote-sensing technology over the past decade have enabled more detailed and comprehensive (global-scale) monitoring of ***land***-surface phenology. Historical patterns of phenology across species and geographical regions are also being incorporated by using specimen-based data. The microcore sampling method has been extensively used to detect the intra-annual growth dynamics of tree stems in response to climate change.

Despite these technological advances and expansions of data sources, many key questions related to climate–phenology relationships remain unanswered, and it remains unclear how phenology will continue to change under future climate warming. For plant species in temperate ***forests***, for example, warmer temperature in spring may stimulate earlier leaf-out or bud break. However, as many plants must first experience sufficient cold temperature before they break dormancy, the effects of warmer winters may delay spring leaf-out or flowering. In this context, will spring phenology continue to advance under future climate warming scenarios? Similarly, both advances and delays in autumn phenology of plants have been observed during the past decade.

A core issue is that the multiple stimuli and mechanisms involved in phenology remain poorly understood. There are therefore urgent needs to elucidate how biotic and abiotic stresses, such as temperature, photoperiod, snow cover, water and food availability, habitat loss and fragmentation, influence the phenology of plants and animals. In addition, phenological responses to climate change may vary between sexes, populations and species, and little is known about ecosystem-level consequences of such phenological mismatches. More studies are also needed to understand variations in climate–phenology relationships among multiple phenological stages in different taxa and seasons, the effects of phenological changes on organisms’ fitness and trophic interactions, as well as phenological effects of genomic variations and their interactions with environmental changes.

On the one hand, global warming has led to shifts in phenology across multiple taxa. On the other hand, changes in phenology — particularly that of plant producers — may, in turn, drive further climate change. However, we have limited knowledge of potential feedback effects of warming-driven shifts in changes in phenology on the climate system. Therefore, increasingly deep and integrated multidisciplinary cooperation in phenological studies is both required and anticipated in coming decades.

Oxygen/Moment/Getty

Trevor F. Keenan: the terrestrial carbon sink and its feedback to climate

It is said that there are decades where nothing happens, but for those focused on the terrestrial carbon sink and its feedback to climate, this past decade certainly has not been one of them. The fields involved have dramatically changed over the past 10 years, driven by a confluence of technological advances, theoretical developments and the widespread embrace of open science practices. The result has been a deluge of observations and derived products, and a more holistic understanding of the role of the terrestrial biosphere in the Earth system.

Technological and data science advances, combined with the recent move toward open science practices (such as depositing data and code in repositories), have colluded to vastly increase the amount and quality of observations available for public use and have lowered the barrier for researchers around the world to advance the science. Large national research initiatives such as the National Ecological Observatory Network (NEON) and the AmeriFlux Management Project in the USA, and many others globally, were funded in the past decade with a mandate to provide harmonized and quality-controlled observations from hundreds of carbon-cycle measurement sites for broader public use. In tandem, technological advances are making novel sensors more widely available, such as methane flux sensors based on optical spectroscopy, ***forest*** structural measurements from LiDAR, airborne hyperspectral measurements of canopy characteristics and fluorescence sensors that provide information on photosynthesis. Not to mention the expanding constellations of Earth-observing sensors from both the world’s space agencies and a growing private industry.

The resulting data deluge has led to a more holistic understanding of the terrestrial carbon sink by facilitating the integration of theory with observations of different components of ecosystems and their feedbacks to the climate system. For example, plants and microbes were previously examined primarily in isolation, but their interactions are increasingly recognized as important for understanding whole-ecosystem regulation of the carbon sink. We are learning that individuals and ecological communities adapt to change, particularly through advances in eco-evolutionary optimality theory, and that they work together to sequester a large proportion of ***emissions***. Much remains unknown, however, about the degree to which ecosystems can adapt to ameliorate the impacts of a rapidly changing climate, how long they will continue to sequester carbon or how long-term ecological change will feed back to the climate system.

The increased accessibility and diversity of available data has also created challenges. The ease with which complex statistical approaches can now be applied to large datasets means that collaborations must include the right expertise to avoid misinterpretation of results. This is important, as the resulting data products typically lack real-world ecophysiology and often, by design, have incorrect assumptions embedded (for example, photosynthesis is commonly and incorrectly assumed to not respond to CO2). The challenges involved are more than offset by progress resulting from the holistic understanding provided for understanding long-term changes in the terrestrial carbon sink, but the new data paradigm emphasizes the need for graduate training focused on both ecophysiological theory and data science skills.

Merritt R. Turetsky: the impermanence of permafrost and its role on climate

The past decade of research on permafrost thaw has been a community effort, with research networks around the world changing the way we do science. Long described as the ‘glue of the Arctic’, permafrost creates the literal foundation that affects most life in the Arctic, and its presence regulates water, energy and nutrient cycling. Storing more than twice as much carbon as is currently held in our atmosphere, permafrost is a legacy of past climate but almost certainly will play a role in shaping our climate future. When I began my research career 20 years ago, we knew just enough to be concerned about the uncertain fate of permafrost carbon. Because we knew little, the value of every new study was high. Over the past decade, enough data became available that research networks took up a synthesis charge. These efforts have improved our confidence on some issues, but have opened up new questions and uncertainties.

We have learned that permafrost ***emissions*** are unlikely to occur as a carbon or methane ‘bomb’, but rather will be more sustained. While they will remain smaller than anthropogenic ***emissions***, permafrost ***emissions*** could impede our ability to achieve ***emission*** reduction ***targets***. Future research is thus likely to focus on global and regional permafrost change hotspots related to both the pace of thaw and the magnitude of ***emissions***. To achieve this, we need to move beyond temperature as the core of permafrost monitoring, assimilating, for example, new spatially-explicit information on ground-ice content or Yedoma carbon stocks. Several other challenges await — multi-scale measurements of atmospheric CO2 and CH4 have created heightened awareness of cold season ***emissions***; no longer can we rely solely on understanding from summertime studies. Global models are powerful tools, but none deal with permafrost complexity. These models need to tackle the challenges of representing fine-scale thaw mechanisms and reducing uncertainties related to Arctic vegetation, which could offset thaw-related carbon losses. Earth history provides an actual record of past climate and permafrost change, yet we currently lack a framework for how to use permafrost responses to previous interglacials as an analogue to today’s rapid warming. Innovation will come from merging understanding from paleo-permafrost reconstructions, modern observations across spatial scales and future projections of permafrost change.

The next decade of permafrost research will be even more convergent. We need to translate permafrost knowledge for community planning to make projections over more policy-relevant time frames. Permafrost is shaped not only by climate but also by human behaviour and ***land*** use. Placing permafrost thaw in a socio-ecological framework will move our questions into the realm of adaptation and management. We must stay focused on using broader climate policy to keep as much permafrost as possible frozen. But where we know permafrost is likely to thaw in the near future, can anything be done? Can we, or should we, modify surface conditions or alter fire management to slow thaw rates? Can we modify soil microbes or vegetation to minimize carbon loss or maximize ecosystem carbon uptake? These questions feel uncomfortable now, but because we know so little in this context, the value of every new study will be tremendous.

SeppFriedhuber/E+/Getty

Sally Brown: be prepared to expand and retreat to adapt to sea-level rise

Pioneering a new product can take years of development. In the last decade, we have witnessed the birth of climate services and improved methods for adapting to rising sea levels. In this product life cycle, we have shifted from the ‘introduction’ to ‘growth’ stage as damage from sea-level rise increases. This may make adaptation sound like a business opportunity, but the willingness to adapt has been recognized: the Bangladesh Delta Plan, a giant sea wall proposed around Jakarta and climate-smart developments though community and ecosystem resilience in Palau and other small islands as well as storm surge barriers under construction worldwide are a few examples.

In 10 years, our knowledge of sea level has become more ***targeted***. Instead of numerous projections with large uncertainties, we have come to understand what is important surrounding uncertainty, such as high rates of melt from the Greenland Ice Sheet. Big data in both climate and socioeconomic development have enabled more detailed and local impact assessments. Society has gained an appreciation for nature-based solutions to sustain and improve resilience of vulnerable communities — solutions that mitigate climate change and help reverse the ecological crisis.

Big questions for the future fall under the themes ‘expand’ and ‘retreat’. As population and blue growth in towns and cities has expanded, the amount of reclaimed ***land***, especially in Asia, has been growing. But will this reclaimed ***land*** offer protection against sea-level rise? Can atolls be artificially raised? Are there sufficient sand resources for reclamation and nourishment? Can nature-based solutions expand sufficiently to protect coastlines? Can we expand the resolution of digital elevation data for improved impact modelling? For those experiencing frequent flooding or at threat from erosion, what are the mental health impacts?

Retreat offers other challenges: if ice sheets rapidly retreat, will we see a step change in sea-level rise, and if so, when? With rising groundwater, erosion and flooding, how can we prepare to retreat? How will low-lying islands and deltas cope, where there are limited places to retreat to, while preserving cultural values? How can the world’s poorest areas increase their resilience so their livelihoods are not eroded?

Moving into the United Nations Decade of Ocean Science for Sustainable Development and ***targeting*** the Sustainable Development Goals, we need to answer these questions around our ecological, sustainable and inclusive values. Inclusivity applies to all scientists across all career stages, but especially for nations that are projected to suffer most. Academic studies are lacking in many African nations, which needs urgent attention. For all nations, new science needs to include education and support for local residents so they are able to sustain their livelihoods as the coast changes. Educating politicians who can influence coastal policies, such as retreat, is increasingly important.

Regardless of mitigation, we are committed to adapt to sea-level rise. Over the next 10 years, for places that need to adapt but are not yet ready, I would like to see greater open and accessible data that is interpretable for those with a range understanding and skills relating to coastal change and adaptation, and inclusion of new multi-scale coastal change models where appropriate, so the right decisions can be made at the right time. Adapting to sea-level rise takes many guises, and growth and integration in all disciplines and nations is needed to help those at risk adapt.

Frank Jotzo: successes and future of climate policy

A decade ago, keeping warming to 2 ºC seemed all but impossible. The Stern Review instead focussed on 3 ºC. Global CO2 ***emissions*** grew by 31% over the century’s first decade. Things look better now. ***Emissions*** grew by about 10% from 2010 to 2019. Net-zero ***emissions*** has become a rallying point, and the ‘below 2 ºC’ ambition seems no longer outlandish. What has changed? One major factor is technology. The cost of important zero-***emissions*** technologies has fallen far faster than any mainstream projection anticipated. Solar or wind power are now the cheapest forms of energy in many places of the world. Energy storage is becoming much more affordable, electric car technology has made leaps that were unimaginable a decade ago and ways to decarbonize industry are opening up. Low-carbon pathways are open to all countries.

The other is that businesses now see the shift to zero-***emissions*** systems as an opportunity, and in any case see it as inevitable given observed climatic changes. Many governments view climate action as a way to reap macroeconomic benefits from a new investment drive. It is evident in some of China’s growth strategy, Europe’s ‘green deal’ and President Biden’s agenda. Good climate policy now ranges over multiple objectives and many dimensions of policy.

Add to this the practical experience that ***emissions*** reduction policies typically don’t hurt. Much analytical effort has gone into designing policies to minimize economic costs and avoid making politically influential players worse off. Governments have implemented them, and they work. Carbon pricing is effective, and ***emissions*** trading schemes have typically performed at lower prices than expected. Many other policies are in place, from process regulation to innovation support, and demand side measures. They are usually effective and don’t seem to affect economic growth. There are other benefits, from cleaner air to industrial modernization.

The research community needs to make sure that analysis, and the advice that flows from it, is not hobbled by outdated assumptions. Too many of the models used for climate policy assessment have economic and technological pessimism baked into them by low-balling substitution options and future technology improvements. Too often modellers use outdated technology cost assumptions and omit co-benefits of cutting ***emissions***. And too rarely do modelling scenarios cover a truly broad range of future possibilities.

Research is needed on how to bring about decarbonization of heavy industry, trade in zero-***emissions*** energy, ***emissions*** reductions in ***agriculture*** and carbon uptake on ***land***, and how to prepare for technological CO2 ***removal***. More knowledge is also needed on how policies can support effective climate change adaptation across the spectrum.

A huge policy challenge ahead is the decline of coal, oil and gas. As these industries shrink, we will see economic and social disruption concentrated in some regions and countries. It is a breeding ground for political polarization, which fossil fuel lobbies and opportunistic politicians can stoke. Research on how policy can make transitions smoother will become more important. Finally, we need to keep in mind that climate change is deeply integrated with development. Transformations to zero-***emissions*** systems will be made only if they help people achieve a reasonable standard of living. And they will take place while climate change already affects a large share of the world’s population.

Frances C. Moore: the expanding and maturing field of climate change economics

When I began my PhD a decade ago, climate change economics was an extremely niche area. Just a few topics dominated — especially discounting and the relative merits of different climate policy instruments — and the number of researchers was small, incommensurate with the scale of the environmental, economic or policy challenges that climate change presents. However, since then, the field has broadened, deepened and strengthened links to climate science.

Notably, there has been an explosion of studies documenting the sensitivity of social and economic systems to temperature. This literature, using statistical approaches designed to identify causal relationships in non-experimental data, has uncovered the effects of temperature across a wide range of outcomes: conflict risk, pre-term birth, classroom learning as well as overall economic productivity across many sectors. This discovery of pervasive and, in some cases, large temperature impacts, even in wealthy countries, is a sharp break with previous work, which understood effects to be mostly limited to a few highly exposed sectors, such as ***agriculture*** and coastal infrastructure.

Important advances have come from questioning assumptions underlying the cost–benefit assessment of climate policy. Ten years ago, conventional wisdom held that substantial ***emissions*** reductions by 2050, required to limit warming to less than 2 °C, could not be justified on a cost–benefit basis. Many studies now show that this finding is overturned under alternate but justifiable models of how climate change affects the economy and human welfare. Two prominent examples are the question of whether climate change affects the underlying growth rate of the economy, and disentangling risk and time preferences in the utility function.

A welcome development has been growing interest across the entire economics discipline, with scholars from labour, development, macro, health and financial economics working on questions of weather and climate. Even more important has been recognition of systemic climate risk within major financial institutions. Central banks, institutional investors and credit rating agencies direct capital investment flows and manage economic risks, and will play a critical role in structuring future adaptive transitions. Markets, communities, households and businesses will have to adapt both to a continuously changing climate, and to a low-carbon economy. Forward-looking regulations and investments that anticipate these changes will lower the costs of these transitions.

I see several important areas still in need of substantive work. Firstly, an assessment of alternative policy instruments that better incorporates the political and technological feedbacks that will accompany major climate policy. Economists tend to favour carbon pricing because of its cost-effectiveness. But how do pricing policies perform given a richer representation of other relevant market failures or real political constraints? Examples include subsidy-driven declines in technology costs or strategic interest group dynamics, where policies themselves create or undermine powerful interest groups and therefore alter the space of political possibility. Collaboration with engineers and political scientists can help address these questions. An expanded focus on desirable policies for low- and middle-income countries, essential to meet ambitious decarbonization goals and which present distinct challenges, is also critical.

More work is needed on understanding climate damages, particularly those that fall outside of traditional market measures, such as losses of cultural heritage, conflict risk or biodiversity loss. These are extremely difficult to value and are not adequately incorporated into current estimates of aggregate climate damages, such as the social cost of carbon. Also critical is understanding the transition and adjustment costs associated with a continuously changing climate. Too many studies estimate equilibrium damages or assume costless adjustment. But infrastructure is long-lived, and natural hazards are already under-priced in many property markets. In this context, climate change risks creating stranded assets, price bubbles and unsustainable liabilities for local or even national governments, all of which could add substantially to climate change cost estimates.

Peter Cade/Stone/Getty

Sander van der Linden: behavioural insights

Acceptance of anthropogenic climate change varies widely around the world. From perception to action, there has been tremendous progress over the last 10 years in our collective understanding of the social, cultural, political and psychological factors that shape individual views about climate change. For example, an important advance has been our ability to combine high-resolution geospatial data with survey data on human cognition. This has helped answer questions such as whether people are accurately perceiving local and global environmental changes, the extent to which perceptions of extreme weather patterns impact climate change concern and how prior beliefs about the world impact understanding of climatic change. More generally, through large meta-analyses, we have accumulated a wealth of knowledge on key determinants of people’s belief in climate change, such as public perceptions of the scientific consensus on climate change.

At the same time, the chasm between belief and action remains. Medium-sized correlations between climate change beliefs and individual and collective action to mitigate the problem has led some scholars to suggest that scholarly work on beliefs should be abandoned and focus shifted toward interventions that can change behaviour directly. I remain hesitant about such recommendations. For example, consider that while behavioural interventions that directly ***target*** social norms have seen relative success, what underlies the efficacy of many of these interventions are changes in beliefs about what others believe. In other words, second-order normative beliefs. Attempting to change behaviour without understanding the beliefs and motivations that underpin people’s decision-making risks short-term success over long-term failure.

Looking to the future, one of the most exciting and important areas focuses on how to sustain changes in beliefs and behaviours over time. Despite some progress, very little is known about the long-term effectiveness of interventions, as most studies do not include longitudinal measurements. Do people forget climate information over time because of real-world interference, or do they lose motivation to sustain belief and behaviour change? I look forward to research which better integrates such cognitive and motivational explanations and moves beyond single-dose exposure in a controlled laboratory setting to evaluate the effect of repeated campaign messages in real-world environments.

In addition, I hope for more engagement from colleagues who conduct neurophysiological research. Although they might not see the immediate relevance of their work to climate change, the next frontier needs to answer difficult questions, such as: do fearful messages about climate change actually elicit differential neural activity? What physiological changes are experienced when people engage with climate change stimuli? Are risk–reward centres of the brain active when people evaluate climate change risks? Existing work in other areas (such as health) has already started to look at how survey and neuroimaging data diverge in predicting people’s responses to persuasive messages.

Lastly, there is a need to shift from intention-based research to more policy-relevant and impactful behaviours that have the technological potential to mitigate climate change. Although those behaviours are more difficult to study and change, our theories need to explain how people make costly mitigation and adaptation decisions in ecologically valid settings across diverse cultures. Doing so will not only advance the behavioural sciences, but also make our insights more integral to climate policy.

MicroStockHub/E+/Getty

Box 1 Contributors

Veronika Eyring heads the Earth System Model Evaluation and Analysis Department at the German Aerospace Center (DLR) Institute of Atmospheric Physics, and she is Professor and Chair of Climate Modelling at the University of Bremen. She served as CMIP Panel Chair during 2014–2020 through the World Climate Research Programme.

Vimal Mishra completed his PhD in hydrology and water resources at Purdue University. He is an associate professor in Civil Engineering and Earth Sciences at the Indian Institute of Technology (IIT), Gandhinagar. His research focuses on understanding the impacts of climate change on water resources and hydrologic extremes.

Gary P. Griffith is a research scientist at the Norwegian Polar Institute and a visiting research fellow at the Department of Ecology and Evolutionary Biology, Levin Lab, Princeton University. His research focuses on applying complexity science to investigating anthropogenic climate change and human stressors on marine ecosystems.

Lei Chen completed his PhD in ecology at Hokkaido University and postdoctoral training at Texas Tech University. He is a distinguished research fellow at the College of Life Sciences, Sichuan University, China. His current research mainly focuses on how global climate change influences plant growth and vegetation ecosystems.

Trevor Keenan is an ecosystem scientist with a background in mathematics. His interests are centred on understanding the terrestrial carbon sink and feedbacks to climate by integrating ground observations of ***land***-surface dynamics with models and remote-sensing data. He is an assistant professor at UC Berkeley and faculty scientist at Lawrence Berkeley National Lab.

Merritt R. Turetsky is an ecologist and carbon cycle scientist who has worked in permafrost landscapes for more than two decades. She is the director of the Institute of Arctic and Alpine Research and a professor in the Ecology and Evolutionary Biology Department at the University of Colorado, Boulder. Turetsky is equally passionate about northern ecosystems and the people who rely on them.

Sally Brown researches coastal change and climate change adaptation at Bournemouth University, UK, and is an affiliated member of Tyndall Centre for Climate Change Research. Her research addresses global-to-local-scale issues across different geomorphic settings.

Frank Jotzo is a professor of climate change economics at the Australian National University. He is contributing to the IPCC Sixth Assessment Report for Working Group III and the Synthesis Report, and has played roles in climate change policy assessments and advice in Australia and other countries. He is joint editor-in-chief of the journal Climate Policy.

Frances C. Moore is an assistant professor in the Environmental Science and Policy Department at the University of California, Davis. Her research helps quantify the risks climate change poses for human wellbeing, and informs the design of adaptation and mitigation policy. Her training and research bridge the fields of climate science and environmental economics.

Sander van der Linden is a social psychologist who studies human judgement, communication and decision-making, especially in the context of climate change attitudes and behaviours. He is currently a professor of Social Psychology in Society and director of the Cambridge Social Decision-Making Lab at the University of Cambridge.

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[***Agrifood Brief: Brexit crunch time - no time to chew the fat***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61VW-R821-JCF9-43YH-00000-00&context=1516831)

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**Highlight:** Welcome to EURACTIV's AgriFood Brief, your weekly update on all things ***Agriculture*** & Food in the EU.

**Body**

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**5 - Agroforestry, pig tails, carbon farming**

As UK-EU negotiations come to a head, with the last round of intense negotiations this week, [*key stakeholders*](https://www.euractiv.com/section/agriculture-food/news/brexit-no-deal-could-severely-disrupt-agrifood-sector/) in agrifood on both sides of the channel are sounding the alarm about the future of the sector.

With the clock ticking, the UK approved legislation on Tuesday (29 September) that allows ministers to override the agreed divorce deal with the European Union, despite the fact it violates international law.

The controversial Internal Market Bill seeks to offer a "safety net" for trade between Britain's four nations after the Brexit transition period expires in December, but has soured relations with Brussels.

In response, the European Commission sent the United Kingdom [*a letter of formal notice*](https://www.euractiv.com/section/uk-europe/news/eu-launches-legal-action-against-uk-over-post-brexit-bill/) for breaching its obligations under the Withdrawal Agreement on Thursday (1 October), marking the start of a formal infringement process.

The move did little to ease the mounting tensions, as the UK edges ever closer to an increasingly likely [*no-deal scenario.*](https://www.euractiv.com/section/uk-europe/opinion/johnson-and-no-deal-brexit/)

This is especially true in the agrifood sector, which stands to be one of the worst hit by the effects of Brexit and is staring down the barrel end of two scenarios:

One is a limited Free Trade Agreement (FTA), and the other a no-deal Brexit, leaving EU-UK trade on World Trade Organisation terms, which means the introduction of tariffs and quotas on trade into and out of the UK.

With negotiations still up in the air, the only certainty afforded to the agri sector is that the way EU food businesses trade with the UK will change significantly.

Addressing the Commons last week, George Eustice, secretary of state for environment, food and rural affairs, sought to assuage concerns over price increases and food insecurity post-Brexit.

Addressing concerns from UK retailers that tariffs will lead to [*increased food prices*](https://www.just-food.com/news/uk-retailers-issue-warning-on-prices-of-no-deal-brexit_id144461.aspx) for consumers, he answered that the impact from tariffs will be "quite modest", with a potential increase of only a few percentage points of the overall costs.

Although he stressed the importance of reaching a deal by mid-October, saying this was being done "with rigour and good faith," Eustice also recently told the BBC Today programme that leaving with no agreement would be a good thing as it would mean the UK had "regained its independence".

But these assurances have done little to allay the fears over the bleak outlook of the agrifood sector.

And rightly so, according to a new London School of Economics [*report*](https://www.lse.ac.uk/business-and-consultancy/consulting/consulting-reports/vulnerabilities-of-supply-chains-post-brexit) published this week, which found that both scenarios would result in a reduced availability of EU products, reduced traded volumes across the UK and the EU, and higher prices for branded and unbranded types of products.

It found that food trade between the UK and EU will be slashed by almost a quarter in both directions even if a free-trade agreement is reached before the end of this year, primarily driven by 'non-tariff barriers' such as new paperwork.

Various voices - from [*farmers*](https://www.fginsight.com/news/news/nfu-denies-eustice-claim-that-no-deal-is-a-good-outcome-111989) to [*celebrity chefs*](https://inews.co.uk/news/uk/jamie-oliver-joe-wicks-warn-against-lowering-food-safety-standards-brexit-trade-662888) -  have now joined the Brexit cacophony to urge the government to uphold protections and safeguards on food over fears that Britain will be flooded with low-quality imports in trade deals with the rest of the world.

Most recently, the Irish meat sector issued concerns over the increasing likelihood of a no-deal trade scenario between the UK and the EU, with the Irish Cattle and Sheep Farmers' Association (ICSA) saying there has been an [*"industry silence"*](https://icsaireland.ie/news/bleak-outlook-winter-finishers-amid-industry-silence-prospects-beef/) on the prospects for the sector over the tough winter months.

Likewise, in a letter sent from the other side of the Channel last week, key EU agrifood players warned that failure to reach a deal on future EU-UK trade relations will result in a "devastating double whammy" for farmers, agri-food businesses and traders who are already struggling to cope with the COVID-19 pandemic.

"Less than four months before the end of the transition period, there are still many unknowns that make preparation impossible. In particular, food operators from both sides of the Channel need to know the UK's regulatory regime on plant health, animal health, food and feed controls, and any future requirements impacting EU exports," the letter said.

It stressed that the agreement must seek to maintain a level playing field between the EU and the UK, as well as protect the integrity of the single market.

But it is becoming increasingly difficult to see a way out of these negotiations which is favourable for the agri sector, both in the bloc and over the Channel.

*(N.F.)*

**Agrifood news this week**

**Routine illegal pig-tail docking continues unabated in the EU**Despite the fact that the practice was outlawed over 20 years ago, only two member states have banned pig-tail docking, according to a Commission response offered to a parliamentary question on the matter. [*Natasha Foote has the story.*](https://www.euractiv.com/section/agriculture-food/news/routine-illegal-pig-tail-docking-continues-unabated-in-the-eu/)

**Handling soil with care: Conservation *Agriculture*'s role in post-2020 CAP**Despite being taken into consideration only slightly in the EU's current farming subsidies programme, Conservation ***Agriculture*** is set to play a central role in the green architecture of the post-2020 Common ***Agricultural*** Policy (CAP). [*Gerardo Fortuna has more.*](https://www.euractiv.com/section/agriculture-food/news/handling-soil-with-care-conservation-agricultures-role-in-post-2020-cap/)

**Genetically modified soybean gains EU Commission approval**The European Commission authorised a genetically modified soybean for food and feed, but not cultivation, on Monday (28 September), paving the way for a full launch of the variety in the US and Canada in 2021. [*See here for more details.*](https://www.euractiv.com/section/agriculture-food/news/genetically-modified-soybean-gains-eu-commission-approval/)

**Europe revives carbon farming but without access to carbon markets**The concept of soil carbon sequestration, a cornerstone of regenerative farming, is regaining strength as a key measure in both climate mitigation and adaptation. However the ***agricultural*** and ***land***-use sector is so far being kept outside the bloc's carbon market - the ***Emissions*** Trading Scheme (ETS). [*Learn more here.*](https://www.euractiv.com/section/agriculture-food/news/europe-revives-carbon-farming-but-without-access-to-carbon-markets/)

**'Urban Farming': Are rooftop fields the future?**Large cities offer millions of square meters of unused roof space. Why aren't they being converted to cultivate crops? The potential seems enormous, but "urban farming" is still in its infancy. [*EURACTIV Germany reports.*](https://www.euractiv.com/section/agriculture-food/news/urban-farming-are-rooftop-fields-the-future/)

**Rewarding farmers for ecological services could help protect biodiversity**As the World Summit on Biodiversity opens on Wednesday (30 September), new measures to halt its decline are being discussed, including the concept of payments for environmental services, which is currently widely debated in France and the EU. [*EURACTIV France reports.*](https://www.euractiv.com/section/agriculture-food/news/rewarding-farmers-for-ecological-services-could-help-protect-biodiversity/)

**"We need to look at the compatibility of our imports with deforestation. Consumers need guarantees on the sourcing of proteins that are imported in Europe"**

Michael Scannell, Deputy Director General of DG AGRI, speaking at the [*FEFAC congress*](https://www.feedfuture.be/fefaccongress2020/en/livestream-25092020-9u30) last week

News from the bubble

**CAP and Green Deal mismatch:** 30 EU civil society organisations and 250 organisations working in coalition in seven Member States [*wrote to the leaders*](https://foodpolicycoalition.eu/wp-content/uploads/2020/09/Open-letter-on-CAP-and-Green-Deal_final.pdf)of EU Institutions calling out the mismatch between ongoing negotiations on the reform of the Common ***Agricultural*** Policy (CAP) and the objectives of the European Green Deal.

**Neonicotinoid reauthorisation:**The European Commission jumped in the debate over France's re-authorisation of neonicotinoids to save its sugar beet industry, hinting that the EU executive may not grant the French government derogations on the use of the controversial class of pesticides. Speaking before MEPs in the European Parliament's Environment Committee (ENVI), Klaus Berend, head of unit for pesticides and biocides in Commission's DG SANTE, said "If EFSA finds that these emergency authorisations are not justified, we will take the same steps as we did for Lithuania and Romania last year and adopt a Commission decision prohibiting the repetition of these emergency authorisations."

**Budget ring-fencing:** The European parliament is currently working on how to allocate the (EURO)7.5 billion top-up coming to the EU's farming subsidies programme from the bloc's post-COVID stimulus plan. The European Parliament's ***agriculture*** committee rapporteur on this issue, socialist MEP Paolo De Castro filed some amendments to the German presidency proposals aiming  at ring-fencing 37% of the budget for agro-environmental measures, but also at increasing the level of support up to 100% for investment linked to the transition toward a smarter, more digital and more resilient ***agricultural*** sector. "Our objective is to reflect the same level of ambition shown by President Von Der Leyen in her State of the Union address, where she committed to invest 37% of NextGenerationEU directly on our European Green Deal objectives," rapporteur De Castro told EURACTIV. The vote is expected on 12 October.

**New geographical indication:** The European Commission has approved the application for inclusion of [*'Bracki varenik'*](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020XC0603(01)&from=EN) from Croatia in the Register of Protected Geographical Indications (PGI). 'Bracki varenik' is a product used as a condiment and obtained by cooking squeezed juice from fresh or dried grapes.

**Funding for sustainable *agriculture*:** 46 new projects will receive over (EURO)236 million in research funding grants from the Horizon 2020 programme. These projects will develop innovative solutions, including approaches to reduce pesticide use and to deliver healthy food from ***land*** and sea, foster urban food systems, and promote agroecology and energy free farming, among others.  [*More information here.*](https://ec.europa.eu/info/news/46-new-projects-start-their-research-agroecology-and-ocean-observation-2020-sep-28_en)

**Romania joins EU farmers association:**Romanian farming and cooperative organisations united forces in the Alliance for ***Agriculture*** and Cooperation and joined farmers association COPA-COGECA as full members this week as part of its goal to be more of a present partner at an EU level.

**Commissioner under quarantine:**EU Health and Food Safety Commissioner Stella Kyriakides is under quarantine this week after a close contact tested positive for COVID-19. She confirmed the news in a [*tweet*](https://twitter.com/SKyriakidesEU/status/1310142114177654786?s=20%C2%A0).

**Cage-free farming:**The European Commission received a European Citizens' Initiative signed by 1.4 million people this week which calls on the EU to phase out the use of cages for farmed animals. 'End the Cage Age' is only the sixth European Citizens' Initiative to reach the required threshold of 1 million signatures since the first Initiative was launched over eight years ago, and is the first successful Initiative for farmed animals.

**Agrifood news from the Capitals**

**UK**UK beef to be served on US plates for first time in over 20 years, with first exports commencing from a Northern Irish facility, according to a [*statement*](https://www.gov.uk/government/news/first-exports-of-uk-beef-to-the-usa-in-20-years-underway) on the UK government's website. After the USA's longstanding ban on EU beef - introduced in the wake of the mad cow disease outbreak in 1996 -  market access for UK beef was granted in March 2020. The statement called this a "historic moment" for UK farmers and food producers. ([*Natasha Foote*](https://www.euractiv.com/authors/natasha-foote/) | [*EURACTIV.com*](https://www.euractiv.com/))

**FRANCE**The "great national debate on ***agriculture***" started again last weekend after being postponed due to COVID-19. The government is looking to consult the population in order to define France's position in the negotiations on the future Common ***Agricultural*** Policy. The three priority objectives of the future CAP have been identified as sustainable management of natural resources, protection of biodiversity, landscapes and ecosystems, and combating and adapting to climate change. ([*Anne Damiani*](https://www.euractiv.com/authors/anne-damiani/)| [*EURACTIV.fr*](https://www.euractiv.fr/))

**IRELAND**The Irish government rushed through emergency legislation for the timber industry this week amid fears that the sector is running out of native raw material after changes in licensing was introduced by the EU after Ireland was found to not fully meet EU environmental requirements. In order to keep timber mills in business, Ireland will now look to import timber from Scotland. ([*Natasha Foote*](https://www.euractiv.com/authors/natasha-foote/) | [*EURACTIV.com*](https://www.euractiv.com/))

**ITALY**The Operational Group ULTRAREP is working on innovative ultrasonic technology to protect crops from ungulates, in a sustainable way, while not harming animals. The presence of ungulates, such as deer and wild boar, living in the Italian region of Tuscany cause serious damage to farm crops, resulting in loss of income for farmers. "For every farmer there are now 5 ungulates, a number that almost doubled in five years. Therefore, we hope that ultrasound technology for the ***removal*** of wild ungulates can be an answer", says Massimiliano Biagi, the agronomist in charge of the ULTRAREP operational  group. ([*EURACTIV.com*](https://www.euractiv.com/))

**On our radar**

The Parliament will hold a plenary vote next Tuesday (6 October) on the draft**European Climate Law**, which seeks to enshrine into hard legislation the EU's goal of reaching "climate neutrality" by 2050, and also on the  the **European *Forest* Strategy**.

**Upcoming events**

6 October - The European Commission, in partnership with the European Investment Bank, is holding a [*webinar*](https://www.fi-compass.eu/event/6922/financial-needs-agriculture-and-agri-food-sectors-austria-and-czech-republic) on the 'Financial needs in the ***agriculture*** and agri-food sectors in Austria and the Czech Republic'.

7-11 October - The [*Alimenterre film festival*](https://festivalalimenterre.be/programme/#date=all&city=bruxelles&title=all) will take place in Belgium, designed to bring attention to films with themes such as the resilience to the current food systems challenges, the reconnection to local production, food sovereignty in Africa, and the prospects for future for young farmers in times of crisis.

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Active chemical ingredients for use in the manufacture of anti-cancer drugs; Active chemical ingredients for use in the manufacture of pharmaceuticals; Additive concentrates (Chemical -) for motor fuels; Additives (Chemical -) for cement; Additives (Chemical -) for clay; Additives (Chemical -) for combustion enhancers; Additives (Chemical -) for compost; Additives (Chemical -) for concrete; Additives (Chemical -) for cooling agents; Additives (Chemical -) for detergents; Additives (Chemical -) for fertilisers; Additives (Chemical -) for flooring plaster; Additives (Chemical -) for food; Additives (Chemical -) for fuels; Additives (Chemical -) for greases; Additives (Chemical -) for grouting materials; Additives (Chemical -) for hydraulic fluids; Additives (Chemical -) for industrial greases; Additives (Chemical -) for industrial oils; Additives (Chemical -) for manures; Additives (Chemical -) for mortar; Additives (Chemical -) for oils; Additives (Chemical -) for ore floatation; Additives (Chemical -) for petroleum products; Additives (Chemical -) for plaster; Additives (Chemical -) for plasticizing concrete; Additives (Chemical -) for polymers; Additives (Chemical -) for printing inks; Additives (Chemical -) for rubber processing; Additives (Chemical -) for rubber vulcanising; Abrasives (Auxiliary fluids for use with -); Absorbent expandable graphite; Absorbent graphites; Absorbents derived from silica; Absorbents for cleaning solvents; Absorbing carbons; Absorbing oil (Synthetic materials for -); Absorption agents; Accelerants for speeding up chemical reactions; Accelerators for organic chemical reactions; Accelerators for speeding up chemical reactions; Accelerators for speeding up the setting of concrete; Accelerators (Vulcanisation -); Accumulators (Acidulated water for recharging -); Acetal; Acetaldehyde (ethanal); Acetanil; Acetanilid; Acetanilide; Acetate [Aluminium -]; Acetate esters; Acetate of cellulose, unprocessed; Acetates; Acetates [chemicals]; Acetates used as industrial solvents; Acetic acid; Acetic acid ester; Acetic anhydride; Acetification (Bacteriological preparations for -); Acetone; Acetophenone; Acetylene; Acetylene for industrial purposes; Acetylene tetrachloride; Acid anhydrides; Acid free flux; Acid gelling agents; Acid proof chemical compositions; Acidic oxides; Acidproof chemical compositions; Acids; Acids derived from plant sources; Acids for etching enamels; Acids for metal pickling; Acids for use in etching; Acids for use in pickling; Acids for use in the preparation of animal foodstuffs; Acids used as electrolytes; Acidulated water for recharging accumulators; Acidulated water for recharging batteries; Acrylamide; Acrylate; Acrylic acids; Acrylic latexes (Raw -); Acrylic latexes (Unprocessed -); Acrylic monomers; Acrylic polymer powders; Acrylic redispersible polymers; Acrylic resins; Acrylic resins, unprocessed; Acrylic resins (Unprocessed -) for use as additives to fibres; Acrylic substances (Unprocessed -); Acrylonitrile; Actinium; Activated carbon; Activated carbons; Activated charcoal; Activator enzymes; Activators [chemicals]; Activators to increase rate of chemical reaction; Active chemical ingredients for use in the manufacture of anti-cancer drugs; Active chemical ingredients for use in the manufacture of pharmaceuticals; Additive concentrates (Chemical -) for motor fuels; Additives (Chemical -) for cement; Additives (Chemical -) for clay; Additives (Chemical -) for combustion enhancers; Additives (Chemical -) for compost; Additives (Chemical -) for concrete; Additives (Chemical -) for cooling agents; Additives (Chemical -) for detergents; Additives (Chemical -) for fertilisers; Additives (Chemical -) for flooring plaster; Additives (Chemical -) for food; Additives (Chemical -) for fuels; Additives (Chemical -) for greases; Additives (Chemical -) for grouting materials; Additives (Chemical -) for hydraulic fluids; Additives (Chemical -) for industrial greases; Additives (Chemical -) for industrial oils; Additives (Chemical -) for manures; Additives (Chemical -) for mortar; Additives (Chemical -) for oils; Additives (Chemical -) for ore floatation; Additives (Chemical -) for petroleum products; Additives (Chemical -) for plaster; Additives (Chemical -) for plasticizing concrete; Additives (Chemical -) for polymers; Additives (Chemical -) for printing inks; Additives (Chemical -) for rubber processing; Additives (Chemical -) for rubber vulcanising; Additives (Chemical -) for soil; Additives (Chemical -) for stone; Additives (Chemical -) for the flow control of adhesives; Additives (Chemical -) for the flow control of caulks; Additives (Chemical -) for the flow control of coatings; Additives (Chemical -) for the flow control of cosmetics; Additives (Chemical -) for the flow control of grease; Additives (Chemical -) for the flow control of ink; Additives (Chemical -) for the flow control of paper; Additives (Chemical -) for the flow control of plastics; Additives (Chemical -) for the flow control of sealants; Additives (Chemical -) for the prevention of sedimentation; Additives (Chemical -) for the prevention of turbidity; Additives (Chemical -) for the protection of plastics against degradation; Additives (Chemical -) for the soil; Additives (Chemical -) for use in binding asphalt; Additives (Chemical -) for use in binding concrete; Additives (Chemical -) for use in binding masonry; Additives (Chemical -) for use in cryoprotection; Additives (Chemical -) for use in drilling; Additives (Chemical -) for use in drilling fluids; Additives (Chemical -) for use in drilling muds; Additives (Chemical -) for use in enzyme stabilisation; Additives (Chemical -) for use in fermentation; Additives (Chemical -) for use in plastics; Additives (Chemical -) for use in repairing asphalt; Additives (Chemical -) for use in repairing concrete; Additives (Chemical -) for use in repairing masonry; Additives (Chemical -) for use in resins; Additives (Chemical -) for use in the casting of metals; Additives (Chemical -) for use in the cleaning of water; Additives (Chemical -) for use in the completion of subterranean gas wells; Additives (Chemical -) for use in the disinfection of water; Additives (Chemical -) for use in the drilling of subterranean gas wells; Additives (Chemical -) for use in the drilling of subterranean oil wells; Additives (Chemical -) for use in the manufacture of animal foodstuffs; Additives (Chemical -) for use in the moulding of metals; Additives (Chemical -) for use in the preparation of animal foodstuffs; Additives (Chemical -) for use in the processing of plastics; Additives (Chemical -) for use in the treatment of paper pulp; Additives (Chemical -) for use in the workover of subterranean wells; Additives (Chemical -) for use in waterproofing asphalt; Additives (Chemical -) for use in waterproofing concrete; Additives (Chemical -) for use in waterproofing masonry; Additives (Chemical -) for use with concrete; Additives (Chemical -) to accelerate the setting of concrete; Additives, chemical, to drilling muds; Additives, chemical, to fungicides; Additives, chemical, to insecticides; Additives, chemical, to motor fuel; Additives (Detergent -) to gasoline [petrol]; Additives for concrete; Additives for frost protection; Additives for raising the cetane number of diesel fuel; Additives for raising the octane number in petrol; Additives for use in mixing cement; Adherent substances for adhesive tapes; Adhesive cements; Adhesive compositions for use in industry; Adhesive compositions with a base of epoxy resins for use in industry; Adhesive compounds with a base of epoxy resins; Adhesive fillers for filling surface blemishes; Adhesive materials for the building industry; Adhesive materials for tiles; Adhesive melts; Adhesive preparations for surgical bandages; Adhesive stiffeners for metal; Adhesive stiffeners for plastics; Adhesive substances for use in industry; Adhesive substances used in industry; Adhesives for affixing insulating boards; Adhesives for affixing wall tiles; Adhesives for ***agricultural*** use in pest control; Adhesives for application to the exterior of cartons to prevent slippage; Adhesives for applying floor tiles; Adhesives for applying wall coverings; Adhesives for billposting; Adhesives for bookbinding; Adhesives for ceiling coverings; Adhesives for cement manufactured products; Adhesives for ceramic coating; Adhesives for ceramic tiles; Adhesives for floor, ceiling and wall tiles; Adhesives for floor coverings; Adhesives for glass; Adhesives for glazing; Adhesives for industrial purposes; Adhesives for industrial use; Adhesives for industrial use in the form of chips; Adhesives for industrial use in the form of coatings; Adhesives for industrial use in the form of flakes; Adhesives for industrial use in the form of granules; Adhesives for industrial use in the form of scales; Adhesives for laying ceramic tiles; Adhesives for mortar; Adhesives for ornamental paving; Adhesives for paperhanging; Adhesives for paving; Adhesives for plaster; Adhesives for preventing the loosening of wheel nuts; Adhesives for printing screens; Adhesives for printing templates; Adhesives for securing plaster; Adhesives for the building industry; Adhesives for the construction industry; Adhesives for use in bonding materials [industrial]; Adhesives for use in building; Adhesives for use in construction; Adhesives for use in industry; Adhesives for use in photography; Adhesives for use in science; Adhesives for use in the binding of books; Adhesives for use in the building industry; Adhesives for use in the construction industry; Adhesives for use in the electroacoustical industry; Adhesives for use in the electronics industry; Adhesives for use in the electro-optical industry; Adhesives for use in the manufacture of furniture; Adhesives for use in the manufacture of plywood; Adhesives for use in the manufacture of surgical bandages; Adhesives for use in the manufacture of wall coverings; Adhesives for use in the mechanical industry; Adhesives for use in the transfer of designs to textiles; Adhesives for use on transdermal drug delivery components; Adhesives for wall coverings; Adhesives for wall tiles; Adhesives for wallpaper; Adhesives for waterproofing; Adhesives of synthetic origin for industrial use; Adhesives, other than for stationery or household purposes; Adhesives [sizing]; Adhesives used in industry; Adhesives used in industry, in particular in the construction industry; Adipic acid; Adjuvants for ***agricultural*** purposes; Adjuvants, other than for medical or veterinary purposes; Admixtures (Chemical -) for concrete; Admixtures (Chemical -) for mortar; Adsorbent chemical preparations; Adsorbent chemical products; Adsorbents consisting of activated carbon; Adsorbents of synthetic materials; Adsorbing agents of synthetic materials; Aerated concrete granules for use as binders for oil; Aerated concrete in pulverised form for use as chemical binders; Aeration chemicals for concrete; Aerogels for use as chemical absorbents; Aerosol propellants; Aerosols (Gas propellants for -); Aerosols (Gas propellents for -); Affinity ligands; Agar; Agar gel; Agar-agar; Agar-agar for industrial purposes; Agents (Chemical -) for the flame-retardant coating of textiles; Agents (Chemical -) for the flame-retardant finishing of textiles; Agents (Chemical -) for use in water purification; Agents for degreasing for use in a manufacturing process; Agents for scouring in a manufacturing process; Agents for soaking in a manufacturing process; Agents for the prevention of re-icing; Agents for washing in a manufacturing process; Agglutinants for cement; Agglutinants for clay; Agglutinants for concrete; Agglutinants for mortar; Agglutinants for plaster; Agglutinants for wood; Agglutinins for concrete; ***Agricultural*** acids; ***Agricultural*** chemicals; ***Agricultural*** chemicals, except fungicides, herbicides, insecticides and parasiticides; ***Agricultural*** chemicals, except fungicides, weedkillers, herbicides, insecticides and parasiticides; ***Agricultural*** chemicals, except fungicides weedkillers, herbicides, insecticides, parasiticides; ***Agricultural*** lime; ***Agriculture*** (Manure for -); Air void formers being additives for concrete; Air void formers being additives for mortar; Air-entraining agents; Albumen; Albumen (Iodised -); Albumen (Malt -); Albumenized paper; Albumin [animal or vegetable, raw material]; Albumin for industrial purposes; Albumin for use in manufacture; Alcohol; Alcohol (Ethyl -); Alcohol for industrial purposes; Alcohol for pickling foodstuffs; Alcohol for use in the manufacture of perfumes; Alcohols; Aldehydes; Algarovilla for use in tanning; Alginates for industrial purposes; Alginates for the food industry; Aliphatics; Alkali; Alkali (Volatile -) [ammonia] for industrial purposes; Alkalies; Alkaline galvanising chemicals for metallic substances; Alkaline iodides for industrial purposes; Alkaline metals; Alkaline metals (Salts of -); Alkaline orthophosphates; Alkaline pickling fluids; Alkaline salts; Alkaline-earth metals; Alkalines; Alkaloids; Alkaloids for ***agricultural*** purposes; Alloying of metals (Chemical preparations for facilitating the -); Alloys of rare earth metals; Allyl alcohol; Allyl chloride; Alum; Alum for use as a flame retardant; Alum for use in the purification of water; Alumina; Alumina [aluminium oxide]; Alumina fibre; Alumina trihydrate; Aluminate; Aluminium acetate; Aluminium alum; Aluminium chloride; Aluminium diacetate; Aluminium ethanoate; Aluminium halides; Aluminium hydrate; Aluminium hydroxide; Aluminium iodide; Aluminium nitrate; Aluminium oxide; Aluminium oxide [alumina]; Aluminium oxides (alumina); Aluminium oxynitride; Aluminium salts; Aluminium silicate; Aluminium sulphate; Alumino-silicates; Aluminum ammonium sulfate; Aluminum oxide; Alunite; Ameliorants for the soil; Americium; Amides for use in industry; Amides for use in manufacture; Amino acids for industrial purposes; Amino acids for scientific purposes; Amino acrylic polymers for use in manufacture; Amino compounds; Aminonaphthol toluidine sulfonate; Ammonia; Ammonia alum; Ammonia for industrial purposes; Ammonia [volatile alkali] for industrial purposes; Ammonia water; Ammoniacal salts; Ammonium acetate; Ammonium aldehyde; Ammonium alum; Ammonium bicarbonate; Ammonium bichromate; Ammonium bromide; Ammonium carbonate; Ammonium chloride; Ammonium chloride fertilizer; Ammonium compounds for ***removing*** electrostatatic charges; Ammonium fluoride; Ammonium hydroxide; Ammonium molybdate; Ammonium nitrate; Ammonium nitrate fertilizer; Ammonium perchlorate; Ammonium persulfate; Ammonium phosphate; Ammonium salts; Ammonium sulphate; Ammonium sulphate fertilizer; Ammonium sulphide; Ammonium tungstate; Ammonium vanadate; Amyl acetate; Amyl alcohol; Amyl alcohol (pentanol); Analyses in laboratories (Chemical preparations for -), other than for medical or veterinary purposes; Anhydrides; Anhydrous ammonia; Anhydrous caustic soda; Anhydrous sodium hydroxide for industrial purposes; Aniline; Animal albumen [raw material]; Animal albumen [raw materials]; Animal carbon; Animal carbon preparations; Animal charcoal; Animal manure; Anisole; Anthracene; Anthranilic acid; Anti-aging agents for industrial purposes; Antibodies for scientific purposes, other than for medical or veterinary use; Antibody reagents for scientific purposes; Anti-boil preparations for engine coolants; Anticaking agents for use in the manufacture of animal feed; Anti-creasing agents; Anti-damp insulating compositions [other than paint]; Antifebrin; Anti-foaming agents; Anti-fogging agent for glasses; Anti-fogging preparations; Antifreeze; Anti-freeze; Anti-freeze agents; Anti-freeze chemicals; Anti-freeze compositions; Anti-freeze for vehicle cooling systems; Antifreeze for vehicle radiators; Antifreeze mixes; Anti-freeze preparations; Anti-freezing additives (Chemical -) for fuels; Antifreezing liquids; Anti-freezing liquids; Anti-freezing mixtures; Antifreezing preparations; Anti-freezing preparations; Anti-frothing solutions for accumulators; Anti-frothing solutions for batteries; Anti-glare spray for 3D scanning; Anti-glutinates for concrete; Anti-incrustants; Antiknock substances for internal combustion engines; Anti-knock substances for internal combustion engines; Antimicrobial agents for use in manufacture; Antimicrobial preservatives for cosmetics; Antimicrobial preservatives for pharmaceuticals; Antimonate; Antimony; Antimony oxide; Antimony oxides; Antimony powder; Antimony sulfide; Antimony sulphide; Antioxidants for use in manufacture; Anti-oxidants for use in manufacture; Antioxidants for use in the manufacture of beverages; Antioxidants for use in the manufacture of cosmetics; Antioxidants for use in the manufacture of food and beverages; Antioxidants for use in the manufacture of food products; Antioxidants for use in the manufacture of food supplements; Antioxidants for use in the manufacture of pharmaceuticals; Anti-pathogen plant-protecting preparations; Anti-rutting agents for bitumen; Anti-seize substances [chemicals]; Anti-shrink agents; Anti-skid sprays for vehicle tires; Anti-sprouting preparations for vegetables; Anti-static additives [other than for household purposes]; Anti-static agents [other than for household purposes]; Anti-static preparations for industrial purposes; Antistatic preparations, other than for household purposes; Anti-static spray for electronic equipment; Anti-static sprays for business machines; Anti-tarnishing chemicals; Anti-tarnishing chemicals for windows; Anti-waxing agents for diesel oil; Antranilic acid; Antranilic acid (anthranilic acid); Aqueous ammonia for industrial purposes; Aqueous based photographic developer chemicals; Aqueous chemical compositions; Aqueous dispersions of inorganic minerals; Aqueous linear polymer gels; Aqueous polymer dispersions; Arabitol; Argon; Aromatic fluorine intermediates for use in manufacture; Aromatic hydrocarbons; Aromatics [chemicals]; Arsenate (Lead -); Arsenic; Arsenic acid; Arsenious acid; Arsine; Artificial farmyard fertilizers; Artificial graphite for industrial purposes; Artificial graphite for secondary cell batteries; Artificial manures; Artificial plant cultivation soil made of mineral materials; Artificial plant cultivation soil made of plastic materials; Artificial plant-cultivation soil; Artificial plant-cultivation soil made of mineral materials; Artificial plant-cultivation soil made of plastic materials; Artificial resins, unprocessed; Artificial skin for testing cosmetics; Artificial soil for plant cultivation made from mineral materials; Artificial soil for plant cultivation made from plastic materials; Artificial sweeteners; Artificial sweeteners [chemical preparations]; Artificial sweetening preparations; Artificial sweetening substances; Ash; Ash (Soda -); Aspartame; Asphalt release agent; Assay preparations for mycotoxins; Astatine; Atomic piles (Fuel for -); Automatic transmission fluids; Automobile body fillers; Automobile brake system leak sealants; Automobile cooling system leak sealants; Automobile gasket cement; Automobile power steering system leak sealants; Automobile tire inflator sealers; Auxiliary fluids for use with abrasives; Auxiliary fluids for use with additives for drilling muds; Auxiliary fluids for use with additives for fungicides; Auxiliary fluids for use with additives for paper; Auxiliary fluids for use with additives for wood pulp; Azobenzene; Azoxybenzene; Bacteria for sewage treatment; Bacteria for use in food manufacture; Bacteria for waste water treatment; Bacteria for water treatment; Bacteria [other than for medical or veterinary purposes]; Bacterial cultures for addition to food products; Bacterial cultures for the food industry; Bacterial cultures for wastewater treatment; Bacterial preparations for the food industry; Bacterial preparations for use in ***agriculture***; Bacterial preparations for use in forestry; Bacterial preparations for use in horticulture; Bacterial preparations, other than for medical and veterinary use; Bacterial preparations other than for medical and veterinary use; Bacterial preparations other than for medical or veterinary use; Bacterial products [other than for medical and veterinary use]; Bacterial substances for industrial use; Bacterial substances for scientific use; Bactericidal preparations [other than for medical and veterinary use]; Bactericides (Oenological -) [chemical preparations used in wine making]; Bactericides [other than for medical and veterinary use]; Bacteriological cultures [other than for medical and veterinary use]; Bacteriological preparations for acetification; Bacteriological preparations for use in ***agriculture***; Bacteriological preparations for use in forestry; Bacteriological preparations for use in horticulture; Bacteriological preparations other than for medical and veterinary use; Bacteriological preparations, other than for medical and veterinary use; Bagasse pulp for use in the manufacture of paper; Balm of gurjun [gurjon, gurjan] for making varnish; Bandages (Adhesive preparations for surgical -); Barite; Barium; Barium carbonate; Barium chloride; Barium compounds; Barium hydroxide; Barium nitrate; Barium nitrite; Barium paper; Barium peroxides; Barium phosphate; Barium sulfate; Barium sulphate; Barium sulphide; Baryta; Baryta paper; Barytes; Barytes (barite, heavy spar); Base papers for diazo copying; Bases [chemical preparations]; Basic gallate of bismuth; Bast pulp; Bate for dressing skins; Baths (Fixing -) [photography]; Baths for galvanizing; Baths (Toning -) [photography]; Batteries (Acidulated water for recharging -); Batteries (Anti-frothing solutions for -); Batteries (Liquids for ***removing*** sulphates from -); Batteries (Salts for galvanic -); Battery anti-sulphurizing agents; Battery electrolytes; Battery fluid [acidulated water]; Bauxite; Beer preserving agents; Beer-clarifying and preserving agents; Bentonite; Benzaldehyde; Benzene; Benzene derivatives; Benzene (Methyl -); Benzene-based acids; Benzidine; Benzidine sulphate; Benzoic acid; Benzoic sulfimide; Benzoic sulphinide; Benzol; Benzol (Methyl -); Benzophenone; Benzyl alcohol; Benzyl chloride; Benzyl ether; Berkelium; Betaines for use in manufacture; Bicarbonate of soda for chemical purposes; Bichloride of tin; Bichromate of potassium; Bichromate of soda; Billposting (Adhesives for -); Binders for investment casting; Binders for use in the formulation of caulks; Binders for use in the formulation of sealants; Binding agents for chipboard; Binding agents for flock-printing; Binding chemicals for concrete; Binding substances for industrial use; Binding substances (Foundry -); Biochar; Biochemical catalysts; Biochemical precursors for scientific purposes; Biochemical preparations for scientific purposes; Biochemical preparations other than for medical use; Biochemical substances [other than for medical use]; Biochemicals for in vitro and in vivo scientific use; Biochemicals for use as indicators [other than for medical use]; Biochemicals, namely, monoclonal antibodies for in vitro scientific or research use; Biochemicals namely, polypeptides for in vitro research use; Biochemicals namely, precursors for in vitro genetic engineering use; Biocidal preparations for use in manufacture; Biodegradable anionic surfactants for use in manufacture; Biodegradable detergents for use in manufacturing processes; Bio-fertilizer; Biofertilizers; Biofertilizers for use in seed treatment; Biofertilizers for use in soil treatment; Biological activators; Biological additives for converting crops into compost; Biological additives for converting vegetation into ***agricultural*** feeds; Biological additives for converting vegetation into silage; Biological indicators for monitoring sterilization processes other than for medical or veterinary purposes; Biological inoculants, other than for medical use; Biological preparation for use in cell cultures other than for medical or veterinary use; Biological preparations for use in industry; Biological preparations for use in industry and science; Biological preparations for use in manufacture; Biological preparations for use in science; Biological preparations, other than for medical or veterinary purposes; Biological preparations [other than for medical use]; Biological substances [other than for medical or veterinary use]; Biological tissue cultures other than for medical or veterinary purposes; Biological tissue cultures, other than for medical or veterinary purposes; Biological water treatment preparations; Biomolecule labelling kits comprising reagents for use in scientific research; Biostimulants being plant growth stimulants; Biphenyl for use as a preservative; Biphenyls; Birdlime; Bismuth; Bismuth (Basic gallate of -); Bismuth chloride; Bismuth germinate; Bismuth nitrate; Bismuth nitrate for industrial purposes; Bismuth nitrite; Bismuth nitrite for chemical purposes; Bismuth subnitrate for chemical purposes; Bisphenol acrylics; Black (Lamp -) for industrial purposes; Bleach [chemical] for use in manufacturing processes; Bleach [decolorants] for industrial purposes; Bleaching chemicals (Fat- -); Bleaching chemicals (Oil- -); Bleaching chemicals (Organic- -); Bleaching chemicals (Wax- -); Bleaching preparations [decolorants] for industrial purposes; Bleaching preparations for industrial purposes; Blood charcoal; Blood culture media for scientific use; Blood grouping reagents [other than for medical use]; Blood meal; Blood powder [fertilizer]; Blowing agents for use in the manufacture of expanded rubber; Blue vitriol; Blueprint cloth; Blueprint paper; Bluestone [copper sulphate]; Body fillers for use in the aerospace industry; Bonding agents for admixture with grouts; Bonding agents for admixture with mortars; Bonding agents for concrete; Bonding agents for masonry; Bond-promoters; Bone charcoal; Bone meal [fertilizer]; Borax; Boric acid; Boric acid for industrial purposes; Borneol; Boron; Boron phosphate; Botanical extracts for use in making cosmetics; Brake fluid; Brake fluids; Brazing chemicals; Brazing fluxes; Brazing preparations; Brewers' grain [fertilizer]; Brickwork and masonry preservatives (not paints and oils); Brickwork preservatives, except paints and oils; Brightening chemicals (Color- [colour -] -) for industrial purposes; Brominated vegetable oil for use as an emulsifier in the manufacture of food; Bromine; Bromine for chemical purposes; Bromobenzene; Bromoform; Buffer solutions for scientific purposes; Buffers [chemicals]; Butadiene; Butane [solidified] for industrial purposes; Butanol; Butyl acetate; Butylene; By-products of the processing of cereals for industrial purposes; Cacodyl chloride; Cadmium chloride; Cadmium sulphide; Caesium; Caffeine and caffeine extract used in industry; Calcined kaolin clay for use in filling newsprint paper; Calcined kaolin for industrial purposes; Calcined potassium fertilizer; Calcined soda; Calcium; Calcium aluminate; Calcium bisulfite; Calcium bisulphide; Calcium carbide; Calcium carbonate; Calcium carbonate powder; Calcium carbonate suspensions; Calcium chloride; Calcium cyanamide [fertiliser]; Calcium cyanamide [fertilizer]; Calcium cyanamides; Calcium cyanide; Calcium fluoride; Calcium hydrosulfide; Calcium hydroxide; Calcium iodide; Calcium nitrate; Calcium nitrate solutions for use in drainage; Calcium nitrate solutions for use in ground water pollution; Calcium nitrate solutions for use in polluted soil; Calcium oxide; Calcium oxides; Calcium peroxide; Calcium peroxide for use in ***agriculture***; Calcium peroxide for use in forestry; Calcium peroxide for use in horticulture; Calcium phosphate; Calcium phosphates; Calcium salts; Calcium silicate; Calcium silicate fertilizer; Calcium sulphide; Calcium superphosphate fertilizer; Calcium tungstate; Calcium-based algae nutrient supplements for use in aquaria; Calibration fluids; Calibration fluids for medical apparatus; Californium; Calomel (mercurous chloride); Calomel [mercurous chloride]; Camphor, for industrial purposes; Camphor for industrial purposes; Camphor oil for industrial purposes; Car body fillers; Carbazole; Carbide; Carbides; Carbohydrate monomers; Carbohydrates used as an ingredient in nutraceuticals; Carbolineum for the protection of plants; Carbon; Carbon black for industrial purposes; Carbon black for industrial use; Carbon black for use in industrial applications; Carbon dioxide bonding agents for respiratory gases; Carbon dioxide [other than for medical or veterinary use]; Carbon disulfide; Carbon disulphide; Carbon fluorochloride; Carbon for filters; Carbon for filters for ***removing*** organic contaminants from water; Carbon for industrial purposes; Carbon monoxide; Carbon paste for producing self-baking electrodes; Carbon preparations (Animal -); Carbon rods; Carbon tetrachloride; Carbonaceous absorbents; Carbonaceous absorbents for separation of gases; Carbonaceous absorbents for separation of liquids; Carbonaceous absorbents for the purification of gases; Carbonaceous absorbents for the purification of liquids; Carbonates; Carbonic acid; Carbonic acid gas; Carbonic acids; Carbonic hydrates; Carbons (Activated -); Carbons for use in catalysis; Carboxylic anhydride; Carboxymethyl cellulose; Carburizing agents; Carpet glue; Carrageenin for use in the manufacture of food; Casein for industrial purposes; Casein for the food industry; Cassiopium [lutetium]; Casting binders for foundry use; Casting flux; Casting powders; Casting preparations for industrial purposes; Catalyst carriers; Catalyst sulfiding agents; Catalyst supports consisting of inorganic oxides; Catalysts; Catalysts for chemical and biochemical processes; Catalysts for hardening purposes; Catalysts for improving combustion; Catalysts for oxidation processes; Catalysts for synthetic resins; Catalysts for use in biochemical processes; Catalysts for use in chemical processes; Catalysts for use in control of hydrocarbon ***emissions***; Catalysts for use in control of hydrogen ***emissions***; Catalysts for use in control of ozone ***emissions***; Catalysts for use in non-biological processes; Catalysts for use in the control of carbon dioxide ***emissions***; Catalysts for use in the cracking of hydrocarbons; Catalysts for use in the manufacture of industrial chemicals; Catalysts for use in the manufacture of plastics; Catalysts for use in the manufacture of polymers; Catalysts for use in the manufacture of rubber; Catalysts for use in the manufacture of synthetics, rubbers and polymers; Catalysts for use in the manufacture of urethane; Catalysts for use in the oil processing industry; Catalysts for use in the refining of hydrocarbons; Catalytic agents; Catechu; Cationic polymers; Cationic surfactants for use in manufacture; Caustic alkali; Caustic alkaline hydroxides; Caustic potash; Caustic potash (potassium hydroxide); Caustic soda; Caustic soda for industrial purposes; Caustic soda (sodium hydroxide); Caustics for industrial purposes; Cell growth media for growing cells for scientific use; Cellulase used in detergent manufacture; Cellulose; Cellulose (Acetate of -), unprocessed; Cellulose derivatives [chemicals]; Cellulose esters for industrial purposes; Cellulose ethers for industrial purposes; Cellulose for industrial purposes; Cellulose microspheres [raw material]; Cellulose paste; Cellulose pulp; Cellulose pulp for the manufacture of paper; Cellulose pulp [raw material]; Cement additives for completing wells; Cement [adhesives], other than for household or stationery use; Cement for boots; Cement for footwear; Cement for mending broken articles; Cement for pneumatic tires [tyres]; Cement for shoes; Cement [metallurgy]; Cement (Oil -) [putty]; Cement preservatives, except paints and oils; Cement preservatives (not paints and oils); Cement set accelerators; Cementitious powder for coatings; Cements for affixing ceiling tiles; Cements for affixing floor tiles; Cements for affixing tiles; Cements for affixing wall tiles; Cements for fixing ceiling tiles; Cements for fixing floor tiles; Cements for fixing tiles; Cements for fixing wall tiles; Cement-waterproofing chemicals, except paints; Cement-waterproofing preparations, except paints; Ceramic compositions for sintering [granules and powders]; Ceramic frits; Ceramic glazes; Ceramic glazings; Ceramic materials in granule form for use in industry; Ceramic materials in particulate form, for use as filtering media; Ceramic materials in particulate form for use as filtering preparations; Ceramic materials in paste form for use in industry; Ceramic materials in powder form for use in industry; Ceramic matrix composite [CMC] materials for use in manufacture; Ceramic microspheres for use as fillers; Ceramic microspheres for use as reinforcing materials; Ceramic powder for forming piezoelectric elements; Ceramics (Compositions for the manufacture of technical -); Cereals (By-products of the processing of -) for industrial purposes; Cerium; Cerium chloride; Cerium fluoride; Cerium hydroxide; Cesium; Cetyl alcohol; Charcoal (Animal -); Charcoal (Blood -); Charcoal (Bone -); Charcoal for horticultural purposes; Charcoal for use as a soil conditioner; Charged resins for the manufacture of casing of electrical windings; Chelated substances for use as fertilizers for plant foliage; Chelated substances for use as nutrients for plant foliage; Chelated substances for use as supplements for plant foliage; Chelates; Chelating agents; Chemical absorbants; Chemical absorbents; Chemical absorption agents; Chemical accelerants; Chemical acid thickeners; Chemical acid thickening agents; Chemical acid viscosifiers; Chemical additives; Chemical additives for borehole stabilisation in oil well drilling; Chemical additives for concrete; Chemical additives for diesel fuels; Chemical additives for drilling fluids; Chemical additives for drilling muds; Chemical additives for engine cooling systems; Chemical additives for food; Chemical additives for foodstuffs; Chemical additives for fuel; Chemical additives for fuel injection system cleaners; Chemical additives for fuel treatment; Chemical additives for gasoline; Chemical additives for greases; Chemical additives for heating oils; Chemical additives for lacquers; Chemical additives for lubricants; Chemical additives for meat processing; Chemical additives for mortars; Chemical additives for motor fuel; Chemical additives for motor fuels; Chemical additives for oil well cements; Chemical additives for oil well drilling fluid; Chemical additives for oil well drilling fluids; Chemical additives for oils; Chemical additives for paint; Chemical additives for paints and surface coatings; Chemical additives for pesticides; Chemical additives for petrol; Chemical additives for the production metal working fluids; Chemical additives for transmission fluids; Chemical additives for use as binding agents for feed pellets; Chemical additives for use as defoaming agents; Chemical additives for use in boilers to inhibit corrosion; Chemical additives for use in fuels to inhibit corrosion; Chemical additives for use in industry; Chemical additives for use in manufacture; Chemical additives for use in the manufacture of cosmetics; Chemical additives for use in the manufacture of fabrics; Chemical additives for use in the manufacture of food; Chemical additives for use in the manufacture of pharmaceuticals; Chemical additives for use in the production of coatings; Chemical additives for use in the production of fuels; Chemical additives for use in the production of inks; Chemical additives for use in the production of lubricants; Chemical additives for use with internal combustion engine fuels; Chemical additives for varnishes; Chemical additives to drilling muds; Chemical additives to fungicides; Chemical additives to insecticides; Chemical additives to motor fuel; Chemical additives to polymers; Chemical adjuvants for use in ***agriculture***; Chemical adjuvants for use in forestry; Chemical adjuvants for use in horticulture; Chemical adjuvants for use in industry; Chemical adjuvants for use in science; Chemical admixtures for concrete; Chemical adsorbents; Chemical adsorbents for ***removing*** impurities from fuel; Chemical agents for acid ***removal*** in industrial manufacturing applications; Chemical agents for carbon dioxide sequestration; Chemical agents for coating textiles, furs, leather, non-wovens and fabrics; Chemical agents for hardening wood; Chemical agents for impregnating cut Christmas trees to preserve freshness; Chemical agents for impregnating cut flowers to preserve freshness; Chemical agents for impregnating textiles, furs, leather, non-wovens and fabrics; Chemical agents for manufacturing dyestuffs; Chemical agents for the flame-retardant coating of textiles; Chemical agents for the treatment of bilge water; Chemical agents for use in metal cutting; Chemical analysis kit for testing swimming pool water; Chemical anchoring compounds; Chemical and organic compositions and substances for treatment of leather and textile; Chemical and organic compositions for use in the manufacture of food and beverages; Chemical anti-tarnishing preparations; Chemical aquarium water conditioners; Chemical auxiliaries for the paper industry; Chemical auxiliaries for the textile industry; Chemical auxiliaries for use in the coagulation of lacquers; Chemical based liquids for making tapes; Chemical bonding agents [other than for household or stationery use]; Chemical brighteners for industrial use; Chemical brightening agents for use on metal surfaces; Chemical catalysts for use in methanol synthesis plant operation; Chemical catalysts for use in synthesis gas and olefin purification; Chemical chimney cleaners; Chemical cleaning agents for use in industrial manufacturing processes; Chemical cleaning agents for use in industrial processes; Chemical coatings for ophthalmic lenses; Chemical coatings used in the manufacture of printed circuit boards; Chemical components for producing a radio-labelled monoclonal antibody for industrial or scientific use; Chemical compositions and materials for use in cosmetics; Chemical compositions and materials for use in science; Chemical compositions and materials for use in the manufacture of cosmetics; Chemical compositions containing derivatives of humic acids; Chemical compositions containing humic acids; Chemical compositions for absorbing hydrocarbons; Chemical compositions for controlling a spillage of hazardous wastes; Chemical compositions for curing concrete; Chemical compositions for developing photographs; Chemical compositions for finishing textiles; Chemical compositions for hardening cement; Chemical compositions for hardening concrete; Chemical compositions for injection into building structures; Chemical compositions for making paper; Chemical compositions for masking concrete; Chemical compositions for preserving foodstuffs; Chemical compositions for preserving stonework; Chemical compositions for reinforcing brickwork; Chemical compositions for reinforcing cement; Chemical compositions for reinforcing concrete; Chemical compositions for retarding the setting of concrete; Chemical compositions for sealing slate; Chemical compositions for strengthening stonework; Chemical compositions for the control of fuel spillages; Chemical compositions for the control of spillage of liquids; Chemical compositions for treating textiles; Chemical compositions for use in construction; Chemical compositions for use in the building industry; Chemical compositions for use in the civil engineering industry; Chemical compositions for use in the conditioning of concrete; Chemical compositions for use in the construction industry; Chemical compositions for use in the formation of glass; Chemical compositions for use in the manufacture of colours; Chemical compositions for use in the manufacture of electrical components; Chemical compositions for use in the manufacture of electronic components; Chemical compositions for use in the manufacture of pigments; Chemical compositions for use in well drilling and well maintenance; Chemical compositions for use with sensitised printing plates; Chemical compositions for water treatment; Chemical compositions for waterproofing articles of fabric; Chemical compositions for waterproofing masonry; Chemical compound additives for fuel; Chemical compounds for ***removing*** solid matter from water in settling tanks; Chemical compounds for the manufacture of artificial resins; Chemical compounds for the manufacture of synthetic resins; Chemical compounds for the ***removal*** of solids in water clarification; Chemical compounds for use in bleaching; Chemical compounds for use in cutting; Chemical compounds for use in metal drawing; Chemical compounds for use in ***removing*** solids from water in filtration; Chemical compounds for use in repair; Chemical compounds for use in the manufacture of adhesives; Chemical compounds for use in the manufacture of polymers; Chemical compounds for use in welding; Chemical condensation preparations; Chemical degreasing agents for use in manufacturing processes; Chemical degreasing liquids for use in manufacturing processes; Chemical diagnostic reagents for industrial use; Chemical elements (Fissionable -); Chemical elements for use in cutting; Chemical elements for use in welding; Chemical emulsifiers; Chemical extenders; Chemical fertilizers; Chemical fixing compounds; Chemical fluids for de-watering; Chemical fluids for metal working; Chemical fluids for use as leak detectors; Chemical formulations for use in biological sewage treatment; Chemical fracturing fluids for use in the oil and gas industry; Chemical friction reducers; Chemical gas purifying agents; Chemical gasoline additives; Chemical gel for use as an ice substitute; Chemical grease ***removing*** agents for use in industrial manufacturing processes; Chemical hardening preparations; Chemical impregnating substances for leather; Chemical impregnating substances for textiles; Chemical inhibitors against acid attack; Chemical intensifiers for paper; Chemical intensifiers for rubber; Chemical intermediates for use in industry; Chemical intermediates for use in manufacture; Chemical material for the preparation of electronic circuitry components; Chemical materials for the manufacture of ceramic materials; Chemical materials for use in the manufacture of ceramics; Chemical materials for use in the manufacture of glass; Chemical motor oil additives; Chemical oxidants for use in the manufacture of printed circuits; Chemical paper for use with assays; Chemical penetrating sealers for natural stone; Chemical petrol additives; Chemical plating solutions; Chemical polymers; Chemical precursors for making polyurethane foam; Chemical preparations and materials for film, photography and printing; Chemical preparations for analyses in laboratories, other than for medical or veterinary purposes; Chemical preparations for assisting the starting of internal combustion engines; Chemical preparations for cleaning chimneys; Chemical preparations for decarbonising engines; Chemical preparations for dewatering; Chemical preparations for facilitating the alloying of metals; Chemical preparations for filling of dents in the repair of vehicle bodies; Chemical preparations for filling of flaws in the repair of vehicle bodies; Chemical preparations for filling of holes in vehicle bodies; Chemical preparations for glazing leather; Chemical preparations for hardening surfaces; Chemical preparations for melting snow and ice; Chemical preparations for neutralizing water; Chemical preparations for preserving foodstuffs; Chemical preparations for preventing pathogenic infections in plants; Chemical preparations for preventing scale formation; Chemical preparations for preventing scale formation in hydronic heating and cooling systems; Chemical preparations for preventing the spread of zinc whiskers on galvanized surfaces; Chemical preparations for protecting fabrics; Chemical preparations for protecting upholstery; Chemical preparations for protection against wheat blight [smut]; Chemical preparations for repelling stains; Chemical preparations for scientific purposes, other than for medical or veterinary use; Chemical preparations for sealing; Chemical preparations for smoking meat; Chemical preparations for soil treatment; Chemical preparations for soldering; Chemical preparations for stabilizing soil; Chemical preparations for testing swimming pool water; Chemical preparations for the binding of gaseous industrial wastes; Chemical preparations for the binding of liquid waste; Chemical preparations for the binding of paste; Chemical preparations for the clarification of beverages; Chemical preparations for the dispersal of oil; Chemical preparations for the dispersal of petroleum; Chemical preparations for the manufacture of industrial ceramics; Chemical preparations for the manufacture of paints; Chemical preparations for the prevention of grease in drainage; Chemical preparations for the prevention of grease in grease traps; Chemical preparations for the treatment of seeds; Chemical preparations for the treatment of water; Chemical preparations for use as additive to fuels for combatting pollution; Chemical preparations for use as additive to fuels for improving combustion; Chemical preparations for use as coolants; Chemical preparations for use as corrosion inhibitors; Chemical preparations for use as solvents; Chemical preparations for use in cosmetic products; Chemical preparations for use in dairy production; Chemical preparations for use in dna analysis [other than medical]; Chemical preparations for use in industry; Chemical preparations for use in livestock farming; Chemical preparations for use in paper making; Chemical preparations for use in photographic processes; Chemical preparations for use in photography; Chemical preparations for use in processing photosensitive material; Chemical preparations for use in providing fire resisting properties; Chemical preparations for use in providing fire retarding properties; Chemical preparations for use in providing fireproofing properties; Chemical preparations for use in the control of fires; Chemical preparations for use in the dairy industry; Chemical preparations for use in the food industry; Chemical preparations for use in the manufacture of biocides; Chemical preparations for use in the manufacture of cosmetics; Chemical preparations for use in the manufacture of floor polishes; Chemical preparations for use in the manufacture of floor waxes; Chemical preparations for use in the manufacture of paint; Chemical preparations for use in the manufacture of paints; Chemical preparations for use in the manufacture of pharmaceuticals; Chemical preparations for use in the manufacture of pigments; Chemical preparations for use in the manufacture of printing materials; Chemical preparations for use in the manufacture of surface coatings; Chemical preparations for use in the manufacture of tyres; Chemical preparations for use in the prevention of fires; Chemical preparations for use in the ***removal*** of coatings from metal; Chemical preparations for use in the ***removal*** of deposits from metal; Chemical preparations for use in the renovation of leather; Chemical preparations for use in the repair of tyres; Chemical preparations for use in the treating of wells; Chemical preparations for use in the treatment of tyres; Chemical preparations for use in water purification; Chemical preparations for use in water softening; Chemical preparations for use in welding; Chemical preparations for waterproofing masonry; Chemical preparations having antistatic properties; Chemical preparations having conductive properties; Chemical preparations in the nature of glue accelerators; Chemical preparations to prevent diseases affecting cereal plants; Chemical preparations to prevent diseases affecting vine plants; Chemical preparations to prevent mildew; Chemical preparations to prevent wheat blight; Chemical preparations to prevent wheat smut; Chemical preparations which penetrate through walls, floors and ceilings used for fire prevention in buildings; Chemical preservatives for silage; Chemical preservatives for use as corrosion inhibitors on automobile exhaust systems; Chemical preservatives for use in bread making; Chemical preservatives for use in manufacture of soap and vegetable oils; Chemical preservatives for use in the production of a wide variety of chemicals; Chemical product for neutralizing stainless alloys of steel, iron and metals of various colors; Chemical products being additives for cement; Chemical products derived from milk; Chemical products derived from petroleum; Chemical products for absorbing; Chemical products for addition to lubricants for decarbonising; Chemical products for adsorbing; Chemical products for aquarium water [other than pharmaceuticals]; Chemical products for biotechnological purposes [industrial]; Chemical products for brightening dyestuffs; Chemical products for diagnostic use [scientific]; Chemical products for drilling fluids; Chemical products for drilling mud; Chemical products for glazing leather; Chemical products for inhibiting the growth of weeds; Chemical products for insertion into vehicle tyres to protect them; Chemical products for insertion into vehicle tyres to repair them; Chemical products for insertion into vehicle tyres to strengthen them; Chemical products for preserving products during storage; Chemical products for preserving the freshness of cut flowers; Chemical products for preserving the freshness of feedstuffs; Chemical products for preserving the freshness of fruit; Chemical products for preserving the freshness of vegetables; Chemical products for preventing scale; Chemical products for sewage treatment; Chemical products for sizing; Chemical products for stabilising foodstuffs; Chemical products for tanning hides; Chemical products for tanning skins; Chemical products for the fresh-keeping and preserving of food; Chemical products for the manufacture of adhesives; Chemical products for the manufacture of binders; Chemical products for the manufacture of cosmetics; Chemical products for the manufacture of perfumery compositions; Chemical products for the manufacture of photographic products; Chemical products for the manufacture of protective coatings; Chemical products for the manufacture of toilet preparations; Chemical products for the preparation of enamels; Chemical products for the preparation of flavourings; Chemical products for the preparation of odorous products; Chemical products for the preparation of perfumes; Chemical products for the treatment of drinking water; Chemical products for the treatment of plant diseases; Chemical products for the treatment of sewage; Chemical products for the treatment of water; Chemical products for use in science [other than medical or veterinary]; Chemical reagent mixtures in kit form, other than for medical or veterinary use; Chemical reagent mixtures in tablet form for testing water [other than for medical or veterinary use]; Chemical reagent mixtures, other than for medical or veterinary use; Chemical reagents for cleansing gases; Chemical reagents for decontaminating gases; Chemical reagents for genetic identity testing; Chemical reagents for identification of microorganisms, other than for medical or veterinary use; Chemical reagents for laboratory use, other than for medical or veterinary use; Chemical reagents for molecular biology, other than for medical or veterinary use; Chemical reagents for non-medical purposes; Chemical reagents for scientific purposes; Chemical reagents for susceptibility determinations, other than for medical or veterinary use; Chemical reagents for testing for chlorine; Chemical reagents for use in analytical tests, other than for medical or veterinary use; Chemical reagents for use in biotechnology, other than for medical or veterinary use; Chemical reagents for use in diagnosis, other than for medical or veterinary use; Chemical reagents for use in diagnostic tests, other than for medical or veterinary use; Chemical reagents for use in genetic research; Chemical reagents for use in identification of yeast using sugars assimilation; Chemical reagents for use in industry; Chemical reagents for use in science, other than for medical or veterinary use; Chemical reagents for use with immunoassay analyzers, other than for medical or veterinary use; Chemical reagents, other than for medical or veterinary purpose; Chemical reagents, other than for medical or veterinary purposes; Chemical sealing grout for use in the building industry; Chemical sealing grout for use in the construction industry; Chemical seasonings [for food manufacture]; Chemical shrinkage reducing admixtures; Chemical sizing compositions for the manufacture of paper; Chemical sizing compositions for use in the manufacture of paperboard; Chemical sizing compositions for use in the manufacture of pulp; Chemical sizing compositions for use in the manufacture of textiles; Chemical sizing compositions for use in the manufacture of threads; Chemical sizing compositions for use in the manufacture of yarns; Chemical soil conditioners; Chemical sorbents; Chemical source material for the deposition of thin films upon semiconductor wafers for the manufacture of semiconductors; Chemical sprays for stretching shoes; Chemical stabilisers for use on floor coverings; Chemical stabilisers for use on upholstery; Chemical stabilisers for use on wall coverings; Chemical substances absorbed on carriers for use as food preservatives; Chemical substances, chemical materials and chemical preparations, and natural elements; Chemical substances for analyses in laboratories, other than for medical or veterinary purposes; Chemical substances for analysis in laboratories; Chemical substances for analysis in laboratories [other than for medical or veterinary purposes]; Chemical substances for generating foam; Chemical substances for impregnation into membranes to separate proteins from liquids; Chemical substances for making adhesives; Chemical substances for modifying the properties of polymers; Chemical substances for preserving and emulsifying foodstuffs; Chemical substances for preserving foodstuffs; Chemical substances for purifying water; Chemical substances for ***removing*** contaminants from gas-treating solvents; Chemical substances for stabilising foam; Chemical substances for stabilising foodstuffs; Chemical substances for stabilizing foam; Chemical substances for the enhancement of the environment; Chemical substances for the manufacture of insect repellents; Chemical substances for the protection of the environment; Chemical substances for use as additives to asphalt; Chemical substances for use as additives to bitumen; Chemical substances for use as additives to industrial lubricating greases; Chemical substances for use as additives to industrial lubricating oils; Chemical substances for use as adsorbents in the administration of inhalant gases; Chemical substances for use as fat replacements; Chemical substances for use as food ingredients; Chemical substances for use as heat transfer media; Chemical substances for use as ingredients in heat transfer media; Chemical substances for use as silage additives; Chemical substances for use as soil coverings; Chemical substances for use in bioluminescent processes; Chemical substances for use in dissolving malodorous gases; Chemical substances for use in dissolving poisonous gases; Chemical substances for use in dissolving toxic gases; Chemical substances for use in electroplating processes; Chemical substances for use in finishing processes in the textile industry; Chemical substances for use in manufacture; Chemical substances for use in metal finishing and metal treatment; Chemical substances for use in metallurgy; Chemical substances for use in neutralizing malodorous gases; Chemical substances for use in neutralizing poisonous gases; Chemical substances for use in neutralizing toxic gases; Chemical substances for use in preventing the coagulation of albumin in blood; Chemical substances for use in preventing the coagulation of albumin in milk; Chemical substances for use in separation [other than medical or veterinary use]; Chemical substances for use in the biochemical industry; Chemical substances for use in the biotechnological industry; Chemical substances for use in the manufacture of perfumes; Chemical substances for use in the manufacture of scented cosmetics; Chemical substances for use in the manufacture of scented detergents; Chemical substances for use in the manufacture of scented toiletries; Chemical substances for use in the manufacture of shock-absorbing backings; Chemical substances for use in the preparation of halogenated chemical derivatives; Chemical substances for use in the production of drugs; Chemical substances for use in the production of forming powder; Chemical substances for use in the production of printed circuit boards; Chemical substances for use in the production of printed circuits; Chemical substances for use in the production of synthetic rubber; Chemical substances for use in treating malodorous gases; Chemical substances for use in treating poisonous gases; Chemical substances for use in treating toxic gases; Chemical substances of vegetable origin and containing phospholipids; Chemical substances used in copying and photocopying; Chemical substances used in the preparation of halogenated chemical derivatives; Chemical supplements for use in the manufacture of vitamins; Chemical synergists; Chemical test paper; Chemical test paper [sensitised]; Chemical test reagents in tablet form for testing for copper [other than medical or veterinary]; Chemical test reagents in tablet form for testing for nitrites [other than medical or veterinary]; Chemical test reagents [other than medical or veterinary]; Chemical testing kits for determining water properties; Chemical vehicles used in the manufacture of paints; Chemical-based rain repellent preparation to be applied to windshields; Chemically converted compound fertilizers; Chemically sensitized paper for use in thermal imaging; Chemically treated peat for use in ***agriculture***; Chemically treated peat for use in gardening; Chemically treated peat for use in horticulture; Chemically treated test strips for calibration of laboratory apparatus; Chemically treated test strips, other than for medical purposes; Chemicals (***Agricultural*** -), except fungicides, weedkillers, herbicides, insecticides and parasiticides; Chemicals containing additives having fire extinguishing properties; Chemicals derived from petroleum; Chemicals, except pigments, for the manufacture of enamel; Chemicals for absorbing oxygen; Chemicals for dissolving oxygen from water; Chemicals for electrostatic use; Chemicals for etching enamels; Chemicals for fermenting wine; Chemicals for forestry, except fungicides, herbicides, insecticides and parasiticides; Chemicals for forestry, other than fungicides, herbicides, insecticides and parasiticides; Chemicals for horticulture, other than fungicides, herbicides, insecticides and parasiticides; Chemicals for impregnating textile fabrics; Chemicals for impregnating textiles; Chemicals for industrial purposes; Chemicals for off-set presses; Chemicals for preserving foodstuffs; Chemicals for preventing corrosion; Chemicals for processing sensitized unexposed x-ray films; Chemicals for reprographic use; Chemicals for testing solutions of spent photoresist developers; Chemicals for the conservation of polythene cables; Chemicals for the control of environmental pollution; Chemicals for the correction of soils; Chemicals for the manufacture of paints; Chemicals for the manufacture of pigments; Chemicals for the protection of plants [other than fungicides, weedkillers, herbicides, insecticides, parasiticides]; Chemicals for the purification of water; Chemicals for the purification of water used in swimming pools; Chemicals for the suppression of the odour of water; Chemicals for the suppression of the taste of water; Chemicals for the treatment of fabrics; Chemicals for the treatment of hot water systems; Chemicals for the treatment of irrigation water; Chemicals for the treatment of polythene cables; Chemicals for the treatment to improve corrosion resistance; Chemicals for treating hazardous waste; Chemicals for treating spent chemicals used in manufacture; Chemicals for treating textile fabrics; Chemicals for treating threads; Chemicals for treating water; Chemicals for treating wearing apparel; Chemicals for treating yarns; Chemicals for use as auxiliaries in electroplating; Chemicals for use as aversion agents by virtue of their odour; Chemicals for use as aversion agents by virtue of their taste; Chemicals for use as deterrents by virtue of their odour; Chemicals for use as deterrents by virtue of their taste; Chemicals for use as flame retardants for textiles; Chemicals for use as fluorescent substrates; Chemicals for use as ingredients in the course of manufacture; Chemicals for use as intermediates in the manufacture of pesticides; Chemicals for use as processing additives in the petrochemicals industry; Chemicals for use as repellents by virtue of their odour; Chemicals for use as repellents by virtue of their taste; Chemicals for use in ***agriculture***; Chemicals for use in analysis [other than medical and veterinary]; Chemicals for use in aquaculture; Chemicals for use in aquariums; Chemicals for use in aquariums [other than pharmaceuticals]; Chemicals for use in biotechnological manufacturing processes; Chemicals for use in biotechnological product development; Chemicals for use in brewing; Chemicals for use in chromatography; Chemicals for use in chromatography [other than medical and veterinary]; Chemicals for use in clarifying water; Chemicals for use in cleaning water; Chemicals for use in clearing water; Chemicals for use in coating ***agricultural*** seeds [other than fungicides, herbicides, insecticides, parasiticides]; Chemicals for use in coating dental instruments [other than pharmaceuticals]; Chemicals for use in coating film; Chemicals for use in coating medical instruments [other than pharmaceuticals]; Chemicals for use in coating surgical instruments [other than pharmaceuticals]; Chemicals for use in coating veterinary instruments [other than pharmaceuticals]; Chemicals for use in diazo reproduction; Chemicals for use in electrography; Chemicals for use in electrophotography; Chemicals for use in etching; Chemicals for use in fermenting; Chemicals for use in fire extinguishing; Chemicals for use in fire extinguishing compositions; Chemicals for use in fish farming [other than pharmaceuticals]; Chemicals for use in fish tanks [other than pharmaceuticals]; Chemicals for use in forestry, except fungicides, herbicides, insecticides and parasiticides; Chemicals for use in fuel as microbial growth inhibitors [other than medical and veterinary]; Chemicals for use in gluing [for industrial purposes]; Chemicals for use in herbicidal compositions; Chemicals for use in herbicides; Chemicals for use in horticulture; Chemicals for use in horticulture [other than fungicides, weedkillers, herbicides, insecticides, parasiticides]; Chemicals for use in immersion baths [other than medical or veterinary]; Chemicals for use in immuno-assay testing [other than medical or veterinary]; Chemicals for use in industry; Chemicals for use in industry and science; Chemicals for use in lithography; Chemicals for use in making adhesive substances; Chemicals for use in making polyurethanes; Chemicals for use in manufacture; Chemicals for use in manufacturing pharmaceuticals; Chemicals for use in metal plating; Chemicals for use in metal treatment; Chemicals for use in metalworking; Chemicals for use in molecular separation processes [other than medical and veterinary]; Chemicals for use in multiplying nucleic acid amounts [other than medical and veterinary]; Chemicals for use in nickel plating processes; Chemicals for use in pathology [other than medical and veterinary]; Chemicals for use in performing nucleic acid polymerase chain reactions [other than medical and veterinary]; Chemicals for use in pesticidal compositions; Chemicals for use in pesticides; Chemicals for use in photography; Chemicals for use in plate etching; Chemicals for use in polymerisations; Chemicals for use in printing; Chemicals for use in propellants; Chemicals for use in purifying water; Chemicals for use in radiochemical analysis [other than medical or veterinary]; Chemicals for use in ***removing*** asbestos; Chemicals for use in ***removing*** coatings; Chemicals for use in ***removing*** paint; Chemicals for use in reprography; Chemicals for use in science; Chemicals for use in science [other than medical or veterinary]; Chemicals for use in scientific analysis [other than medical or veterinary]; Chemicals for use in scientific research [other than medical or veterinary]; Chemicals for use in separation [other than medical or veterinary]; Chemicals for use in separation techniques [other than medical or veterinary]; Chemicals for use in sticking [other than for household or stationery purposes]; Chemicals for use in swimming pools; Chemicals for use in the aeronautical industry; Chemicals for use in the agrochemical industry; Chemicals for use in the agrochemical industry [other than fungicides, weed killers, herbicides, insecticides, parasiticides]; Chemicals for use in the automotive industry; Chemicals for use in the decontamination of polluted sites; Chemicals for use in the drilling of geothermal wells; Chemicals for use in the drilling of wells; Chemicals for use in the electrical industry; Chemicals for use in the electronics industry; Chemicals for use in the electroplating industry; Chemicals for use in the fabrication of printed wiring board; Chemicals for use in the filling of aerosols; Chemicals for use in the formation of gas wells; Chemicals for use in the formation of oil wells; Chemicals for use in the formation of water wells; Chemicals for use in the gas industry; Chemicals for use in the initiation of the curing of paints; Chemicals for use in the making of wine; Chemicals for use in the manufacture of abrasives; Chemicals for use in the manufacture of adhesives; Chemicals for use in the manufacture of concrete; Chemicals for use in the manufacture of cosmetics; Chemicals for use in the manufacture of dyestuffs; Chemicals for use in the manufacture of flame retardant coatings; Chemicals for use in the manufacture of flame retardant compositions; Chemicals for use in the manufacture of flame retardant polymers; Chemicals for use in the manufacture of inks; Chemicals for use in the manufacture of insect growth regulators; Chemicals for use in the manufacture of insecticides; Chemicals for use in the manufacture of paints; Chemicals for use in the manufacture of paper; Chemicals for use in the manufacture of pharmaceuticals; Chemicals for use in the manufacture of polyurethanes; Chemicals for use in the manufacture of printing ink; Chemicals for use in the manufacture of smoke suppressed coatings; Chemicals for use in the manufacture of smoke suppressed compositions; Chemicals for use in the manufacture of smoke suppressed polymers; Chemicals for use in the manufacture of solar cells; Chemicals for use in the microelectronics industry; Chemicals for use in the neutralization of radioactive substances; Chemicals for use in the oil drilling industry; Chemicals for use in the oil industry; Chemicals for use in the oil refining industry; Chemicals for use in the paper industry; Chemicals for use in the petrochemicals industry; Chemicals for use in the pharmaceutical industry; Chemicals for use in the polyvinyl chloride industry; Chemicals for use in the precision machinery industry; Chemicals for use in the prevention of environmental damage to plants; Chemicals for use in the printing of newspapers; Chemicals for use in the processing of natural rubber; Chemicals for use in the purification of proteins for in vitro use; Chemicals for use in the purification of water; Chemicals for use in the refining of liquid hydrocarbons; Chemicals for use in the refining of oils; Chemicals for use in the rubber industry; Chemicals for use in the semiconductor industry; Chemicals for use in the softening of water; Chemicals for use in the tanning industry; Chemicals for use in the therapy of environmental damage on plants; Chemicals for use in the treatment of liquid hydrocarbons; Chemicals for use in the treatment of oils; Chemicals for use in the treatment of textile fabrics [other than for laundry purposes]; Chemicals for use in the treatment of threads; Chemicals for use in the treatment of waste water; Chemicals for use in the treatment of water; Chemicals for use in the treatment of yarns; Chemicals for use in the visualization of electrophoretic results; Chemicals for use in thermography [other than medical or veterinary]; Chemicals for use in transfer printing; Chemicals for use in treating hides; Chemicals for use in treating leather; Chemicals for use in treating metal surfaces; Chemicals for use in treating skins; Chemicals for use in welding; Chemicals for use in xerography; Chemicals for water softening; Chemicals for welding; Chemicals having antimicrobial properties [other than medical or veterinary]; Chemicals having liquid crystal properties; Chemicals in liquid form for use as bright dips; Chemicals in liquid form for use as etchants; Chemicals in the form of detergency enhancers; Chemicals in the form of foam enhancers; Chemicals in the form of water soluble lubricants; Chemicals in the form of water soluble oils; Chemicals in the nature of sorbents; Chemicals (Industrial -); Chemicals [other than household] in liquid form for use as descalers; Chemicals used for plating non-conducting surfaces with metals; Chemicals used for printing or the printing of texts, images, words or graphics; Chemicals used for the formulation of hair treatment products; Chemicals used in ***agriculture***; Chemicals used in ***agriculture***, horticulture and forestry; Chemicals used in fermenting wine; Chemicals used in forestry; Chemicals used in horticulture; Chemicals used in industry; Chemicals used in laboratory analyses, other than for medical and veterinary purposes; Chemicals used in oil drilling; Chemicals used in photography; Chemicals used in science; Chemicals used in the manufacture of confectionery; Chemicals used in the manufacture of electronic components; Chemicals used in the manufacture of fabric or textiles; Chemicals used in the manufacture of liquid crystal displays; Chemicals used in the manufacture of paper; Chemicals used in the manufacture of semiconductor chips; Chemicals used in the treatment of waste streams; Chemicals used to indicate damage in paper coatings; Chemicals used to prevent condensation; Chemicals used to prevent scaling [other than household]; Chemiground wood pulp; Chemimechanical pulp; Chimney cleaners, chemical; Chimney cleaners (chemicals); China clay; China slip; Chitosans for industrial purposes; Chloralkalis; Chlorates; Chlorides; Chlorinated acids; Chlorinated chemicals; Chlorinated naphthalenes; Chlorine; Chlorine for swimming pools; Chlorine-free fertilizers; Chloroacetic acid; Chlorobenzene; Chloroethene; Chlorofluorocarbons; Chloromethane; Chloromethanes; Chloromethyl ether; Chloromethyl methyl ether; Chloronaphthalene; Chloronitroaniline; Chloronitrobenzene; Chloroprene; Chloropropylene; Chlorosulphonic acid; Cholic acid; Choline chloride for use in the manufacture of vitamins; Chromates; Chromating agents; Chromatographic material for the treatment of biopolymers for scientific laboratory use; Chromatographic material for the treatment of nucleic acids for scientific laboratory use; Chromatographic supports for scientific laboratory use; Chromatography chemicals; Chrome alum; Chrome salts; Chromic acid; Chromic anhydride; Chromic salts; Chromium based compositions for use in the production of chromium metal; Chromium chloride; Chromium oxide; Chromium oxides; Chromium plating compositions; Cinematographic film, sensitised but not exposed; Cinematographic film, sensitized but not exposed; Cinematographic films, sensitized but not exposed; Cinnamyl alcohol; Citric acid; Citric acid for industrial purposes; Clarification preparations; Clarifiers; Clarifying agents; Clay (China -); Clay (Expanded- -) for hydroponic plant growing [substrate]; Clay for use as swelling agents for suspensions; Clay for use as thickening agents for suspensions; Clay for use as thixotropic agents for suspensions; Cleaners, chemical (Chimney -); Cleaning solvents for use in manufacturing processes; Clinical diagnostics, other than for medical or veterinary use; Cloth (Blueprint -); Clutch fluid; Coal saving preparations; Coalescing aids for the paint industry; Coated adhesives for ***agricultural*** use in pest control; Coated paper [sensitized]; Coated wollastonite [calcium metasilicate] for use as a reinforcing filler in adhesives; Coated wollastonite [calcium metasilicate] for use as a reinforcing filler in paints; Coated wollastonite [calcium metasilicate] for use as a reinforcing filler in sealants; Coating agents [chemicals], other than paint; Coating compositions [chemicals], other than paint; Coating compositions for optical fibers; Coating compositions for protection against the effects of encrustation; Coating compositions for protection against the effects of incrustation; Coating compositions [not paint] for protection against the effects of water; Coatings [chemical] for glass; Coatings [chemical] for lenses; Coatings [chemicals] for preventing staining other than for household or laundry purposes; Coatings containing quartz for optical glass; Coatings containing quartz for use in lenses; Coatings for the renovation of floor coverings [other than paints or oils]; Coatings for waterproofing [chemicals]; Coatings for weatherproofing [chemicals]; Coatings in the form of holographic film supports; Coatings in the nature of solder mask for the manufacture of electronic parts; Cobalt acetate; Cobalt chemicals; Cobalt chloride; Cobalt oxide for industrial purposes; Cobalt oxides; Cobalt oxides for industrial purposes; Cobalt zirconate; Coir fibre soil improvers; Collagen based ingredients for cosmetic preparations; Collagen for industrial purposes; Collagen used as a raw ingredient in the manufacture of cosmetics; Collodion; Colloid preparations for use in manufacture; Colloidal silica; Colloidal silicon dispersants; Color- [colour-] brightening chemicals for industrial purposes; Color-brightening chemicals for industrial purposes; Colorimetric chemicals; Coloring metal (Salts for -); Colostrum for the food industry; Colour stabilizers; Colour-brightening chemicals for industrial purposes; Coloured paper [sensitised]; Colouring metal (Salts for -); Combusting preparations [chemical additives to motor fuel]; Combustion enhancers [chemicals]; Combustion promoting chemicals; Commercial adhesives [other than for stationery or household use]; Commercial glues [other than for stationery or household use]; Common salt for preserving [other than foodstuffs]; Complex fertilizer; Complex salts; Composition of adhesives and fillers for repairing seals; Compositions for accelerating the setting of concrete; Compositions for coating aluminium in preparation for plating; Compositions for dust proofing concrete; Compositions for embedding electrical parts; Compositions for embedding electronic parts; Compositions for fire extinguishing and prevention; Compositions for industrial use in controlling scale in boilers; Compositions for industrial use in ***removing*** scale from boilers; Compositions for industrial use in the preparation of culture media; Compositions for preserving brickwork [except paints or oils]; Compositions for preserving cement [except paints or oils]; Compositions for preserving concrete [except paints or oils]; Compositions for repairing inner tubes; Compositions for repairing inner tubes of tires; Compositions for repairing inner tubes of tires [tyres]; Compositions for repairing inner tubes of tyres; Compositions for repairing tires; Compositions for repairing tires [tyres]; Compositions for repairing tyres; Compositions for repairing vehicle tyres; Compositions for scientific use in the preparation of culture media; Compositions for setting cement; Compositions for the manufacture of phonograph records; Compositions for the manufacture of technical ceramics; Compositions for the ***removal*** of adhesive as part of a manufacturing process; Compositions for the ***removal*** of grease as part of a manufacturing process; Compositions for the ***removal*** of gum as part of a manufacturing process; Compositions for the ***removal*** of tar as part of a manufacturing process; Compositions for threading; Compositions for use in etching; Compositions for use in metal finishing; Compositions for use in radiation; Compositions for use in tanning leather; Compositions for use in the manufacture of magnetic media; Compositions for use in the manufacture of printed circuit boards; Compost; Compost activators; Compost [fertilizer]; Compost, manures, fertilizers; Compost mixtures enriched with organic substances; Compost mixtures of mineral based material in particulate form; Composts; Compound fertilisers; Compounds containing calcium carbonate; Compounds for compounding rubber and latex; Compounds for filling cavities in vehicles; Compounds for filling cracks in vehicles; Compounds for filling holes in vehicles; Compounds for patching cavities in vehicles; Compounds for patching cracks in vehicles; Compounds for patching holes in vehicles; Compounds of calcium carbonate; Compounds of polyvinyl chloride; Compressed air; Concentrated cutting fluid coolants; Concentrated proteinic acid for use in cheese making; Concrete additives; Concrete admixtures; Concrete (Agglutinants for -); Concrete bonding compounds; Concrete curing agents; Concrete hardening compounds; Concrete preservatives, except paints and oil; Concrete preservatives, except paints and oils; Concrete-aeration chemicals; Condensation preparations (Chemical -); Condensation-preventing chemicals; Conditioners for cooling systems; Conductive adhesives [other than for household or stationery use]; Conductive resins; Consolidation accelerators; Consolidation retarders; Construction industry adhesives; Contact cement for use with laminates; Contact cement for use with wood; Contact cements; Continuous casting powders; Contrast agents for use in molecular imaging; Contrast media, other than for use in medical imaging; Controlled-release fertilizers for gardening; Cooking (Preparations for stimulating -) for industrial purposes; Coolants; Coolants (Anti-boil preparations for engine -); Coolants for vehicle engines; Coolants for vehicle radiators; Cooling fluids for vehicle radiators; Copier paper [sensitized]; Co-polyester resins; Copolymer beads for use in manufacturing; Copolymers; Copper carbonate; Copper chemicals; Copper phosphate; Copper sulfate [blue vitriol]; Copper sulphate; Copper sulphate [vitriol]; Copying paper (Sensitized -); Core oils; Core paste for foundry cores; Core sand binders; Corrosive acids; Corrosive preparations; Corrosives; Cracking catalysts for use in the oil refinery industry; Cracking catalysts for use in the petroleum industries; Cream of tartar for chemical purposes; Cream of tartar for industrial purposes; Cream of tartar for the food industry; Creosote for chemical purposes; Creosote for industrial purposes; Cresol; Cross linking agents; Crotonaldehyde; Crotonic acid; Crotonic aldehyde; Cryogenic preparations; Cryogenic preparations in solid, liquid or gas form; Cryolite; Cryoscopic agents; Crystalline cellulose; Crystalline molecular sieve desiccants for use as catalyst supports in industry; Crystalline molecular sieve desiccants for use as catalysts in the chemical industry; Crystalline molecular sieve desiccants for use as catalysts in the petrochemical industries; Crystalline silicon; Culture media for microbiology; Cultures of cell media [other than for medical or veterinary use]; Cultures of microorganisms for industrial purposes; Cultures of microorganisms for industrial use; Cultures of microorganisms for use in the paper industry; Cultures of microorganisms, other than for medical and veterinary use; Cultures of microorganisms other than for medical and veterinary use; Cultures of microorganisms other than for medical or veterinary use; Cultures of microorganisms used in the fermentation of silage; Cultures, other than for medical or veterinary use; Cumene; Curing additives; Curing agent for synthetic resin; Curing defoamers; Curing preparations; Curium; Currying preparations for leather; Currying preparations for skins; Cutting agents; Cyanates; Cyanides; Cyanides and cyanates; Cyanides [prussiates]; Cyanotyping (Solutions for -); Cyclamate; Cyclohexane; Cyclohexanol; Cyclopentane; Cymene; Cynotyping (Solutions for -); Cytological fixatives; Damp proofing compositions [other than paints]; Damp proofing preparations, except paints, for masonry; Dampener additives; Dampening solutions; Damp-proofing chemicals, except paints, for masonry; Decalcifying preparations [industrial] in liquid form; Decalcifying preparations [industrial] in powder form; Decarbonising engines (Chemical preparations for -); Decolorants for industrial purposes; Decontaminants for fuels; Defoamers; Defoamers for effluent; Defoamers for use in the adhesive industry; Defoamers for use in the food processing industry; Defoamers for use in the paint industry; Defoamers for use in the plastics industry; Defoaming agents; Defoaming agents for the coagulation of lacquers; Defoliants; Degreasers based on lemon oil for use in manufacturing processes; Degreasing agents for fur, for use in manufacturing processes; Degreasing agents for leather, for use in manufacturing processes; Degreasing agents for use in manufacturing processes; Degreasing agents [not for household use]; Degreasing liquids for use in manufacturing processes; Degreasing materials for use in manufacturing processes; Degreasing preparations for use in manufacturing processes; Degreasing solvents for use in manufacturing processes; Degumming preparations; Dehydrating agents for the treatment of plastics materials; Dehydrating agents for the treatment of rubber materials; Dehydrating preparations for industrial purposes; Deicers; De-icers; De-icing fluids; Deicing preparations; De-icing preparations; De-icing sprays for door locks; De-icing sprays for windscreens; Deinked pulp; Deionised water; Delustering agents; Demineralised water, not for medical purposes; Demisting preparations for glass; Demulsifiers; Dendrimer-based polymers for use in the manufacture of capsules for pharmaceuticals; Descalants for industrial use; Descalants, other than for household use; Descaling preparations for industrial purposes; Descaling preparations, other than for household purposes; Descaling substances, other than for household use; Desiccants; Desiccants for absorbing moisture; Detergent additive for use with motor oil; Detergent additives for fuels; Detergent additives for greases; Detergent additives for lubricants; Detergent additives to gasoline; Detergent additives to gasoline [petrol]; Detergent additives to petrol; Detergent additives to petrol [gasoline]; Detergent for use in the manufacture of hair shampoo; Detergents for automatic cleaning systems, as part of manufacturing operations; Detergents for cleaning use [part of manufacturing operations]; Detergents for industrial use; Detergents for industrial use as part of manufacturing operations; Detergents for use in industrial processes; Detergents for use in manufacture and industry; Detergents for use in manufacturing processes; Detergents having anti-bacterial properties for use in manufacturing processes; Detergents having deodorising properties for use in manufacturing processes; Detergents having disinfectant properties for use in manufacturing processes; Developers for positive type photoresist; Developers for use with light sensitive materials; Developers (Photographic -); De-watering fluids; Dextrin; Dextrin for industrial purposes; Dextrin [size]; Dextrine size; Dextrinizing enzymes; Dextrins for industrial purposes; Dextrins for industrial use; Diaccetyl tartaric acid esters of glycerides; Diaethylacetal; Diagnostic chemicals for use in antibiotic susceptibility testing [other than for medical use]; Diagnostic chemicals [other than for medical or veterinary use]; Diagnostic kits comprising specimen receptors and reagents for testing for selected bacteria; Diagnostic preparations, except for medical or veterinary use; Diagnostic preparations for scientific or research use; Diagnostic preparations for scientific or research use other than for medical use; Diagnostic preparations for scientific purposes; Diagnostic preparations for scientific use; Diagnostic preparations other than for medical or veterinary purposes; Diagnostic preparations, other than for medical or veterinary purposes; Diagnostic preparations used in science; Diagnostic reagents and preparations, except for medical or veterinary use; Diagnostic reagents, except for medical or veterinary use; Diagnostic reagents for in vitro use in biochemistry, clinical chemistry and microbiology; Diagnostic reagents for in-vitro use [other than medical]; Diagnostic reagents for scientific or research use; Diagnostic reagents for scientific use; Diagnostic reagents, other than for medical laboratory use; Diagnostic reagents, other than for medical use for sale in kit form; Diagnostic scanning agents for in-vivo use [other than medical]; Diagnostic substances, other than for medical use; Diagnostic testing materials, other than for medical use; Diamines; Dianisidine; Diastase for industrial purposes; Diatomaceous earth; Diatomite; Diazo paper; Diazo papers; Dibasic potassium phosphate; Dicalcium phosphate dihydrate; Dichlorobenzene; Dichloroethane; Dichloromethane; Dicyandiamide; Diesel fuel cetane number improvers; Diethyl acetal; Diethyl phthalate; Diethylene glycol; Diethylzinc; Diglycerides; Diisopropyl ether; Diluents for industrial use; Dimethyl phthalate; Dimethyl sulphate; Dimethylaniline; Dinitronaphthalene; Dioxalate (Potassium -); Dioxide of hydrogen; Dioxide (Titanium -) for industrial purposes; Diphenyl; Diphenylmethane; Disaccharides; Disincrustants; Dispersants; Dispersants for use in aqueous dispersions of carbon black; Dispersants for use in cement; Dispersants for use in the paper industry; Dispersants for use in the pulp industry; Dispersants (Oil -); Dispersants (Petroleum -); Dispersing agents; Dispersing agents for textile printing and dyeing; Dispersions of mineral salts for fireproofing particle boards; Dispersions of plastics; Dissolving wood pulp for manufacturing purposes; Distilled water; Dolomite; Dolomite for industrial purposes; Door lock de-icing agents; Doping compounds for use in the manufacture of printed circuit boards; Doping compounds for use in the manufacture of semiconductors; Doping gases [other than for medical use]; Double or triple superphosphate fertilizer; Double salts; Double superphosphate fertilizers; Dough conditioners; Dough conditioners for the food industry; Dough moulding compounds; Dough stabilizers; Dough stabilizers for the food industry; Dressing chemicals (Leather- -); Dressing, except oils, for skins; Dressings for restoring the leather of shoes [other than shoe polish]; Dressings for seeds; Dressings in liquid form for waterproofing leather shoes; Drilling muds; Drilling muds (Chemical additives to -); Drilling muds for use in oil well drilling; Dry film solder mask; Dry ice; Dry ice [carbon dioxide]; Drying agents for prints; Duplicating paper [sensitized]; Dust suppressing chemicals for use on grain; Dye migration inhibitors for use in textile dyeing; Dyes for scientific or research purposes; Dysprosium; Earth (Diatomaceous -); Earth for cultivation; Earth for growing; Earth metals; Earths (Metal -); Earths (Rare -); Electrically conductive raw plastics; Electrolyte solutions, other than for medical use; Electrolytic nickel for making embossed holograms; Electron beam curved coatings; Electron beam curved substrates; Electrophoresis gels; Electrophoresis gels, not for medical or veterinary purposes; Electrophoresis gels, other than for medical or veterinary purposes; Electrophoresis gels other than for medical or veterinary purposes; Electroplating additives; Electroplating compositions; Electroplating etching solutions; Electroplating solutions; Electropolishing compositions; Electrostatic films; Embedding compositions for use in industry; Emollients for industrial purposes; Emollients for use in the manufacture of cosmetics; Emollients for use in the manufacture of pharmaceuticals; Emollients for use in the manufacture of toiletries; Emulsifiable beeswax derivative for use in the manufacture of cosmetic preparations; Emulsifiers; Emulsifiers for emulsion polymerization; Emulsifiers for food preparations; Emulsifiers for industrial purposes; Emulsifiers for resins; Emulsifiers for sausages; Emulsifiers for solvents; Emulsifiers for use in the feed processing industries; Emulsifiers for use in the food processing industries; Emulsifiers for use in the manufacture of cosmetics; Emulsifiers for use in the manufacture of food; Emulsifiers for use in the manufacture of foods; Emulsifiers for use in the manufacture of leather; Emulsifiers for use in the manufacture of leather and textiles; Emulsifiers for use in the manufacture of textiles; Emulsifiers for use in the manufacture of toiletry preparations; Emulsifying agents; Emulsifying preparations; Emulsions (Photographic -); Enamel and glass-staining-chemicals; Enamel (Chemical preparations, except pigments, for the manufacture of -); Enamel frits; Enamel (Opacifiers for -); Enamel-staining chemicals; Engine coolants; Engine coolants (Anti-boil preparations for -); Engine (Coolants for vehicle -); Engine-decarbonising chemicals; Engines (Coolants for vehicle -); Enzymatic mordants [chemical products] for use in the fur industry; Enzymatic mordants [chemical products] for use in the leather industry; Enzyme preparations for industrial purposes; Enzyme preparations for the decomposition of excreta; Enzyme preparations for the decomposition of waste matter; Enzyme preparations for the deodorising of excreta; Enzyme preparations for the deodorising of waste matter; Enzyme preparations for the food industry; Enzyme preparations for the processing of excreta; Enzyme preparations for the processing of waste matter; Enzyme preparations for use in desizing fabrics; Enzyme preparations for use in desizing garments; Enzyme preparations for use in the alcohol industry; Enzyme preparations for use in the baking industry; Enzyme preparations for use in the detergents industry; Enzyme preparations for use in the flour milling industry; Enzyme preparations for use in the textile industry; Enzyme products for use in fading dyed textiles; Enzyme stabilizers; Enzyme substrates; Enzyme substrates for scientific purposes; Enzymes derived from biotechnological processes for use in industry; Enzymes for cloth processing; Enzymes for food or drinks; Enzymes for industrial purposes; Enzymes for ***removing*** resins from pulp in the paper fabrication industry; Enzymes for scientific purposes; Enzymes for technical use; Enzymes for the brewing industry; Enzymes for the food industry; Enzymes for use as biochemical catalysts; Enzymes for use in binding; Enzymes for use in colouring; Enzymes for use in drinks; Enzymes for use in fermentation; Enzymes for use in flavouring; Enzymes for use in foodstuffs; Enzymes for use in ice cream; Enzymes for use in isothermal amplifications [for industrial use]; Enzymes for use in protein hydrolysis; Enzymes for use in starch hydrolysis; Enzymes for use in the bakery industry; Enzymes for use in the dairy industry; Enzymes for use in the detergent industry; Enzymes for use in the manufacture of fruit juice; Enzymes for use in the manufacture of nutraceuticals; Enzymes for use in the manufacture of pet food; Enzymes for use in the processing of food by-products; Enzymes for use in the processing of sugar cane; Enzymes for use in the tanning industry; Enzymes for use in the tanning of leather; Enzymes for use in water treatment; Enzymes in liquid form for industrial use; Enzymes [other than for medical or veterinary use]; Enzymes [other than for medical use] for detecting protein fractions; Enzymes [other than for medical use] for labelling protein fractions; Enzymes [other than for medical use] for labelling proteins; Enzymes [other than for medical use] for measuring protein fractions; Enzymes [other than for medical use] for measuring proteins; Enzymes [other than for medical use] for use in the continuous homogenous isothermal amplifications of specific dna templates; Enzymes [other than for medical use] for use in the continuous homogenous isothermal amplifications of specific rna templates; Enzymes [other than for medical use] in detecting proteins; Enzymes to assist in digestion for use in the manufacture of animal feeds; Epoxide adhesives for use with concrete; Epoxy glue for general bonding and repair purposes; Epoxy resin based preparations for use on wood; Epoxy resins; Epoxy resins, unprocessed; Erbium; Erythritol; Esparto pulp; Esters; Esters for use in the manufacture of pharmaceutical products; Esters of fatty acids for industrial use; Esters of fatty acids for use in manufacture; Esters of fatty acids for use in pharmaceuticals; Esters of polyols for use as ingredients in foodstuffs; Esters produced from fatty acids [for use in manufacture]; Etchants for industrial use; Etchants for use in manufacture; Etchants for use in the manufacture of printed circuit boards; Etchants for use in the manufacture of semiconductors; Etching agents; Etching chemicals; Etching compounds; Etching gels; Etching gels for industrial purposes; Etching mordants [acids]; Ethane; Ethanol for scientific purposes; Ether alcohols; Ethers; Ethers for industrial use; Ethycellosolve; Ethyl alcohol; Ethyl carbamate; Ethyl chloride; Ethyl ether; Ethyl malonate; Ethyl phthalate; Ethyl urethane; Ethyl zinc iodide; Ethylamine; Ethylbenzene; Ethylene; Ethylene chlorohydrin; Ethylene dichloride; Ethylene glycol; Ethylene glycol antifreeze; Ethylene oxide; Europium; Exchangers (Ion -) [chemicals]; Expandable graphite; Expanded clay for hydroponic plant growing [substrate]; Expanded clay for hydroponic plant growing [substrates]; Expanded graphites; Expanded synthetic resins [unprocessed]; Expanded unsaturated polyester resins [unprocessed]; Expanded-clay for hydroponic plant growing [substrates]; Extenders [chemical substances]; Extinguishing compositions; Extinguishing compositions (Fire -); Extraction chemicals; Extracts of yucca schidigera; Fabric glues for industrial use; Fabric protectant for commercial dry cleaning use; Fabric protectants; Fabric stiffeners for artistic work; Fabric stiffeners for decorative work; Fabrics (Stain-preventing chemicals for use on -); Fat-bleaching chemicals; Fatty acid esters; Fatty acid-based diesel fuel conditioners; Fatty acid-based gasoline fuel conditioners; Fatty acids; Fatty acids for industrial purposes; Fatty acids for industrial use; Fermentation extract; Fermentation extracts for industrial purposes; Fermented rice bran for use in the manufacture of cosmetics; Fermenting wine (Chemicals used in -); Ferments for chemical purposes; Ferments (Milk -) for chemical purposes; Ferments (Milk -) for industrial purposes; Ferments (Milk -) for the food industry; Fermium; Ferric chloride; Ferric nitrate; Ferrocyanides; Ferrotype plates [photography]; Ferrous sulfate preparations to prevent chlorosis in plants; Ferrous sulfates against yellowing of plant leaves; Ferrous sulfide; Ferrous sulphate; Fertiliser for soil and potting soil; Fertilisers; Fertilisers, and chemicals for use in ***agriculture***, horticulture and forestry; Fertilisers consisting of compounds of nitrogen; Fertilisers for soil and potting soil; Fertilising preparations; Fertilized bases made of mineral wool for growing plants; Fertilized preparations of mineral wool for growing plants; Fertilizer compositions; Fertilizers; Fertilizers and manures; Fertilizers containing nitrogen and magnesium; Fertilizers for ***agricultural*** use; Fertilizers for ***agriculture*** made of seaweed; Fertilizers for domestic use; Fertilizers for household plants; Fertilizers for soil; Fertilizers for the ***land***; Fertilizers, lawn fertilizers, grass fertilizers; Fertilizing preparations; Fibres of inorganic material for separation purposes; Fibres of organic material for separation purposes; Fibrous material for use as manures; Fibrous material for use as soil conditioning agents; Filler for automotive body repair; Fillers derived from calcitic calcium carbonate; Fillers derived from calcium carbonate; Fillers derived from white minerals; Fillers for absorption agents; Fillers for automobile bodies; Fillers for bleaching earths; Fillers for car bodies; Fillers for cardboard; Fillers for drying agents; Fillers for paper; Fillers for rubber; Fillers for soaps; Fillers for toothpastes; Fillers for vehicle body and tyre repair; Fillers (Tree cavity -) [forestry]; Film cleaners [chemicals]; Film strength improving agents; Film supports for holography; Films (Cinematographic -), sensitized but not exposed; Films (Sensitized -), unexposed; Films (Sensitized, unexposed -) for use in photography; Films (X-ray -), sensitized but not exposed; Filter aids for liquid purification; Filter materials of ceramic [in particulate form]; Filtering compositions; Filtering materials [chemical, mineral, vegetable and other unprocessed materials]; Filtering materials [chemical preparations]; Filtering materials [mineral substances]; Filtering materials of chemical substances; Filtering materials of mineral substances; Filtering materials of unprocessed plastics; Filtering materials of vegetable substances; Filtering materials [unprocessed plastics]; Filtering materials [vegetable substances]; Filtering media (Ceramic materials in particulate form, for use as -); Filtering media [chemical] for water; Filtering media [mineral substances]; Filtering media [vegetable substances]; Filtering preparations for the beverages industry; Filtration agents for enzymes; Filtration control agents for completion fluids for subterranean wells; Filtration control agents for drilling fluids for subterranean wells; Filtration control agents for workover fluids for subterranean wells; Fine chemicals; Fining agents for beer; Fining agents for cider; Fining agents for wine; Fining preparation (Must- -); Finings; Finings (Wine -); Finishing preparations for use in the manufacture of steel; Fire absorbent chemicals for the manufacture of fire resistant coatings; Fire absorbent chemicals for the manufacture of fire resistant monomers; Fire absorbent chemicals for the manufacture of fire resistant plastics; Fire absorbent chemicals for the manufacture of fire resistant polymers; Fire absorbent chemicals for the manufacture of fire retardant coatings; Fire absorbent chemicals for the manufacture of fire retardant monomers; Fire absorbent chemicals for the manufacture of fire retardant plastics; Fire absorbent chemicals for the manufacture of fire retardant polymers; Fire absorbent chemicals for use in the manufacture of fire resistant paints; Fire absorbent chemicals for use in the manufacture of fire resistant resins; Fire absorbent chemicals for use in the manufacture of fire retardant paints; Fire absorbent chemicals for use in the manufacture of fire retardant resins; Fire extinguishing and fire prevention compositions; Fire extinguishing chemicals; Fire extinguishing compositions; Fire extinguishing compounds; Fire extinguishing foam compositions; Fire extinguishing media; Fire extinguishing preparations; Fire prevention compositions; Fire protection compositions; Fire resistant chemicals; Fire retardant additives for plastics; Fire retardant additives for resins; Fire retardant chemicals; Fire retardant compositions; Fire retardant compositions for commercial and domestic use; Fire retardant preparations; Fire retarding chemicals; Fire-extinguishing compositions; Fire-extinguishing compositions, in particular fire-extinguishing foams; Fire-extinguishing preparations; Firefighting foam; Fireproof preparations; Fireproofing preparations; Fish meal fertilisers; Fish meal fertilizers; Fissionable chemical elements; Fissionable material for nuclear energy; Fixers; Fixing baths [photography]; Fixing solutions; Fixing solutions [photography]; Flame proofing chemicals; Flame proofing solutions; Flame retardant preparations for coating fabrics; Flame retardants; Flame retarding compositions; Flashlight preparations; Flavonoids for industrial purposes [phenolic compounds]; Flavonoids [phenolic compounds] for industrial purposes; Flavour enhancers for food; Flavour enhancers for foodstuffs; Flavour improvers for coffee; Flavour improvers for foodstuffs; Flavour improvers for tea; Flavour improvers for tobacco; Flexibilizers for artificial resins; Flocculants; Flocculating agents; Flocculating chemicals for treating waste and industrial process water; Flour for industrial purposes; Flour improvers; Flower preservative; Flower preservatives; Flowers of sulfur for chemical purposes; Flowers of sulphur for chemical purposes; Fluate preparations; Fluid cracking catalysts; Fluid loss additives; Fluid (Power steering -); Fluid (Transmission -); Fluidised polymers for industrial use; Fluids (Brake -); Fluids for drilling; Fluids for hydraulic apparatus; Fluids for hydraulic circuits; Fluids for the transport of gravel; Fluids for use in etching aluminium; Fluids for use in etching glass; Fluids for use in etching inflatables; Fluids for use in etching painted wood; Fluids for use in etching plastic; Fluids for use in etching varnished wood; Fluids for use in metal working; Fluids for use in the oil industry; Fluids for use in the transport of particulate materials in gas wells; Fluids for use in the transport of particulate materials in geothermal wells; Fluids for use in the transport of particulate materials in oil wells; Fluids for use in the transport of particulate materials in water wells; Fluids for use with abrasives (Auxiliary -); Fluorescent chemicals; Fluorescent chemicals for use as a fluorescent label; Fluorescent labels for nucleotides and proteins; Fluorescent substances; Fluoric acid; Fluorinated acrylics; Fluorinated polymers; Fluorinated resins; Fluorine; Fluorine compounds; Fluorosilicic acid; Fluorspar; Fluorspar compounds; Flushing agents for automobile radiators; Flushing agents for cooling systems; Flushing agents for heating systems; Fluxes; Fluxes (Brazing -); Fluxes for use in the preparation of ceramics; Fluxes for use in the preparation of glass; Fluxes for use in the preparation of pottery; Fluxes for use in welding; Fluxes (Soldering -); Fly ash for general manufacturing use; Foam inhibitors; Foamed materials being carrier substances for bacteria compounds; Foaming agents; Foliar feeds; Foliar fertiliser for application to crops during periods of rapid growth; Foliar fertiliser for application to crops during periods of stress; Food esters, other than for pharmaceutical purposes; Food preservative compositions; Food preservatives; Food preserving chemicals; Food protein as a raw material; Food-grade wax for the food industry; Foodstuffs (Chemical substances for preserving -); Footwear (Cement for -); Forestry (Chemicals for -), except fungicides, herbicides, insecticides and parasiticides; Forestry (Chemicals for -), except fungicides, herbicides, insecticides, parasiticides; Form release agents for use in the concrete industry; Formaldehyde; Formate; Formic acid; Formic aldehyde for chemical purposes; Formulated fire retarding products to reduce flammability; Formulated fire retarding products to reduce ignitability; Formulations for electroplating metals on substrates; Foundry binding substances; Foundry molding [moulding] preparations; Foundry molding preparations; Foundry mould wash; Foundry moulding preparations; Foundry sand; Foundry sand substances; Foundry sands incorporating inorganic glass binders; Fracturing additives; Fracturing compositions; Fracturing fluids; Fragrant chemical compounds for use in manufacture; Francium; Freezing agents for use in cooling electronic components; Freezing agents for use in cooling mechanical components; Freezing agents for use in freezing biological specimens; Frosting chemicals (Glass -); Fruit (Hormones for hastening the ripening of -); Fuel additives (Chemical -); Fuel economising compositions; Fuel elements for nuclear reactors; Fuel for atomic piles; Fuel for nuclear reactors; Fuel injection cleaner chemical additive; Fuel-saving preparations; Fuller's earth for use in textile industry; Fuller's earth for use in the textile industry; Fulling preparations; Fulling preparations for use in textile industry; Fulling preparations for use in the textile industry; Fume suppressants [chemicals]; Fungal enzymes for use in brewing; Fungicides (Chemical additives to -); Furan; Furfural; Fused phosphate fertilizers; Fused superphosphate fertilizers; Fusel oil for industrial purposes; Gadolinium; Galactose for industrial purposes; Gall nuts; Gallate (Basic -) of bismuth; Gallic acid; Gallic acid for the manufacture of ink; Gallium; Gallium compounds; Gallnuts; Gallotannic acid; Galvanising baths; Galvanising compositions; Galvanising compounds; Galvanizing baths; Galvanizing preparations; Gambier; Garden feeds [fertilizers]; Gas for industrial use; Gas for the preparation of soda water; Gas in dissolved form for industrial use; Gas in liquid form for industrial use; Gas leak detector spray; Gas mixtures for use in ***agriculture***; Gas mixtures for use in industry; Gas mixtures for use in photography; Gas mixtures for use in science; Gas propellants for aerosols; Gas propellents for aerosols; Gas purifying preparations; Gaseous hydrocarbon compounds; Gaseous hydrocarbons; Gaseous mixtures for welding purposes; Gases for analytical purposes; Gases for carbonizing metals; Gases for industrial purposes; Gases for industrial use; Gases for inflating balloons; Gases for laboratory use [other than for medical use]; Gases for laser cutting; Gases for preparatory purposes [industrial]; Gases for use as blowing agents; Gases for use in ***agriculture***; Gases for use in air conditioners; Gases for use in cutting; Gases for use in dispensing liquids; Gases for use in flame spraying; Gases for use in forestry; Gases for use in horticulture; Gases for use in metal production; Gases for use in refrigeration systems; Gases for use in thermal treatment; Gases for use in welding; Gases for use with aerosols; Gases for welding; Gases (Protective -) for welding; Gases (Solidified -) for industrial purposes; Gases with heat insulating effects; Gases with sound insulating effects; Gasoline additives; Gasoline (Detergent additives to -); Gelatin beads for industrial use; Gelatine for industrial purposes; Gelatine for photographic purposes; Gelatine for the manufacture of printing paper; Gelatine glue; Gelatine glue for industrial purposes; Gelatines for industrial use; Gelling agents; Gels (Electrophoresis -), other than for medical or veterinary purposes; Genes of seeds for ***agricultural*** production; Genetic identity tests comprised of reagents; Genetic identity tests comprised of reagents for non-medical purposes; Germination inhibitors [anti-sprouting agents]; Getters [chemically active substances]; Glacial acetic acid; Glass granules for use in swimming pool filters; Glass (Opacifiers for -); Glass (Preparations for preventing the tarnishing of -); Glass (Water -) [soluble glass]; Glass-frosting chemicals; Glass-staining chemicals; Glaziers' putty; Glazing putty; Glazings (Ceramic -); Gliadin for industrial purposes; Globulin for industrial purposes; Gluconic acid; Gluconic salts; Glucose for industrial purposes; Glucose for the food industry; Glucose powder for industrial purposes; Glucose preparations for industrial purposes; Glucose syrups for industrial purposes; Glucosides; Glue for industrial purposes; Glues for industrial purposes; Glues for use in industry; Glutamate for industrial use; Glutamic acid as raw materials for use in the manufacture of cosmetics; Glutamic acid for industrial purposes; Glutaric acid; Glutelin for industrial purposes; Gluten for industrial purposes; Gluten for industrial use; Gluten for the food industry; Gluten [glue], other than for stationery or household purposes; Glutinous preparations for tree-banding; Glutinous preparations for tree-grafting; Glutinous tree-banding preparations; Glutinous tree-grafting preparations; Glycerides; Glycerin for use in manufacture; Glycerine esters; Glycerine for industrial purposes; Glycerol; Glycerol for use in manufacture; Glycogen; Glycol; Glycol ether; Glycoprotein; Glycosides; Glyoxal reactants; Gold chloride; Gold salts; Grafting mastic for trees; Grafting wax for trees; Granulated carbon; Granulated limestone for ***agricultural*** purposes; Graphene; Graphite; Graphite for industrial purposes; Graphite for industrial use; Graphites for nuclear energy; Grass fertilizers; Grease cutters for use in industrial processes; Grease dissolving preparations for use in industrial processes; Grease-***removing*** preparations for use in manufacturing processes; Greases (Preparations for the separation of -); Ground natural iron oxide; Groundwood pulp; Growing media; Growing media, fertilizers and chemicals for use in ***agriculture***, horticulture and forestry; Growing media for plants; Growing media made from coconut coir dust; Growth promoters [other than for medical or veterinary use]; Growth regulating preparations (Plant -); Growth regulators for plants; Growth stimulants [other than for medical or veterinary use]; Guano; Gum arabic; Gum arabic for industrial purposes; Gum arabic for use in lithographic printing processes; Gum arabic glue [not for stationery or household purposes]; Gum solvents; Gum solvents [other than for household purposes]; Gum (Tragacanth -) for use in manufacture; Gum (Tragacanth -) for use in manufactures; Gum tragacanth for industrial purposes; Gums [adhesives] for industrial purposes; Gums [adhesives], other than for stationery or household purposes; Gurjun balsam for making varnish; Gurjun balsam for use in the manufacture of varnish; Gurjun [gurjon, gurjan] (Balm of -) for making varnish; Gypsum for use as a fertilizer; Halides and halogen acid salts; Halogenides; Halogens; Hardeners for concrete; Hardeners for epoxy resins; Hardeners for masonry; Hardening agents; Hardening agents for plaster; Hardening agents for processed plastics; Hardening agents for resins; Hardening preparations; Hardening preparations for metals; Hardening preparations (Metal -); Hardening substances (Limestone -); Heat sensitive [sensitized] tapes for use in the printing of cash cards; Heat sensitive [sensitized] tapes for use in the printing of prepaid cards; Heat sensitive [sensitized] tapes for use in the printing of tickets; Heat stable polymerase; Heat transfer fluids; Heat transfer fluids for industrial use; Heat transfer liquids for use in cooling systems in industry; Heat transfer liquids for use in cooling systems in the chemical industry; Heat transfer liquids for use in cooling systems in the pharmaceutical industry; Heat transfer liquids for use in heating systems; Heat transfer liquids for use in heating systems in the pharmaceutical industry; Heat transfer substances; Heat-sensitive paper [sensitized]; Heavy water; Helium; Hemicellulose; Herb extracts, other than essential oils, for use in the manufacture of cosmetics; Heterocyclic compounds; Hexachloroethane; Hexamethylenediamine; Hexyl alcohol; Histological fixatives; Holmium; Homogenous catalysts; Hormones derived from thymus extracts [other than for medical use]; Hormones for hastening the ripening of fruit; Hormones for hastening the ripening of fruit and vegetables; Horticultural chemicals, except fungicides, herbicides, insecticides and parasiticides; Horticultural growing media composts; Horticultural potting mixtures; Horticulture chemicals, except fungicides, herbicides, insecticides and parasiticides; Horticulture chemicals, except fungicides, herbicides, insecticides or parasiticide; Horticulture growing media; Hot applied roofing adhesives; Hot applied roofing bonding agents; Hot-melt adhesives; Household flame proofing solutions for application to fabrics; Humectants; Humic acid; Humus; Humus top dressing; Huntite; Hyaluronic acid; Hydrated calcium sulphate; Hydrates; Hydraulic brake fluid; Hydraulic circuits (Fluids for -); Hydraulic circuits (Liquids for -); Hydraulic fluid; Hydraulic fluids; Hydraulic fluids containing four or more carbon atoms; Hydraulic fluids for general use; Hydraulic oils for brake circuits; Hydraulic transmission fluid; Hydrazine; Hydrazobenzene; Hydrazone; Hydrocarbon compounds; Hydrocarbon resins; Hydrocarbons; Hydrochlorates; Hydrochloric acid; Hydrochloric acid (hydrogen chloride); Hydrofluoric acid; Hydrogel polymer coatings; Hydrogen; Hydrogen chloride; Hydrogen cyanide; Hydrogen fluoride; Hydrogen peroxide; Hydrogen peroxide for industrial purposes; Hydrogen sulphide; Hydrohalic acids; Hydrolysed starches for industrial purposes; Hydromagnesite; Hydroponic fertilizers; Hydroquinone; Hydrosoluble polymers; Hydrosulphites; Hydroxide of calcium; Hydroxide of magnesium; Hydroxides; Hydroxyethyl methylcellulose; Hydroxypropyl cellulose; Hydroxypropyl methylcellulose acetate succinate; Hydroxypropyl methylcellulose phthalate; Hypnone; Hypochlorite of soda; Hyposulfites; Hyposulphites; Ice (Dry -) [carbon dioxide]; Ice melting compositions; Immersion tin plating compositions for the manufacture of printed circuit boards; Immunoassay reagents, other than for medical use; Immunoassays based on polypeptides for determining immunological profile, other than for medical use; Immunoglobulins, other than for medical use; Immunological antibodies, other than for medical use; Immunological antisera, other than for medical use; Impregnants for exterior surfaces of buildings [other than paints or oils]; Impregnating agents for concrete; Impregnating chemicals for leather; Impregnating chemicals (Leather- -); Impregnating chemicals (Textile- -); In vivo diagnostic scanning agents for scientific use; Indicators [chemicals] for scientific use; Indole for industrial purposes; Industrial adhesives; Industrial adhesives for use in building; Industrial adhesives for use in coating and sealing; Industrial adhesives for use in metal working; Industrial adhesives for use in plumbing; Industrial chemicals; Industrial chemicals for indicating the completeness of a sterilization process; Industrial chemicals for use in the manufacture of colorants; Industrial chemicals for use in the manufacture of lacquers; Industrial chemicals for use in the manufacture of mordants; Industrial chemicals for use in the manufacture of paints; Industrial chemicals for use in the manufacture of preservatives; Industrial chemicals for use in the manufacture of varnishes; Industrial chemicals for use in treating cooling water in recirculating cooling systems; Industrial cleaners [preparations] for use in manufacturing processes; Industrial detergents for use in manufacturing processes; Industrial gases; Industrial gases for use in electronics; Industrial gases for use in fabrication; Industrial gases for use in food processing; Industrial gases for use in metal production; Industrial gases for use in the welding industry; Industrial gluing agents; Industrial inorganic chemicals; Industrial minerals; Industrial organic chemicals; Industrial salt for water purification; Industrial salt for water softening; Industrial salts; Industrial salts for alkali-metal chloride electrolysis; Industrial salts for the preservation of furs; Industrial salts for the preservation of gut; Industrial salts for the preservation of skins; Inert gases for industrial use; Inert gases for scientific use; Inert gases, other than for medical use; Injection moulding compositions; Inner tubes of tire [tyres] (compositions for repairing -); Inner tubes of tires [tyres] (Compositions for repairing -); Inoculants for seeds; Inoculants [other than for medical or veterinary use]; Inorganic acids; Inorganic chemical compounds; Inorganic chemical for use in science; Inorganic chemicals for use in industry; Inorganic fertilizers; Inorganic glass binders for foundry cores; Inorganic glass binders for foundry moulds; Inorganic peroxides for use in ***agriculture***; Inorganic peroxides for use in horticulture; Inorganic peroxides for use in silviculture; Inorganic precipitation agents for paper sizing; Inorganic precipitation agents for the purification of potable water; Inorganic precipitation agents for the purification of waste water; Inorganic salts for industrial purposes; Inorganic smoke retardants; Insecticides (Chemical additives to -); Insemination result control diagnosis reagents [for scientific use]; Intermediates for preparation of organic chemical halogen derivatives; Internal combustion engines (Anti-knock substances for -); Internal combustion engines (Antiknock substances for -); Inulin for the food industry; In-vivo diagnostic reagents for scientific use; In-vivo radiodiagnostic agents scientific use; In-vivo radiological contrast substances for scientific use; Iodic acid; Iodic acid, other than for medical use; Iodides; Iodides, other than for medical or pharmaceutical purposes; Iodine for chemical purposes; Iodine for industrial purposes; Iodine tinctures for industrial purposes; Iodines for industrial purposes; Iodised albumen; Iodised salts; Ion exchange resins; Ion exchange resins for use in water treatment; Ion exchange substances; Ion exchangers [chemical preparations]; Ion exchangers [chemicals]; Ion-exchange resin membranes [chemical preparation]; Ion-exchange resins [chemical preparation]; Ion-exchange resins [chemical preparations]; Iron alum; Iron chloride; Iron nitrate; Iron oxide; Iron oxides; Iron phosphate; Iron salt preparations for industrial use; Iron salts; Iron sulphide; Iron-oxide-based foundry sand additive used in the manufacture of metallic castings; Isinglass other than for stationery, household or alimentary purposes; Isinglass, other than for stationery, household or alimentary purposes; Isobutanol; Isobutylene; Isocyanate compounds; Isoflavone for preparing foodstuffs; Isoprene; Isopropanol; Isotopes for industrial purposes; Kainite; Kaolin; Keratin; Ketoglutaric acid; Ketones; Kieselguhr; Kieselgur; Kieserite; Krypton; Laboratory chemicals for scientific use; Laboratory gases; Laboratory reagents for scientific use; Laboratory reagents for scientific use in analysing hydrocarbons; Lactam; Lactic acid; Lactic acid bacteria for use in food production; Lactic acid polymers; Lactic cultures for the food industry; Lactitol for the food industry; Lactitol to be used in the manufacture of foodstuffs; Lactobacillus for use in food manufacture; Lactose for industrial purposes; Lactose for the food industry; Lactose [raw material]; Lactose to be used in the manufacture of foodstuffs; Laminates of sensitized paper; Laminating agents; Lamp black for industrial purposes; Lamp black for use in industry; ***Land*** fertilizers; Lanthanum; Latex additives for adhesives; Latex glue for industrial purposes; Latex glue [not for stationery or household purposes]; Latex rubber additives; Lauryl alcohol; Lead acetate; Lead arsenate; Lead carbonate; Lead chromate; Lead nitrate; Lead oxide; Lead oxides; Lead sulphate; Leaf mold [fertilizer]; Leaf mould; Leather (Currying preparations for -); Leather glues; Leather (Mastic for -); Leather processing chemical preparations; Leather-dressing chemicals; Leather-impregnating chemicals; Leather-renovating chemicals; Leather-waterproofing agents; Leather-waterproofing chemicals; Lecithin derived from soya for use in the manufacture of foodstuffs; Lecithin for industrial purposes; Lecithin for industrial use in the manufacture of food products; Lecithin for the food industry; Lecithin for use in manufacture; Lecithin for use in the manufacture of chocolate; Lecithin [raw material]; Lenses (Preparations for preventing the tarnishing of -); Leucocyte retaining media, other than for medical use; Light calcium carbonate; Light protectors in the form of antioxidants; Light sensitive emulsions; Light sensitive organic coating compounds for application to substrates by electrodeposition; Lignin; Lignosulphonates; Lime acetate; Lime carbonate; Lime chloride; Lime for use in ***agriculture***; Lime (Nitrogenous -) [manure]; Limestone hardening substances; Linkage compounds for scientific use in associating radiodiagnostic compounds with antibodies; Linking agents for scientific use in associating antibodies with radionuclides; Lipids for use in industry; Lipids for use in manufacture; Liposomes for non-medical use; Liquefied gases for use in aerosol containers; Liquefied gases for use in aerosol dispensers; Liquid absorbing chemical products; Liquid adhesives for use as fabric stiffeners [not for laundry purposes]; Liquid air; Liquid buffers; Liquid carbon dioxide; Liquid chlorine; Liquid cleaning compositions used in manufacturing processes; Liquid cleansers used in manufacturing processes; Liquid coatings [chemical]; Liquid elastomers; Liquid fertilisers; Liquid glues, other than for household or stationery use; Liquid manure substitute; Liquid phosphate for foliar application to ***agricultural*** crops; Liquid phosphate for foliar application to horticultural crops; Liquid photoimagable compositions; Liquid photopolymer solder masks for use as a permanent coating for printed circuits; Liquid photosensitive resin for the fabrication of three-dimensional models; Liquid salt for deicing; Liquid storing polymers for use in ***agriculture***; Liquid storing polymers for use in forestry; Liquid storing polymers for use in horticulture; Liquid sulfur dioxide; Liquids for hydraulic circuits; Liquids for ***removing*** sulfates from accumulators; Liquids for ***removing*** sulfates from batteries; Liquids for ***removing*** sulphates from accumulators; Liquids for ***removing*** sulphates from batteries; Liquids for use in cleaning during manufacturing processes; Liquids for use in cleansing during manufacturing processes; Liquified gases, other than for medical use; Liquifying chemicals (Starch- -) [ungluing agents]; Lithia [lithium oxide]; Lithium; Lithium carbonate; Lithium hydroxide; Lithium phosphate; Lithium tantalate; Lithographic chemicals; Litmus paper; Living microorganisms, other than for medical or veterinary use; Loam; Long chain alcohols; Low calorie sweeteners [artificial, chemical]; Low molecular weight polythene terpolymers for use in industry; Low substituted hydroxypropyl cellulose; Luminous chemical composition for use on the dials of chronometrical instruments; Luminous chemical composition for use on the dials of watches; Luminous paper [sensitised]; Lutetium [cassiopium]; Lysozyme for industrial purposes; Machine coolants; Machining coolants; Magnesia, other than for pharmaceutical purposes; Magnesite; Magnesite clinkers; Magnesium carbonate; Magnesium carbonate for industrial use; Magnesium carbonate for use in manufacture; Magnesium carbonate for use in water treatment; Magnesium chloride; Magnesium chloride for fireproofing materials; Magnesium chloride for industrial use; Magnesium chloride for laboratory use [other than medical]; Magnesium chloride for use in manufacture; Magnesium ferro-silicon; Magnesium fluoride; Magnesium hydroxide; Magnesium hydroxide for industrial use; Magnesium hydroxide for use as a catalyst in manufacture; Magnesium hydroxide for use in manufacture; Magnesium oxide; Magnesium oxide for use in papermaking; Magnesium oxide, other than for medical use; Magnesium oxides; Magnesium phosphate; Magnesium preparations for use in manufacture; Magnesium salts; Magnesium salts for industrial use; Magnesium salts for use in manufacturing processes; Magnesium silicofluoride; Magnesium sulfate for industrial use; Magnesium sulfate for use in paper sizing; Magnesium sulfate for use in textile dyeing; Magnesium sulphate; Magnesium sulphate for industrial use; Magnesium sulphate for use in textile dyeing; Magnetic ferro-alloy; Magnetic fluid for industrial purposes; Magnetic iron oxide; Maleimide; Malt albumen; Malt albumen [raw material]; Maltitol; Maltodextrins for use in manufacture; Manganate; Manganese acetate; Manganese alum; Manganese carbonate; Manganese chloride; Manganese dioxide; Manganese dioxide catalysts; Manganese dioxides; Manganese fertilizer; Manganese metaphosphate; Manganese nitrate; Manganese phosphate; Mangrove bark for industrial purposes; Mannitol; Mannose; Manure; Manure for ***agriculture***; Manure in liquid form; Manure in solid form; Manures; Manures containing antioxidants; Manures for flowerpot plants; Manures for use on grass or grassland; Manures made from sea components; Manures obtained by the treatment of refuse with earthworms; Manures with added microorganisms; Marine fertilizer; Masking compounds for use in the manufacture of printed circuit boards; Masking compounds for use in the manufacture of semiconductors; Masonry preservatives, except paints and oils; Masonry preservatives [other than paints and oils]; Mastic for leather; Mastic for tires; Mastic for tires [tyres]; Mastic for tyres; Mastic (Grafting -) for trees; Mastics for use in bonding; Mastics for use in welding; Meat (Chemical preparations for smoking -); Meat tenderizers for industrial purposes; Meat tenderizers [preparations]; Media for cell culture for use in non-medical research laboratories; Media for cell culture for use in the biotechnological industry; Media for recording visual images [sensitised films]; Media for use in chromatography [not medical]; Media for use in offset lithographic printing; Media for use in separation techniques [not medical]; Melamine; Melamine resin; Melamine resins; Mercaptan; Mercuric chloride; Mercuric oxide; Mercury; Mercury chloride; Mercury nitrate; Mercury oxides; Mercury salts; Mercury sulphate; Mercury sulphide; Metal annealing preparations; Metal chlorides; Metal clad calcium silicon alloys for use in the steelmaking industry; Metal conditioners; Metal drawing compounds; Metal earths; Metal etchants; Metal exchange resins; Metal hardening compositions; Metal hardening preparations; Metal oxide powders for industrial purposes; Metal oxides; Metal plating compositions; Metal preservatives [chemical]; Metal salts; Metal tempering preparations; Metal tempering preparations [tempering chemicals]; Metal to metal adhesives [other than for stationery or household use]; Metal welding flux; Metallates (metal salts of acids); Metallic masks for graphical image patterns [sensitized]; Metallic oxides; Metallocenes; Metalloids; Metals (Alkaline -); Metals (Alkaline-earth -); Metalworking agents having cooling properties; Metalworking agents having flushing properties; Metalworking fluids [other than cutting]; Methacrylamide; Methacrylate; Methacrylic acid; Methane; Methanol; Methyl acetate; Methyl alcohol (methanol); Methyl benzene; Methyl benzol; Methyl chloride; Methyl esters; Methyl ether; Methylamine; Methylbenzene; Methylbenzol; Methylcellulose; Methylcellulose for use as a basic product in the cosmetics industry; Methylene chloride; Micaceous iron oxide; Microalgae for waste water treatment; Microbial inoculants, other than for medical use; Microbiotic organisms, other than for medical use; Microcarriers, other than for medical use; Microfiche [sensitized, not exposed]; Microfilm [sensitized, not exposed]; Microfilms [sensitized, not exposed]; Micronized polythene waxes for use in the manufacture; Micronutrients for application to crops; Microorganisms (Cultures of -) other than for medical and veterinary use; Microorganisms for pond maintenance; Microorganisms for the degradation of toxins [other than for medical use]; Microorganisms for use in stimulation of plant growth; Microorganisms for use in water treatment; Microorganisms (Preparations of -) other than for medical and veterinary use; Mildew (Chemical preparations to prevent -); Milk ferments [bacteria preparations] used in making foodstuffs; Milk ferments for chemical purposes; Milk ferments for industrial purposes; Milk ferments for the food industry; Mineral acids; Mineral extenders; Mineral fertilising preparations; Mineral fertilizers; Mineral fillers for use in industry; Mineral fillers for use in manufacture; Mineral preparations for use as nutritional foodstuffs for plants; Mineral preparations for use in manufacturing; Mineral products for use in growing plants; Mineral sorbents; Mineral substances for use in filtering; Minerals in powder form for industrial use; Mischmetal; Mixed acids; Mixed fertilizers; Mixtures of bacterial concentrates for addition to silages [other than for medical or veterinary use]; Mixtures of chemicals and microorganisms for fertilizing compost; Mixtures of chemicals and microorganisms for increasing the nutritional value of animal fodder [other than for veterinary use]; Mixtures of chemicals and microorganisms for sterilizing compost; Mixtures of chemicals and microorganisms for use on hay in producing silage [other than for veterinary use]; Mixtures of chemicals and natural materials for use as ***agricultural*** fertilizers; Mixtures of chemicals and natural materials for use as horticultural fertilizers; Mixtures of ozone and oxygen, other than for medical use; Mixtures of resin and filler for use as an adhesive [other than for stationery or household use]; Moderating materials for nuclear reactors; Modified pregelatinized starches for industrial purposes; Modified starches for industrial purposes; Modifiers in the form of chemical compositions; Moistening agents; Moistening [wetting] preparations for use in bleaching; Moistening [wetting] preparations for use in dyeing; Moistening [wetting] preparations for use in the textile industry; Moisture displacers; Moisture repellant coatings [other than paints]; Mold inhibiting chemicals for preventing growth of mold; Mold release compounds; Mold release compounds for use in concrete fabrication; Molding compound in the nature of a synthetic putty for use in the manufacture of printing inks in the printing industry; Molding preparations (Foundry -); Mold-release compounds for use in the plastics industry; Mold-release preparations; Molybdic acid; Monochloroacetic acid; Monoclonal antibodies for diagnostic use [other than medical]; Monoclonal antibodies for industrial use; Monoclonal antibodies for scientific purposes; Monoclonal antibodies for scientific use; Monoclonal antibodies for the qualitative determination of leucocyte subsets [other than for medical use]; Monoclonal antibodies for the quantative determination of leucocyte subsets [other than for medical use]; Monoclonal antibodies for use in the study of haematopoietic systems [other than for medical use]; Monoclonal antibody reagents, other than for medical use; Monoglycerides; Monomers for use as sealants; Monomers for use in the manufacture of dental products; Monosaccharides; Mordants for metals; Mordants for seeds; Motor fuel (Chemical additives to -); Motor vehicle body fillers; Mould release agents; Mould releasing agents having a water and solvent base; Mouldable synthetic resins [unprocessed]; Moulded growing media consisting of peat; Moulding compounds (Foundry -); Moulding powders (Foundry -); Moulding preparations (Foundry -); Mould-release preparations; Mud dispersants; Muds (Drilling -); Mulch for soil enrichment [fertiliser]; Mulch for soil enrichment in ***agricultural*** environments; Mulch for soil enrichment in horticultural environments; Multi-nutrient fertilizers; Muscovite mica for industrial purpose; Must-fining preparation; Must-fining preparations; Nanopowders for industrial purposes; Naphtalene; Naphthalene; Naphthylamine; Natural and synthetic plant growth media; Natural desiccants for chilling by absorbing water vapour; Natural desiccants for chilling by desorbing water vapour; Natural desiccants for cooling by absorbing water vapour; Natural desiccants for cooling by desorbing water vapour; Natural desiccants for the control of humidity; Natural desiccants for use in refrigeration; Natural fertilizers; Natural graphite; Natural graphite for industrial purposes; Natural manure; Natural microorganisms used in pond maintenance; Natural starches for industrial purposes; Negative paper; Neodymium; Neon; Neopentylglycol for use in the manufacture; Neptunium; Neutralizers (Toxic gas -); Nickel ammonium sulphate; Nickel chemicals; Nickel hydroxide; Nickel oxides; Nickel salts; Nickel sulphate; Niobium carbide; Nitrate of uranium; Nitrate paper; Nitrated paper; Nitrates; Nitric acid; Nitric monoxide; Nitroaminophenol; Nitrobacteria for use in aquaculture; Nitrobacteria, other than for medical or veterinary purposes; Nitrobenzene; Nitrogen; Nitrogen biofertilizers; Nitrogen compounds; Nitrogen oxides; Nitrogenous fertilisers; Nitrogenous fertilizer; Nitrogenous fertilizers; Nitrogenous lime [manure]; Nitroglycerin; Nitronaphthalene; Nitroparaffin; Nitrophenol; Nitrotoluene; Nitrotoluidine; Nitrous oxide; Nitrous paper; Non-flammable volatile organic chemical liquids; Non-halogenic oxidizing compound for hot tubs; Non-halogenic oxidizing compound for spas; Non-halogenic oxidizing compound for swimming pools; Non-ionic detergent compounds for use in industrial processes; Non-ionic surfactants for use in manufacture; Non-metallic oxides; N-Phenylacetamide; Nuclear reactors (Moderating materials for -); Nucleic acid amplification reagents [other than for medical use]; Nucleic acid for use in nucleic acid amplification processes [other than for medical use]; Nucleic acid reagents for use in forensic analysis [other than for medical purposes]; Nucleic acid sequencing programs [other than for medical use]; Nucleic acids; Nucleic acids for scientific purposes; Nucleic recombinant acids; Nucleoprotein; Nutrients for algae; Nutrients for flowers; Nutrients for plants; Nutrition agents for processing living cells [other than for medical use]; Nutritional substances [fertilizers] in liquid form for use in ***agriculture***; Nutritive agents for processing living cells [other than for medical use]; Nuts (Gall -); Octane booster fuel chemical additive; Octyl acetate; Oenological bactericides [chemical preparations for use in wine making]; Oenological bactericides [chemical preparations used in wine making]; Offset printing plates; Oil cement [putty]; Oil dispersants; Oil ***removing*** substances for use in manufacturing processes; Oil separating chemicals; Oil soluble organic sulfanate surfactants; Oil (Synthetic materials for absorbing -); Oil-bleaching chemicals; Oil-purifying chemicals; Oils (Chemical additives for -); Oils for brakes; Oils for currying leather; Oils for foundry purposes prepared from linseed oil; Oils for hydraulic circuits; Oils for hydraulic cushions; Oils for hydraulic suspensions; Oils for preparing leather in the course of manufacture; Oils for tanning leather; Oils for the preservation of food; Oils for use in the leather industry; Oils for use in the manufacture of printing inks; Oilseed flour for industrial use; Oil-separating chemicals; Oleic acid; Oleic acid for use in the manufacture of cosmetics; Oleic acid for use in the manufacture of lubricating oils; Oleic acid for use in the manufacture of ointments; Oleic acid for use in the manufacture of soaps; Oleinalcohols; Oleyl alcohol; Oligopeptides for industrial purposes; Oligosaccharides; Olivine [chemical preparations]; Olivine [silicate mineral]; Opacifiers for enamel; Opacifiers for glass; Organic acid anhydride; Organic acid salts; Organic acids for industrial use; Organic composts; Organic compounds for use in the manufacture of babies' napkins; Organic digestate [fertiliser]; Organic digestate [fertilizer]; Organic fertilisers; Organic fertilizers; Organic halogenides; Organic liquids for use in vacuum pumps; Organic manure; Organic potting soil; Organic soil enhancement powders and preparations; Organic sulfonates; Organic-bleaching chemicals; Organoarsenic compounds; Organohalogenosilane; Organometallic compounds; Organophosphorus compositions; Organophosphorus compounds; Organosilanes; Organosilicon compounds for use as catalysts in industry; Organosiloxane; Oxalate; Oxalates; Oxalic acid; Oxides; Oxides of metal; Oxidised saccharides in dry form; Oxidised saccharides in solution form; Oxidising agents; Oxidising gases; Oxidising preparations; Oxidizing agents; Oxime; Oxygen for industrial purposes; Oxygen for industrial use; Oxygenated distilled water; Ozone, other than for medical use; Paints (Chemical preparations for the manufacture of -); Palladious chlorides; Palladium chloride; Palmitic acid; Palygorskite; Paper for electrostatic copiers [sensitised]; Paper for photocopying [sensitised]; Paper having a film coating of admixtures of resin [sensitized]; Paper in loose sheets [sensitized]; Paper in roll form [sensitized]; Paper in sheet form [sensitized]; Paper in strip form for copying purposes [sensitized]; Paper in the form of webs [sensitized]; Paper on reels [sensitized]; Paper paste [adhesive] other than for stationery or household purposes; Paper paste [pulp]; Paper pulp; Paper pulp for manufacturing purposes; Paper rolls [sensitized]; Paper [sensitised]; Paper sizing preparations for use in industry; Paperhanging adhesives; Paperhanging (Adhesives for -); Papers (Diazo -); Papers [sensitized] for use as recording media for electrosensitive recorders; Para-aminoacetanilide; Paraldehyde; Particle adherent inhibitors; Particulate material for use in chromatographic processes [other than medical]; Passivating agents; Paste compounds of glass and ceramic powders dispersed in a vehicle; Paste compounds of glass and ceramic powders forming dielectric layers on microcircuits; Paste fillers; Paste fillers for automobile body repair; Paste fillers for car body repair; Pastes containing glass for use in industry; Pastes containing metal-filed glass for use in industry; Pastes for currying leather; Pastes for gluing leather [other than for household purposes]; Peat being in the nature of compost; Peat containing trace elements for use as a compost; Peat [fertiliser]; Peat [fertilizer]; Peat for the cultivation of seeds; Peat for use as fertilizer; Peat pots for horticultural use; Peat pots for horticulture; Pectin for industrial purposes; Pectin for the food industry; Pectin [photography]; Penetrating agents for textile printing and dyeing; Pentaerythritol; Pepsin; Pepsin [enzymes] for industrial purposes; Pepsins for industrial purposes; Peptide substrates for scientific purposes; Peptides for industrial purposes; Peptones for industrial purposes; Perborate of soda; Percarbonates; Perchlorates; Perchloric acid; Perchloroethylene; Perfluorinated chemical compounds prepared synthetically for use in manufacture; Perlite for use in horticulture; Persulfates; Persulfuric acid; Persulphates; Persulphuric acid; Petrol additives [chemical]; Petroleum cracking catalysts; Petroleum derivatives; Petroleum dispersants; Phenanthrene; Phenol for industrial purposes; Phenolic resins; Phenols; Phenothiazine for use as a pharmaceutical intermediate; Phenylenediamine; Pheromones, not for medical use; Phonograph records (Compositions for the manufacture of -); Phonograph records (Renovating preparations for -); Phosgene; Phosphates; Phosphates [fertilisers]; Phosphates [fertilizers]; Phosphates for potable water treatment; Phosphates for use in the feeding-stuffs industry; Phosphatides; Phosphating agents; Phosphating compounds; Phosphine; Phosphoaminolipins; Phosphoprotein; Phosphoric acid; Phosphoric anhydride; Phosphorous; Phosphorus; Phosphorus chloride; Phosphorus sulphide; Photo curable compositions comprising polymers; Photo curable compositions comprising pre-polymers; Photocatalyst; Photocatalysts; Photocopier paper [sensitized]; Photocopying paper [sensitized]; Photographic chemical substances; Photographic chemicals; Photographic chemicals for cleaning presensitised plates for printing; Photographic chemicals for developing photographic films; Photographic chemicals for developing presensitised plates for printing; Photographic chemicals for processing photographic films; Photographic chemicals for processing photographic plates; Photographic developers; Photographic dry plates; Photographic emulsions; Photographic film, not exposed; Photographic film [unexposed]; Photographic films [unexposed]; Photographic fixers; Photographic media [chemicals]; Photographic media [films, unexposed]; Photographic paper; Photographic paper [must be chemically-sensitized paper]; Photographic plates; Photographic plates of glass for laser exposures [unexposed]; Photographic plates [unexposed]; Photographic sensitisers; Photographic sensitizers; Photography (Chemical preparations for use in -); Photography (Reducing agents for use in -); Photoimageable masks; Photoinitiators for the polymerization of artificial resins; Photometric paper; Photoprint paper [sensitized]; Photoresists; Photoresists for fabrication of printed circuit boards; Photoresists for photoengraving; Photosensitive chemicals; Photosensitive coated paper products; Photosensitive films [unexposed]; Photosensitive foils; Photosensitive materials [chemicals]; Photosensitive materials [films, unexposed]; Photosensitive media [films, unexposed]; Photosensitive media [paper]; Photosensitive paper; Photosensitive paper for use in medical imagery; Photosensitive plates; Photosensitive resin films for screen printing; Phthalic acid; Phthalic anhydride; Pickling solutions for industrial use; Pickling solutions for use in the ***removal*** of coatings from metals; Pickling solutions for use in the ***removal*** of deposits from metal; Picric acid; Pigment dispersant for use in the manufacture of cosmetics; Plant extracts for industrial purposes; Plant extracts for the food industry; Plant extracts for use in the manufacture of cosmetics; Plant extracts for use in the manufacture of pharmaceuticals; Plant extracts, other than essential oils, for use in the manufacture of cosmetics; Plant feeds; Plant food; Plant foods; Plant growing media; Plant growing substances; Plant growth media; Plant growth regulating compositions; Plant growth regulating preparations; Plant growth regulating substances; Plant growth regulators for ***agricultural*** use; Plant hormones (phytohormones); Plant nutrient preparations; Plant nutrients; Plant nutrients for use in aquariums; Plant nutrition preparations; Plant strengthening preparations; Plant substrates; Plant-growth promoters containing microorganisms; Plant-growth regulators; Plant-growth regulators containing microorganisms; Planting additives to facilitate rooting; Plastic adhesives for industrial purposes; Plastic adhesives [not for stationery or household purposes]; Plastic coated paper [sensitized]; Plastic in the form of emulsions for use in industry; Plastic in the form of granules for use in industry; Plastic in the form of liquids [for use in industry]; Plastic in the form of pastes for use in industry; Plastic in the form of powders [for use in industry]; Plastic materials in the raw state; Plasticisers; Plasticizers; Plasticizers for plastics; Plastics as raw materials; Plastics (Dispersions of -); Plastics in raw form; Plastics in raw state; Plastics in the crude state; Plastics in the form of chips; Plastics in the form of dispersions; Plastics in the form of emulsions; Plastics in the form of flakes; Plastics in the form of foams; Plastics in the form of gels; Plastics in the form of granules; Plastics in the form of liquids; Plastics in the form of masses; Plastics in the form of pastes; Plastics in the form of pellets; Plastics in the form of powders; Plastics in the form of powders, liquids or pastes; Plastics in the form of raw materials; Plastics in unprocessed form, in powder, liquid or paste form; Plastics, unprocessed; Plastisizers for use in natural polymers; Plastisizers for use in synthetic polymers; Plastisols; Plastisols for use in industry; Plate making chemicals; Plates for offset printing (Sensitized -); Plates (Photosensitive -); Plates (Sensitized photographic -); Plating solutions; Plugs of mineral fibres for use as an inorganic growing medium for plants; Plumbing flux; Plutonium; Polish ***removing*** substances; Polonium; Polyacetal resins; Polyaluminium chloride; Polyamide; Polyamide resins; Polyamides; Polydextrose for use in low-calorie foods; Polyelectrolytes; Polyester compositions in the form of powders for forming coatings; Polyester filler paste; Polyester resins [unprocessed]; Polyesters for use in the filling of flaws in surfaces; Polyesters for use in the filling of holes in surfaces; Polyesters for use in the repair of flaws in surfaces; Polyesters for use in the repair of holes in surfaces; Polyesters in the form of pastes for use in the filling of holes in surfaces; Polyesters (unprocessed); Polyesther triols; Polyether diols; Polyether polyols; Polyethylene; Polyethylene resins; Polyethylene resins [unprocessed]; Polyethylene synthetic resin [unprocessed] for foam mouldings; Polyethyleneimine for use as additives in paper manufacturing; Polyfunctional acrylics; Polyfunctional aziridine compounds for use in resin bridging agents; Polyglycols for use in the manufacture of lubricants; Polymer based compounds for use in manufacture; Polymer beads for use in manufacture; Polymer beads for use in manufacturing; Polymer coating agents for paper; Polymer coatings [other than paints]; Polymer compounds for use in manufacture; Polymer dispersions; Polymer dispersions for use as auxiliaries for the textile industry; Polymer dispersions for use as auxiliaries in the paper making industry; Polymer resins, unprocessed; Polymer solutions; Polymeric chemicals for use in the cosmetic industry; Polymeric emulsifiers; Polymeric intermediates; Polymerisates of organic compounds for the plastics industry; Polymerisation catalysts; Polymerization plastics; Polymers for industrial use; Polymers for use as reference standards in industry; Polymers for use as reference standards in science; Polymers for use in manufacturing ***agricultural*** chemicals; Polymers for use in the analysis of biochemicals; Polymers for use in the analysis of nucleic acids; Polymers for use in the analysis of organic chemicals; Polymers for use in the analysis of proteins; Polymers for use in the drilling and oil industries; Polymers for use in the manufacture of floor finishes; Polymers for use in the manufacture of floor sealers; Polymers for use in the preparation of cementitious compositions; Polymers for use in the preparation of cements; Polymers for use in the preparation of plasters; Polymers of glucose for industrial use; Polymers used in separation processes; Polyol for use in industry; Polyoles; Polyols; Polypeptides for scientific purposes; Polypropylene [raw material]; Polysaccharides for use in binding; Polysaccharides for use in colouring; Polysaccharides for use in fermentation; Polysaccharides for use in flavouring; Polysaccharides for use in preservation; Polysaccharides for use in the manufacture of foodstuffs; Polysilanes; Polysilazanes; Polystyrene in granular form for extrusion; Polystyrene in granular form for injection moulding; Polystyrene resins; Polystyrene [unprocessed]; Polytetrafluoroethylene non-stick coatings; Polyunsaturated fatty acids; Polyurethane; Polyurethane adhesives; Polyurethane adhesives for industrial purposes; Polyurethane coatings [other than paints]; Polyurethane cross-linking agents for use in industrial coatings; Polyurethane cross-linking agents for use in paints; Polyurethane granulate; Polyurethane resins; Polyurethanes; Polyvinyl alcohol; Polyvinyl chloride compounds [unprocessed]; Polyvinyl chloride for use in manufacture; Polyvinyl chloride resins [unprocessed]; Pool cue cement; Potash; Potash water; Potassium; Potassium acetate; Potassium alum; Potassium chloride; Potassium chloride fertilizer; Potassium cyanate; Potassium cyanide; Potassium dioxalate; Potassium ferricyanide; Potassium ferrocyanide; Potassium fertilizers; Potassium fluoride; Potassium fluorozirconate; Potassium fluosilicate; Potassium hydroxide; Potassium nitrate; Potassium phosphate; Potassium salts, other than for medical purposes; Potassium silicate; Potassium silicates; Potassium sulfate; Potassium sulphate; Potassium sulphate fertilizer; Potato flour for industrial purposes; Potato starch for industrial use; Pots (Peat -) for horticulture; Potting compost; Potting composts; Potting compounds; Potting grits; Potting soil; Poultice for use on concrete; Poultice for use on marble; Pouring point depressants; Powdered carbon for secondary cell batteries; Power steering fluid; Power transmission fluids; Praseodymium; Praseodymium hydroxide; Pre-cast electrophoretic gels [other than for medical use]; Precious metals (Salts of -) for industrial purposes; Precipitating agents; Precursors of artificial resins; Pregelatinized starches for industrial purposes; Premixed adhesive foam cements; Premixed adhesive foam cements for industrial purposes; Preparations containing bacteria for water treatment; Preparations for fortifying plants; Preparations for preventing the tarnishing of glass; Preparations for preventing the tarnishing of lenses; Preparations for stimulating cooking for industrial purposes; Preparations for the purification of gas; Preparations for the separation of greases; Preparations of microorganisms, other than for medical and veterinary use; Preparations of the distillation of wood alcohol; Preparations of trace elements for plants; Prepared soils; Prepared soils for the germination of seeds; Prepared wax for grafting trees; Pre-sensitised offset printing plates; Presensitised plates for offset printing; Preservatives (Brickwork -), except paints and oils; Preservatives (Cement -), except paints and oils; Preservatives (Concrete -), except paints and oils; Preservatives (Flower -); Preservatives for animal feeds [chemical]; Preservatives for brickwork [except paints and oils]; Preservatives for buildings [except paints and oils]; Preservatives for cement; Preservatives for cement [except paints and oils]; Preservatives for cement, except paints and oils; Preservatives for concrete [except paints and oils]; Preservatives for cut flowers; Preservatives for flowers; Preservatives for food [chemical]; Preservatives for foodstuffs; Preservatives for maintaining the viability of micro-organisms in cultures [industrial]; Preservatives for maintaining the viability of micro-organisms in cultures [scientific]; Preservatives for metals [chemical]; Preservatives for pharmaceutical preparations; Preservatives for pharmaceuticals; Preservatives for plants; Preservatives for rubber [chemicals]; Preservatives for the surfaces of buildings [chemical] other than paints or oils; Preservatives for tiles, except paints and oils; Preservatives for use in the pharmaceutical industry; Preservatives (Masonry -), except paints and oils; Preserving foodstuffs (Chemical substances for -); Preserving (Salt for -), other than for foodstuffs; Pressure sensitive adhesive tapes [sensitised]; Pressure-sensitive paper; Printing chemicals; Printing plates (Sensitised -) for offset printing; Printing plates (Sensitized -) for offset; Probiotic bacteria for the food industry; Probiotic bacterial cultures for the food industry; Probiotic bacterial formulations [other than for medical use]; Produce stabilizer used for preserving foods; Promethium; Propagation material [growing media]; Propellant gases for aerosols; Propellants for aerosols; Propionic acid; Propylene glycol; Propylene glycol antifreeze; Propylene oxide; Propylene (propene); Protactinium; Protamine; Protective balm for injuries of trees; Protective balm for wounds of trees; Protective coatings for application in liquid form for use on concrete [other than paints or oils]; Protective coatings for balconies [other than in the nature of paints or oils]; Protective coatings for buildings [other than paints or oils]; Protective coatings for car park decks [other than in the nature of paints or oils]; Protective coatings for repelling water [chemical]; Protective coatings for walkways [other than paints or oils]; Protective coatings for waterproofing surfaces of buildings [other than paints or oils]; Protective coatings in the form of sprays for use on concrete [other than paints or oils]; Protective gases for welding; Protein for food for human consumption [raw material]; Protein for industrial use; Protein for use in the manufacture of cosmetics; Protein for use in the manufacture of foodstuffs; Protein plastics; Protein prepared from soya beans for use in the manufacture of foodstuffs; Protein [raw material]; Proteins for binding antibodies [other than for medical use]; Proteins for detecting antibodies [other than for medical use]; Proteins for human foodstuffs which form emulsions as part of the manufacturing process; Proteins for human foodstuffs which form gels as part of the manufacturing process; Proteins for the food industry; Proteins for use in fermentation technology; Proteins for use in industry; Proteins for use in manufacture; Proteins for use in recombinant dna technology [other than for medical use]; Proteins for use in science; Proteins for use in the manufacture of beverages; Proteins for use in the manufacture of cosmetics; Proteins for use in the manufacture of food products; Proteins for use in the manufacture of food supplements; Prussiates; Pulp for use in papermaking; Pulp for use in the manufacture of board; Pulp for use in the manufacture of paper; Pulp (Paper -); Pulp (Wood -); Pulverized limestone for ***agricultural*** purposes; Pure silicon; Purification chemicals; Purification of gas (Preparations for the -); Purification preparations; Purified enzymes for industrial use; Purifying agents for organic chemical compounds; Purifying agents for the cleaning of industrial electrolytes; Purifying chemicals (Oil- -); Purifying chemicals (Water- -); Putties, and fillers and pastes for use in industry; Putties and other paste fillers; Putties [Fillers]; Putty for use by plumbers for affixing toilets; Putty (Glaziers' -); Pyridine; Pyrimidine; Pyrogallic acid; Pyroligneous acid; Pyroligneous acid [wood vinegar]; Pyrolytic graphite; Pyrrole; Quaternary ammonium compounds; Quebracho bark for industrial use; Quebracho for industrial purposes; Quebracho for tanning; Quench compounds for use in casting; Quench compounds for use in metal forming processes; Quenching fluids; Quenching fluids for use in metalworking; Quick bonding adhesives for industrial use; Quinhydrone; Radiation absorbing agents; Radiation absorbing compositions; Radiation absorbing substances; Radiation curable unprocessed synthetic resins; Radiator additives to prevent rust; Radiator flush; Radiator flushing chemicals; Radioactive elements for laboratory use; Radioactive elements for scientific purposes; Radioactive materials for laboratory use; Radioactive materials for scientific purposes; Radioactive preparations for industrial purposes; Radioactive preparations for laboratory purposes; Radioactive preparations for scientific purposes; Radiochemical products for scientific purposes; Radiological contrast agents, other than for medical purposes; Radiological contrast media, other than for medical purposes; Radiological contrast substances, other than for medical purposes; Radium; Radium for industrial purposes; Radium for scientific purposes; Radon; Rag pulp; Rain repellant preparations for use on windows; Rain repellant preparations for use on windscreens; Rain repellant preparations for use on windshields; Rare earth; Rare earth compounds; Rare earth metals; Rare earth metals (Salts from -); Rare earth salts; Rare earths; Rare gases other than for medical use; Raw chemicals; Raw chemicals for use in the manufacture of polyurethane resins; Raw material for lacquers; Raw materials [chemical] for the formulation of cosmetic products; Raw plastics; Raw plastics in the form of granules; Raw plastics in the form of liquids; Raw plastics in the form of pastes; Raw plastics in the form of pellets; Raw plastics in the form of powders; Raw plastics in the form of powders, liquids or pastes; Raw proteins; Raw proteins for use in industry; Raw proteins for use in manufacture; Raw salt; Raw synthetic resins in the form of liquids; Raw synthetic resins in the form of paste; Raw synthetic resins in the form of powder; Raw [unprocessed] artificial resins; Raw [unprocessed] artificial resins for use in industry; Reactants for scientific use; Reactive liquid polymer compositions; Reagent for chemical analyses; Reagent paper, other than for medical or veterinary purposes; Reagent strips; Reagents (Chemical -) other than for medical or veterinary purposes; Reagents for analytical purposes [other than for medical or veterinary purposes]; Reagents for bacteriological analysis of culture water [other than for medical or veterinary purposes]; Reagents for blood grouping [other than for medical or veterinary purposes]; Reagents for chemical analyses; Reagents for detecting helicobacter pylori organisms [other than for medical or veterinary purposes]; Reagents for detecting labelled helicobacter pylori antigens [other than for medical or veterinary purposes]; Reagents for industrial purposes; Reagents for in-vitro laboratory use [other than for medical or veterinary purposes]; Reagents for laboratory purposes [other than for medical or veterinary purposes]; Reagents for medical research; Reagents for microbiological analysis [other than for medical or veterinary purposes]; Reagents for protein folding [other than for medical or veterinary purposes]; Reagents for research purposes; Reagents for scientific or medical research use; Reagents for scientific purposes; Reagents for testing aqueous solutions [other than for medical or veterinary purposes]; Reagents for testing the sterility of medical equipment; Reagents for testing the sterility of pharmaceuticals and injectable solutions; Reagents for testing water; Reagents for use in analysis [other than for medical or veterinary purposes]; Reagents for use in analytical tests [other than for medical or veterinary purposes]; Reagents for use in biological processing [other than for medical or veterinary purposes]; Reagents for use in diagnostic tests [other than for medical or veterinary purposes]; Reagents for use in environmental analysis; Reagents for use in environmental testing; Reagents for use in geophysical analysis; Reagents for use in geophysical testing; Reagents for use in immunoserology; Reagents for use in scientific apparatus for chemical or biological analysis; Reagents for use in the development of hybridoma antibodies [other than for medical or veterinary purposes]; Reagents for use in the development of monoclonal antibodies [other than for medical or veterinary purposes]; Reagents for use with analyzers [other than for medical or veterinary purposes]; Reagents for use with evacuated ampoules in fluid analysis [other than for medical or veterinary purposes]; Reagents in kit form for conducting enzyme-linked immunosorbent assays (elisa) [other than for medical or veterinary purposes]; Reagents used for analytical moisture determinations; Reagents used in science; Recharging accumulators (Acidulated water for -); Reconstituted cells for the efficiency testing of chemical products; Reconstituted cells for the efficiency testing of cosmetic products; Reconstituted cells for the efficiency testing of hygienic products; Reconstituted cells for the efficiency testing of pharmaceutical products; Reconstituted cells for the tolerance testing of chemical products; Reconstituted cells for the tolerance testing of cosmetic products; Reconstituted cells for the tolerance testing of hygienic products; Reconstituted cells for the tolerance testing of pharmaceutical products; Reconstituted sea water for aquariums; Reconstituted sea water for ponds; Recording paper [sensitised]; Records (Renovating preparations for phonograph -); Recycled paper pulp; Red mud; Reducing agents for the textile industry; Reducing agents for use in chemical processes; Reducing agents for use in photography; Reference standards [chemicals] for use in industry; Reference standards [chemicals] for use in science; Refrigerant agents; Refrigerant chemicals; Refrigerants; Refrigerating preparations; Regulatory proteins for industrial use; Regulatory proteins for scientific use; Reinforced polymers; Reinforcing fillers; Reinforcing separating agents; Release agents [chemicals]; Release agents for use in baking; Releasing agents [chemical]; Releasing compounds for concrete shuttering; ***Removing*** grease (Substances for -) as part of industrial operations; ***Removing*** polish (Substances for -); Renal scanning agents for scientific use; Renovating chemicals (Leather- -); Renovating preparations for phonograph records; Repairing tires [tyres] (Compositions for -); Repellents for liquids; Repellents for water; Reprographic films (sensitised -) [unexposed]; Reprographic plates (sensitised -) [unexposed]; Resin (artificial -) [unprocessed]; Resin (epoxy -) [unprocessed]; Resin for use in anchoring rods; Resin (synthetic -) [unprocessed]; Resins (Acrylic -), unprocessed; Resins (Artificial -), unprocessed; Resins (Epoxy -), unprocessed; Resins for use in the printing industries; Resins (Synthetic -), unprocessed; Resists of light sensitive resins; Resorcinol; Retaining compounds; Retarders for use with concrete; Retarders for use with mortar; Retarders for use with plaster; Rhamnose; Rhamnose for industrial purposes; Rhenium; Rheological additives for use in industry; Rheological additives, other than for medical use; Rheology modifiers [chemicals] for use in the field of coating materials; Rheology modifying compositions, other than for medical use; Rice bran [fertilizer]; Rigid manures; Rock drilling (Fluids for -); Rock drilling (Muds for -); Rock fibres for use in ***agriculture***; Rock fibres for use in forestry; Rock fibres for use in horticulture; Rock salt; Rock salt [for deicing]; Rock salt for deicing; Rolled paper for use in calculators [sensitized]; Rolled paper for use in computers [sensitized]; Rolls of paper [sensitized]; Roofing adhesive; Rubber adhesives for industrial use; Rubber adhesives [other than for household or stationery use]; Rubber based adhesives for industrial use; Rubber based adhesives [other than for household or stationery use]; Rubber based cements [adhesives] for industrial use; Rubber based cements adhesives, other than for household or stationery use; Rubber cement for repairing pneumatic tyres; Rubber compounds for industrial use; Rubber preservatives; Rubidium; Runs in stockings (Substances for preventing -); Rust preventive resins of high friction coefficient; Saccharide preparations, other than for medical use; Saccharin; Sal ammoniac; Sal ammoniac spirits; Salicylic acid; Salpetre; Salt for preserving, other than for foodstuffs; Salt for use in the dyeing industry; Salt for use in the soap industry; Salt pellets for use in the dyeing industry; Salt pellets for use in the soap industry; Salt, raw; Saltpeter; Salts [chemical preparations]; Salts [fertilisers]; Salts [fertilizers]; Salts for coloring [colouring] metal; Salts for coloring metal; Salts for colouring metal; Salts for galvanic batteries; Salts for galvanic cells; Salts for industrial purposes; Salts from rare earth metals; Sheets of paper [sensitized]; Sheets of sensitized paper being media for processing photographic images; Shock absorber fluids; Shock absorbing fluids; Shoes (Cement for -); Shrinkage reducing agents; Silage additives [preservatives]; Silanes; Silica for use as a polyolefin catalyst; Silica gel; Silica gels; Silicate based color developers for thermoreactive papers; Silicates; Silicates for use in industry; Silicates for use in the culture of cucumbers on stone wool slabs; Silicates for use in the culture of cucumbers on substrate silicon; Siliceous ooze; Silicon; Silicon carbide; Silicon carbide for industrial purposes; Silicon carbide for use as a raw material in the manufacture of other goods; Silicon carbide [raw material]; Silicon dioxide; Silicon modified polyether polyols; Silicone fluids; Silicone liquid elastomers; Silicone resins; Silicone solutions for use in anti-offset equipment; Silicone surfactants for industrial purposes; Silicones; Silver chloride; Silver cyanide; Silver iodide; Silver nitrate; Silver nitrite; Silver oxides; Silver salt solutions for silvering; Silver sulphate; Single crystals of silicon; Sintering (Ceramic compositions for -) [granules and powders]; Size for finishing and priming; Size for use in the textile industry; Size for walls; Sizing agents; Sizing compounds for use in manufacture; Sizing preparations; Skins (Currying preparations for -); Skins (Dressing, except oils, for -); Slag [fertilisers]; Slag [fertilizers]; Slip agents; Slow release fertilizer compositions; Smoke generating fluid for use with fog machines; Smoke suppressant chemicals; Smoking meat (Chemical preparations for -); Snow melting agents; Soap [metallic] for industrial purposes; Soap stabilisers; Soaps [metallic] for industrial purposes; Soda ash; Soda (Calcined -); Sodium; Sodium alum; Sodium aluminium fluoride; Sodium aluminium phosphate; Sodium bicarbonate; Sodium bichromate; Sodium bisulphite; Sodium bromide; Sodium carbonate; Sodium chlorate; Sodium chloride; Sodium chlorite; Sodium chromate; Sodium cyanide; Sodium fluoride; Sodium fluosilicate; Sodium formate; Sodium gold chloride; Sodium hydroxide for industrial purposes; Sodium hypochlorite; Sodium iodide; Sodium molybdate; Sodium naphthionate; Sodium nitrate; Sodium nitrate fertilizer; Sodium nitrite; Sodium oxynaphthionate; Sodium perborate; Sodium permanganate; Sodium peroxide; Sodium phosphate; Sodium salts [chemical compounds]; Sodium salts [chemical preparations]; Sodium silicate; Sodium silicates; Sodium sulfanilate; Sodium sulfite; Sodium sulphate; Sodium sulphide; Sodium sulphite; Sodium tartrate; Sodium tetraborate; Sodium thiosulfate; Sodium tungstate; Softeners for leather; Softening preparations (Water -); Soil additives; Soil additives [fertilising]; Soil amendment agents [other than sterilising]; Soil amendments; Soil amendments for ***agricultural*** use; Soil amendments for horticultural use; Soil conditioners; Soil conditioners for ***agricultural*** purposes; Soil conditioners for horticultural purposes; Soil conditioners for inoculation into the soil preparatory to the sowing of seeds [other than sterilising]; Soil conditioners [other than sterilising]; Soil conditioning chemicals; Soil conditioning chemicals [other than sterilising]; Soil conditioning preparations; Soil conditioning preparations for enhancing the growth of ***agricultural*** products; Soil conditioning preparations for enhancing the growth of garden products; Soil conditioning preparations for enhancing the growth of horticultural products; Soil conditioning preparations for regulating the growth of ***agricultural*** products; Soil conditioning preparations for regulating the growth of garden products; Soil conditioning preparations for regulating the growth of horticultural products; Soil conditioning substances [other than sterilising]; Soil enrichment chemicals; Soil for growing; Soil improvement substances; Soil improvers; Soil improving agents; Soil improving material; Soil improving preparations; Soil stabilizers for roads, ponds and lakes; Soil stabilizers for use in road construction; Soil substitutes; Soil surfactants used to promote uniform movement of water in soil; Soil-conditioning preparations; Solder creams; Solder fluxes; Solder mask [chemical preparations]; Solder masks; Solder (Pastes for use with -); Solder (Preparations for use with -); Solder stripper [preparations]; Soldering (Agents for use in -); Soldering chemicals; Soldering creams; Soldering flux; Soldering fluxes; Soldering pastes; Soldering preparations; Solid and liquid diluents for artificial resins; Solid gaseous filtering substances; Solid inorganic adhesives for forming solid synthetic resins for rock consolidation; Solid oxygen, other than for medical use; Solid potassium silicate; Solid sodium silicate; Solidified gases for industrial purposes; Solidified protective gases for welding; Solutions for cyanotyping; Solutions for scientific use in the preservation of human organs; Solutions for scientific use in the storage of human organs; Solvent based cleaning preparations for ***removing*** grease during manufacturing operations; Solvent cleaners for ***removing*** grease during manufacturing operations; Solvent type processing compositions for use in the electronics industry; Solvents for cleaning purposes during manufacturing operations; Solvents for industrial cleaning during manufacturing operations; Solvents for industrial use in manufacturing operations; Solvents for lacquers; Solvents for paints; Solvents for ***removing*** adhesives used during manufacturing operations; Solvents for stripping surface finishes during manufacturing processes; Solvents for use in aerosols; Solvents for use in industrial manufacturing processes; Solvents for use in manufacturing processes; Solvents for use in the cleaning of machines during manufacturing processes; Solvents for use in the manufacture of insecticides; Solvents for use in the processing of plastics; Solvents for varnishes; Solvents for washing out light sensitive resins; Soot for industrial or ***agricultural*** purposes; Sorrel salt; Spinel [chemical preparations]; Spinel [oxide mineral]; Spirit gum for industrial purposes; Spirits of salt; Spirits of vinegar [dilute acetic acid]; Spray adhesives; Spray crystallised maltose for industrial use; Spray crystallised porous spheres of ceramic material; Spray crystallized maltose for industrial use; Spray crystallized porous spheres of ceramic material; Spray dried gum acacia for use in the manufacture of drinks; Spray dried gum acacia for use in the manufacture of foodstuffs; Stabilisers for oils; Stabilisers for vitamins; Stabilising agents for use in food; Stabilizers for flame retardants; Stabilizers for plastic polymers; Stabilizing agents for polyvinyl chloride; Stabilizing agents for solvents; Stain repellents; Staining-chemicals (Enamel and glass- -); Stain-preventative chemicals for use on carpets; Stain-preventative chemicals for use on soft furnishings; Stain-preventing chemicals for use on fabrics; Stannate; Starch for industrial purposes; Starch for use in industry; Starch for use in the manufacture of paper; Starch for use in the manufacture of paper or textiles; Starch for use in the manufacture of textiles; Starch paste [adhesive], other than for stationery or household purposes; Starch paste [not for stationery or household purposes]; Starches for the fixing of floorings; Starches for use in manufacturing and industry; Starch-liquifying chemicals [ungluing agents]; Stearic acid; Stearyl fumarate; Stearyl lactilate; Stearyl tartrate; Steel (Finishing preparations for use in the manufacture of -); Steel quenching agents; Stem cells for research or scientific purposes; Stem cells for research purposes; Stem cells for scientific purposes; Stem cells other than for medical or veterinary purposes; Stem cells, other than for medical or veterinary purposes; Stilbene; Stockings (Substances for preventing runs in -); Straw pulp; Strips of sensitised film [unexposed]; Strips of sensitised paper; Strips of sensitised photographic film [unexposed]; Strontium; Strontium carbonate; Strontium carbonates; Strontium hydroxide; Structural adhesives for automotive use; Structural adhesives for building use; Styrene; Styrene monomers; Substances (Chemical -) for cleaning brickwork; Substances (Chemical -) for cleaning concrete; Substances (Chemical -) for cleaning mortar; Substances (Chemical -) for cleaning stonework; Substances (chemical -) for inhibiting attacks from water [other than paints]; Substances (chemical -) for inhibiting damage from oil [other than paints]; Substances (Chemical -) for preserving foodstuffs; Substances for binding [foundry]; Substances for binding in manufacturing processes; Substances for controlling the growth of aquatic plants; Substances for controlling the growth of aquatic weeds; Substances for horticultural use produced by genetic engineering; Substances for improving the soil; Substances for laboratory use; Substances for preserving cut flowers; Substances for preserving seeds; Substances for preventing runs in stockings; Substances for promoting plant growth; Substances for protection against frost; Substances for protection against ice; Substances for regulating growth in plants; Substances for regulating plant growth; Substances for ***removing*** adhesives; Substances for ***removing*** polish; Substances for scientific use; Substances for soil-free growing [***agriculture***]; Substances for stabilising the soil; Substances for tanning animal hides; Substances for tanning animal skins; Substances for tanning animal skins and hides; Substances for the etching of brickwork; Substances for the etching of concrete; Substances for the etching of mortar; Substances for the etching of stonework; Substances for the purification of fluids; Substances for the purification of gases; Substances for use in aquaculture [other than pharmaceutical]; Substances for use in genetic probe assay kits [not for medical use]; Substances of polyester paste for use in the filling of cracks; Substances of polyester paste for use in the filling of flaws in surfaces; Substances of polyester paste for use in the filling of holes in surfaces; Substances of polyester paste for use in the repair of cracks; Substances of polyester paste for use in the repair of flaws in surfaces; Substances of polyester paste for use in the repair of holes in surfaces; Substrates for soil-free growing [***agriculture***]; Substrates used in ***agriculture***, horticulture and forestry; Succinic acid; Sucro chemicals; Sucrose esters of acids; Sugar alcohols; Sugar substitutes (Chemical -); Sulfates; Sulfides; Sulfinic acids; Sulfite for preserving food; Sulfites for preserving foodstuffs; Sulfonic acids; Sulfur; Sulfur trioxide; Sulfuric acid; Sulfuric ether; Sulfurous acid; Sulphates; Sulphides; Sulphite pulp; Sulphonic acid; Sulphonic acids; Sulphur; Sulphur dioxide; Sulphur dioxide for use as additives to beverages to prevent spoilage; Sulphur hexafluoride for use as dielectrics in electrical instruments; Sulphur [non-metallic element]; Sulphur [non-metallic mineral]; Sulphuric acid; Sulphuric ether; Sulphurous acid; Sulphurous acid gas (sulphur dioxide); Sumac for use in tanning; Superphosphates [fertilisers]; Superphosphates [fertilizers]; Supports coated with antigens of helicobacter pylori [not for medical use]; Supports for catalysts; Supports impregnated with antigens of helicobacter pylori; Surface active chemical agents for use in ***agriculture***; Surface active chemical agents for use in forestry; Surface active chemical agents for use in horticulture; Surface adhesives [not for medical, stationery or household use]; Surface coating compositions [chemicals], other than paints; Surface-active chemical agents; Surface-active compounds; Surface-active substances; Surface-coating chemicals for LCD; Surfactants for industrial purposes; Surfactants for treating machinery used in printing processes; Surfactants for treating paper in printing processes; Surfactants for use as drying aids; Surfactants for use in coating concrete [other than paints]; Surfactants for use in coating floor surfaces; Surfactants for use in connection with ***agricultural*** pesticides; Surfactants for use in detergent compositions; Surfactants for use in preserving concrete; Surfactants for use in preserving floor surfaces; Surfactants for use in protecting concrete; Surfactants for use in protecting floor surfaces; Surfactants for use in reinstating concrete; Surfactants for use in reinstating floor surfaces; Surfactants for use in the manufacture of animal feedstuffs; Surfactants for use in the manufacture of synthetic detergents; Surgical bandages (Adhesive preparations for -); Sweeteners (Artificial -) [chemical preparations]; Syntactic foams made from synthetic resins; Synthesis gas catalysts for use in ammonia manufacture and plant operation; Synthetic barium; Synthetic binders for agglomeration; Synthetic catalysts; Synthetic compositions for forming coatings of borosilicate glass; Synthetic cryolite; Synthetic deoxyribonucleic acid [other than for medical use]; Synthetic films [sensitized, unexposed]for use as recording media for electrosensitive recorders; Synthetic fragrance ingredients; Synthetic gas for industrial use; Synthetic linear alcohols for industrial use; Synthetic linear alpha olefins; Synthetic manures; Synthetic materials for absorbing oil; Synthetic neutralising tanning materials; Synthetic pheromones, other than for medical use; Synthetic plastics [dispersions]; Synthetic quartz; Synthetic quartz for optical fibers; Synthetic resin adhesives for industrial purposes; Synthetic resin adhesives for laminating purposes; Synthetic resin compositions [unprocessed]; Synthetic resin compositions [unprocessed] for industrial purposes; Synthetic resin compounds in the form of microspheres used to incorporate various other substances; Synthetic resin fillers; Synthetic resin plastics [unprocessed]; Synthetic resins for use in the treatment of surfaces of buildings; Synthetic resins in the form of ion-exchangers; Synthetic resins, unprocessed; Synthetic resins [unprocessed] for use in manufacture; Synthetic ribonucleic acid, other than for medical use; Synthetic silica; Synthetic thickeners for use in manufacture; Tagged antibodies for laboratory use; Tagged antibodies for scientific use; Talc for use in paints; Talc [magnesium silicate]; Tamper evident plastic films [sensitised] for packaging purposes; Tamper evident plastic films [sensitised] for sealing purposes; Tan; Tannery oils; Tannic acid; Tannin; Tanning agents [for hides]; Tanning agents for use in the manufacture of leather; Tanning compositions for animal skins; Tanning oils for animal skins; Tanning substances; Tan-wood; Tapioca flour for industrial purposes; Tartar other than for pharmaceutical purposes; Tartar, other than for pharmaceutical purposes; Tartaric acid; Tea extracts for industrial purposes; Tea extracts for the food industry; Tea extracts for use in the manufacture of cosmetics; Tea extracts for use in the manufacture of pharmaceuticals; Technetium; Tellurium; Temperature stabilizers; Tempering chemicals for use in metalworking; Tempering chemicals for use in soldering; Tempering preparations; Tempering preparations for metals; Tempering preparations (Metal -); Tempering substances; Tempering substances for soldering; Tempering substances for welding; Tensio-active agents; Terbium; Test gas mixtures; Test gases; Test paper, chemical; Test paper, [litmus paper]; Test paper, [litmus paper] for industrial use; Test paper, [litmus paper] for scientific use; Test paper, sensitized; Test reagents [other than for medical use]; Test strips impregnated with reagents for testing swimming pool water; Testing reagents for industrial use; Testing reagents for scientific use; Tetrachlorides; Tetrachloroethane; Tetraethyl lead; Tetrasaccharides; Textile finishing chemicals; Textile finishing chemicals having water repellant properties; Textile finishing wax; Textile finishing wax having water repellant properties; Textile for photogravure; Textile-brightening chemicals; Textile-impregnating chemicals; Textile-waterproofing chemicals; Thallium; Thermally applied metallic spray coatings of carbide alloy; Thermally curable unprocessed synthetic resins; Thermic paper [sensitised]; Thermofusible adhesives [other than for stationery or household purposes]; Thermomechanical pulp; Thermoplastic compounds; Thermoplastic elastomers; Thermoplastic resin for use in moulding; Thermoplastic resin for use in thermoforming; Thermoplastic resins [unprocessed]; Thermosensitive recording materials; Thermosetting plastic refractory materials; Thickening agents being biochemical products for industrial use; Thiocarbanilide; Thioether; Thiophene; Thiourea; Thomas phosphatic fertilizer; Thorium; Thorium nitrate; Threading (Compositions for -); Thulium; Thymol for industrial purposes; Tile adhesives; Tiles (Preservatives for -), except paints and oils; Tin chloride; Tin dichloride; Tin disulfide; Tin monosulfide; Tin monoxide; Tin oxides; Tin sulphide; Tire puncture sealants; Tire repairing compositions; Tire sealing compounds; Tires (Mastic for -); Titanates; Titanite; Titanites; Titanium dioxide for industrial purposes; Titanium oxides; Tobacco (Sauce for preparing -); Tolidine; Tolidine sulphate; Toluene; Toluenesulfonyl chloride; Toluidine; Toluidine sulphate; Toluol; Toluol (toluene); Toning baths [photography]; Toning salts [photography]; Top dressings for lawns; Top dressings [humus] for lawns; Top soil; Topsoil; Toxic gas neutralizers; Trace element feeds for plants; Trace elements for use in ***agriculture***; Trace elements for use in horticulture; Trace elements (Preparations of -) for plants; Tragacanth gum for use in manufacture; Tragacanth gum for use in manufactures; Tragacanth gum for use in the manufacture of lozenges; Tragacanth gum for use in the manufacture of pharmaceuticals; Translucent paper [sensitised]; Transmission fluid; Transmission fluids; Transmission oil; Transparent film in roll form [photographic, unexposed]; Transparent film in roll form [sensitised]; Transparent film in sheet form [photographic, unexposed]; Transparent films [photographic, unexposed] for overhead projectors; Transparent films [sensitised]; Transparent paper [sensitised]; Treated papers for stationery use [sensitised]; Tree cavity fillers [forestry]; Tree-banding (Glutinous preparations for -); Tree-grafting (Glutinous preparations for -); Trichloroethylene; Trichloromethane for industrial purposes; Triethanolamine; Triethylene glycol; Triglycerides; Triphenylmethane; Triple superphosphate fertilizers; Trisaccharides; Trypsin; Tungsten carbide; Tungstic acid; Turf wetting agents; Turmeric paper; Tyre repair adhesives; Tyre repair composites; Tyre repair compositions; Tyre repair mastics; Tyre repairing compositions; Tyre sealing compounds; Tyres (Mastic for -); Ultrafiche [unexposed]; Ultraviolet absorbing agents for use in cosmetic products; Ultraviolet absorbing agents for use in dermatologic products; Ultraviolet curable adhesives for semiconductor chips; Ultraviolet curable resins; Ultraviolet light sensitive coated aluminium sheet material; Underwater concrete segregation controlling admixtures; Unexposed camera film; Unexposed cinematographic film; Unexposed cinematographic films; Unexposed colour photographic films; Unexposed dry films; Unexposed film; Unexposed films; Unexposed photographic film; Unexposed photographic film for the production of printed circuit boards; Unexposed photographic films; Unexposed photographic paper; Unexposed photographic plates; Unexposed sensitised paper; Unexposed sensitized film; Unexposed sensitized lithographic film; Unexposed sensitized lithographic foils; Unexposed sensitized lithographic paper; Unexposed sensitized lithographic plates; Unexposed sensitized microfiche; Unexposed sensitized microfilm; Unexposed sensitized photographic films; Unexposed sensitized plates; Unexposed X-ray film; Ungluing agents [chemical preparations for liquifying starch]; Ungluing preparations; Ungluing, unsticking and separating preparations; Universal reagents for automated test systems [laboratory]; Universal reagents for automated test systems [scientific]; Unprocessed acrylic resins; Unprocessed acrylonitrile butadiene styrene resins; Unprocessed and synthetic resins; Unprocessed artificial and synthetic resins; Unprocessed artificial ion exchange resins for treating water used in power generation; Unprocessed artificial plastics; Unprocessed artificial resin; Unprocessed artificial resins; Unprocessed artificial resins as raw materials in the form of powders, liquids or pastes; Unprocessed artificial resins for industrial purposes; Unprocessed artificial resins for processing industries; Unprocessed casein resins; Unprocessed cellulose acetate plastics; Unprocessed diallyl isophthalate resins; Unprocessed epoxy resin; Unprocessed epoxy resins; Unprocessed fluoropolymer resins; Unprocessed furan resins; Unprocessed packaging resin; Unprocessed plastic in powder form; Unprocessed plastic in the form of powder or granules; Unprocessed plastic materials in powder, liquid or paste form; Unprocessed plastics; Unprocessed plastics for industrial use; Unprocessed plastics in all forms; Unprocessed plastics of natural origin; Unprocessed plastics [plastics in primary form]; Unprocessed polyamide resins; Unprocessed polyarylate resins; Unprocessed polybenzimidazol resins; Unprocessed polybutylene resins; Unprocessed polybutylene terephthalate resins; Unprocessed polycarbonate resins; Unprocessed polyethtylene terephthalate resins; Unprocessed polyethylene resins; Unprocessed polymethyl methacrylate resins; Unprocessed polyphenylene oxide resins; Unprocessed polyphenylene sulfide resins; Unprocessed polypropylene resins; Unprocessed polysulfone resins; Unprocessed polyurethane; Unprocessed polyvinyl acetate resins; Unprocessed polyvinyl alcohol resins; Unprocessed polyvinyl chloride resins; Unprocessed propionate resins; Unprocessed protein plastics; Unprocessed resins; Unprocessed silicone resins; Unprocessed styrene acrylonitrile resins; Unprocessed synthetic polymers; Unprocessed synthetic polypropylene resins; Unprocessed synthetic resin compounds in the form of microspheres used to incorporate various other substances; Unprocessed synthetic resins; Unprocessed synthetic resins for binding floor coatings; Unprocessed synthetic resins for powder coatings in industrial applications; Unprocessed synthetic resins for use in adhesives; Unprocessed synthetic resins for use in glass fibre reinforced laminates; Unprocessed synthetic resins for use in glass fibre reinforced mouldings; Unprocessed synthetic resins for use in the manufacture of blast cleaning abrasives; Unprocessed synthetic resins for use in the manufacture of cosmetics; Unprocessed synthetic resins for use in the manufacture of molding compounds; Unprocessed synthetic resins for use in the manufacture of plastic molding compounds; Unsaturated polyester; Unsaturated polyester resin based coatings; Unsaturated polyester resins; Unsticking and separating preparations; Uranate; Uranates; Uranium; Uranium nitrate; Uranium oxide; Uranium oxides; Urea fertilizer; Urea resins [unprocessed]; Urea-formaldehyde resins; Urea-formaldehyde resins [unprocessed]; Urease; Urethane floor sealants; Urethane modified co-polyester resins [unprocessed]; Valeric acid; Vanillin [industrial chemical]; Varnishes (Solvents for -); Vehicle engine coolants; Vehicle engines (Coolants for -); Vine disease preventing chemicals; Vinegar (wood -) [pyroligneous]; Vinegar (Wood -) [pyroligneous acid]; Vinic alcohol; Vinyl acetate; Vinyl chloride; Vinyl chloride monomers; Vinylidene chloride; Viscose; Visible ray catalysts; Vitamins for the food industry; Vitamins for use in the manufacture of cosmetics; Vitamins for use in the manufacture of food supplements; Vitamins for use in the manufacture of pharmaceuticals; Vitreous carbon; Vitriol; Volatile alkali [ammonia] for industrial purposes; Vulcanisation accelerators; Vulcanisation accelerators [chemical preparation]; Vulcanising preparations; Vulcanization accelerators; Vulcanizing accelerators; Vulcanizing preparations; Wall size; Wall tile adhesives; Wall tiles (Adhesives for -); Wallpaper (Adhesives for -); Wallpaper paste; Wallpaper pastes; Wallpaper ***removing*** compositions; Wallpaper ***removing*** preparations; Waste treatment chemicals.Class 3 Abrasive bands; Abrasive boards for use on fingernails; Abrasive cloth; Abrasive compounds; Abrasive emery paper; Abrasive emery paper for use on fingernails; Abrasive granules; Abrasive paper; Abrasive paper for use on the fingernails; Abrasive paper [sandpaper]; Abrasive paste; Abrasive preparations; Abrasive preparations for polishing; Abrasive preparations for use on the body; Abrasive preparations for vehicle care; Abrasive rolls; Abrasive sand; Abrasive sanding sponges; Abrasive sheets; Abrasive strips; Abrasives; Acne cleansers, cosmetic; Adhesive removers; Adhesives for affixing artificial eyelashes; Adhesives for affixing artificial fingernails; Adhesives for affixing false eyebrows; Adhesives for affixing false eyelashes; Adhesives for affixing false hair; Adhesives for affixing false nails; Adhesives for artificial nails; Adhesives for cosmetic purposes; Adhesives for cosmetic use; Adhesives for false eyelashes, hair and nails; Adhesives for fixing false nails; After shave lotions; After sun creams; After sun moisturisers; Aftershave; After-shave; Aftershave balm; Aftershave balms; After-shave balms; Aftershave creams; After-shave creams; Aftershave emulsions; After-shave emulsions; After-shave gel; Aftershave gels; Aftershave lotions; After-shave lotions; Aftershave milk; Aftershave moisturising cream; Aftershave preparations; After-shave preparations; Aftershaves; After-sun creams; After-sun lotions; After-sun lotions [for cosmetic use]; After-sun milk; After-sun milk [cosmetics]; After-sun milk for cosmetic use; After-sun milks; After-sun milks [cosmetics]; After-sun oils [cosmetics]; After-sun preparations for cosmetic use; Age retardant gel; Age retardant lotion; Age spot reducing creams; Agents for ***removing*** wax; Air (Canned pressurized -) for cleaning and dusting purposes; Air fragrance preparations; Air fragrance reed diffusers; Air fragrancing preparations; Alcoholic solvents being cleaning preparations; Alkali (Volatile -) [ammonia] detergent; All-purpose cotton buds for personal use; Almond milk for cosmetic purposes; Almond oil; Almond soap; Almond soaps; Aloe soap; Aloe soaps; Aloe vera gel for cosmetic purposes; Aloe vera preparations for cosmetic purposes; Alum blocks for shaving; Alum stones [astringents]; Amber [perfume]; Ambergris; Amla oil for cosmetic purposes; Ammonia for cleaning purposes; Ammonia [volatile alkali] [detergent]; Ammonia [volatile alkali] detergent; Animal grooming preparations; Anti-ageing creams; Anti-ageing creams [for cosmetic use]; Anti-ageing moisturiser; Anti-ageing serum; Anti-ageing serums for cosmetic purposes; Anti-aging cream; Anti-aging creams; Abrasive bands; Abrasive boards for use on fingernails; Abrasive cloth; Abrasive compounds; Abrasive emery paper; Abrasive emery paper for use on fingernails; Abrasive granules; Abrasive paper; Abrasive paper for use on the fingernails; Abrasive paper [sandpaper]; Abrasive paste; Abrasive preparations; Abrasive preparations for polishing; Abrasive preparations for use on the body; Abrasive preparations for vehicle care; Abrasive rolls; Abrasive sand; Abrasive sanding sponges; Abrasive sheets; Abrasive strips; Abrasives; Acne cleansers, cosmetic; Adhesive removers; Adhesives for affixing artificial eyelashes; Adhesives for affixing artificial fingernails; Adhesives for affixing false eyebrows; Adhesives for affixing false eyelashes; Adhesives for affixing false hair; Adhesives for affixing false nails; Adhesives for artificial nails; Adhesives for cosmetic purposes; Adhesives for cosmetic use; Adhesives for false eyelashes, hair and nails; Adhesives for fixing false nails; After shave lotions; After sun creams; After sun moisturisers; Aftershave; After-shave; Aftershave balm; Aftershave balms; After-shave balms; Aftershave creams; After-shave creams; Aftershave emulsions; After-shave emulsions; After-shave gel; Aftershave gels; Aftershave lotions; After-shave lotions; Aftershave milk; Aftershave moisturising cream; Aftershave preparations; After-shave preparations; Aftershaves; After-sun creams; After-sun lotions; After-sun lotions [for cosmetic use]; After-sun milk; After-sun milk [cosmetics]; After-sun milk for cosmetic use; After-sun milks; After-sun milks [cosmetics]; After-sun oils [cosmetics]; After-sun preparations for cosmetic use; Age retardant gel; Age retardant lotion; Age spot reducing creams; Agents for ***removing*** wax; Air (Canned pressurized -) for cleaning and dusting purposes; Air fragrance preparations; Air fragrance reed diffusers; Air fragrancing preparations; Alcoholic solvents being cleaning preparations; Alkali (Volatile -) [ammonia] detergent; All-purpose cotton buds for personal use; Almond milk for cosmetic purposes; Almond oil; Almond soap; Almond soaps; Aloe soap; Aloe soaps; Aloe vera gel for cosmetic purposes; Aloe vera preparations for cosmetic purposes; Alum blocks for shaving; Alum stones [astringents]; Amber [perfume]; Ambergris; Amla oil for cosmetic purposes; Ammonia for cleaning purposes; Ammonia [volatile alkali] [detergent]; Ammonia [volatile alkali] detergent; Animal grooming preparations; Anti-ageing creams; Anti-ageing creams [for cosmetic use]; Anti-ageing moisturiser; Anti-ageing serum; Anti-ageing serums for cosmetic purposes; Anti-aging cream; Anti-aging creams; Anti-aging creams [for cosmetic use]; Anti-aging moisturizers; Anti-aging moisturizers used as cosmetics; Anti-aging serum for cosmetic use; Anti-aging skincare preparations; Anti-freckle creams; Anti-perspirant deodorants; Anti-perspirant preparations; Antiperspirant soap; Antiperspirants; Anti-perspirants; Antiperspirants for personal use; Anti-perspirants for personal use; Anti-perspirants in the form of sprays; Antiperspirants [toiletries]; Anti-smear agents for cleaning purposes; Antistatic drier sheets; Antistatic dryer sheets; Anti-static dryer sheets; Antistatic preparations for household purposes; Antistatic sprays for clothing; Anti-static sprays for clothing; Anti-wrinkle cream; Anti-wrinkle cream [for cosmetic use]; Anti-wrinkle creams; Anti-wrinkle creams [for cosmetic use]; Aromatherapy creams; Aromatherapy lotions; Aromatherapy oil; Aromatherapy oils; Aromatherapy pillows comprising potpourri in fabric containers; Aromatherapy preparations; Aromatic essential oils; Aromatic oils; Aromatic oils for the bath; Aromatic plant extracts; Aromatic potpourris; Aromatics; Aromatics [essential oils]; Aromatics for fragrances; Aromatics for household purposes; Aromatics for perfumes; Artificial eyelashes; Artificial fingernails; Artificial fingernails of precious metal; Artificial nails; Artificial nails for cosmetic purposes; Artificial pumice stone; Artificial tanning preparations; Ash (Volcanic -) for cleaning; Astringents for cosmetic purposes; Automobile cleaners; Automobile cleaning preparations; Automobile polish; Automobile polishes; Automobile wax; Automotive cleaning preparations; Auto-tanning creams; Babies' creams [non-medicated]; Baby bath mousse; Baby body milks; Baby bottom balm; Baby bubble bath; Baby care products (Non-medicated -); Baby hair conditioner; Baby lotion; Baby lotions; Baby oil; Baby oils; Baby powder; Baby powders; Baby shampoo; Baby shampoo mousse; Baby suncreams; Baby wipes; Baby wipes impregnated with cleaning preparations; Badian essence; Balms (Non-medicated -); Balms other than for medical purposes; Balms, other than for medical purposes; Bar soap; Bark (Quillaia -) for washing; Barrier creams; Bars of soap; Base cream; Bases for flower perfumes; Basma [cosmetic dye]; Bath and shower foam; Bath and shower gel; Bath and shower gels; Bath and shower gels, not for medical purposes; Bath and shower oils [non-medicated]; Bath and shower preparations; Bath beads; Bath bombs; Bath concentrates (Non-medicated -); Bath cream; Bath creams; Bath creams (Non-medicated -); Bath crystals; Bath crystals (Non-medicated -); Bath crystals, not for medical use; Bath flakes; Bath foam; Bath foams; Bath foams (Non-medicated -); Bath gel; Bath gels; Bath gels (Non-medicated -); Bath herbs; Bath lotion; Bath lotions (Non-medicated -); Bath milk; Bath oil; Bath oil, not for medical use; Bath oils; Bath oils for cosmetic purposes; Bath oils (Non-medicated -); Bath pearls; Bath pearls (Non-medicated -); Bath powder; Bath powder [cosmetics]; Bath powders (Non-medicated -); Bath preparations; Bath preparations for animals; Bath preparations (Non-medicated -); Bath preparations, not for medical purposes; Bath preparations, not medicated; Bath salts; Bath salts, not for medical purposes; Bath soak for cosmetic use; Bath soap; Bath soaps; Bathing lotions; Baths (Cosmetic preparations for -); Bay rums; Bay rums for cosmetic use; Beard balm; Beard care preparations; Beard dyes; Beard oil; Beauty balm creams; Beauty care cosmetics; Beauty care preparations; Beauty creams; Beauty creams for body care; Beauty gels; Beauty lotions; Beauty masks; Beauty masks for hands; Beauty milk; Beauty milks; Beauty preparations for the hair; Beauty serums; Beauty serums with anti-ageing properties; Beauty soap; Beauty tonics for application to the body; Beauty tonics for application to the face; Bergamot oil; Beverages (Flavorings [flavourings] for -) essential oils; Biological laundry detergents; Bleach; Bleaches for use on the hair; Bleaching (Leather -) preparations; Bleaching preparations; Bleaching preparations and other substances for laundry use; Bleaching preparations [decolorants] for cosmetic purposes; Bleaching preparations [decolorants] for household purposes; Bleaching preparations for cosmetic purposes; Bleaching preparations for household use; Bleaching preparations for laundry use; Bleaching preparations for the hair; Bleaching preparations [laundry]; Bleaching salts; Bleaching soda; Blemish balm creams; Blended essential oils; Blueing for laundry; Blueing (Laundry -); Bluing for laundry; Blush; Blush pencils; Blusher; Blushers; Body and facial butters; Body and facial creams [cosmetics]; Body and facial gels [cosmetics]; Body and facial oils; Body art stickers; Body butter; Body butters; Body care cosmetics; Body cleaning and beauty care preparations; Body cleansing foams; Body cream; Body cream for cosmetic use; Body cream soap; Body creams; Body creams [cosmetics]; Body deodorants; Body deodorants [perfumery]; Body emulsions; Body emulsions for cosmetic use; Body gels; Body gels [cosmetics]; Body glitters; Body lotion; Body lotions; Body mask cream; Body mask lotion; Body mask powder; Body masks; Body massage oils; Body milk; Body milks; Body mist; Body moisturisers; Body oil; Body oil [for cosmetic use]; Body oil spray; Body oils; Body oils [for cosmetic use]; Body paint (cosmetic); Body paint for cosmetic purposes; Body polish; Body powder; Body powder (Non-medicated -); Body scrub; Body scrubs; Body scrubs [cosmetic]; Body shampoos; Body soap; Body soufflé; Body splash; Body spray; Body sprays; Body sprays [non-medicated]; Body talcum powder; Body wash; Body washes; Boot cream; Boot polish; Boot wax; Breath freshener; Breath fresheners; Breath fresheners for animals; Breath fresheners in the form of chew sticks made from birchwood extracts; Breath fresheners, not for medical use; Breath freshening liquid; Breath freshening preparations; Breath freshening preparations for personal hygiene; Breath freshening sprays; Breath freshening strips; Breath freshing sprays; Brilliantine; Bubble bath; Bubble bath [for cosmetic use]; Bubble bath preparations; Bubble bath preparations [for cosmetic use]; Bubble baths; Buffing compounds; Cake flavorings [essential oils]; Cake flavourings [essential oils]; Cakes of soap; Cakes of soap for body washing; Cakes of soap for household cleaning purposes; Cakes of toilet soap; Camouflage cream; Canned pressurized air for cleaning and dusting purposes; Canned pressurized air for dusting and cleaning purposes; Car cleaning preparations; Car polish; Car shampoos; Car wax; Car wax with a paint sealant; Carbides of metal [abrasives]; Carbolic soaps; Carnauba wax for automotive use; Carpet cleaners; Carpet cleaning preparations; Carpet freshening preparations; Carpet shampoo; Castor oil for cosmetic purposes; Caustic cleaning agents; Caustic soda; Cedarwood (Essential oils of -); Cedarwood perfumery; Chalk (Cleaning -); Chalk for cosmetic use; Chalk for make-up; Cheek colors; Cheek colours; Cheek rouges; Chemical cleaning preparations for household purposes; Chemical laundry preparations; Chewable dentifrices; Chewable tooth cleaning preparations; Chrome cleaners; Chrome polish; Citron [Essential oils of -]; Citronella oil for cosmetic use; Clay skin masks; Cleaner for cosmetic brushes; Cleaners for litter trays; Cleaning agents for deep freezers; Cleaning agents for glass; Cleaning agents for household purposes; Cleaning agents for metal; Cleaning agents for stone; Cleaning agents for the hands; Cleaning and fragrancing preparations; Cleaning and shining preparations for plant leaves; Cleaning chalk; Cleaning compositions for spot ***removal***; Cleaning dentures (Preparations for -); Cleaning fluid for typewriter type; Cleaning fluids; Cleaning fluids for camera lenses; Cleaning foam; Cleaning masks for the face; Cleaning pads impregnated with cosmetics; Cleaning preparations; Cleaning preparations for animal cages; Cleaning preparations for automobiles; Cleaning preparations for cleansing drains; Cleaning preparations for fabrics; Cleaning preparations for household purposes; Cleaning preparations for leather; Cleaning preparations for personal use; Cleaning preparations for plant leaves; Cleaning preparations for the teeth; Cleaning preparations for use in livestock farming; Cleaning preparations for use on masonry; Cleaning preparations for use on tiles; Cleaning preparations for use on vehicles; Cleaning preparations impregnated into pads; Cleaning preparations impregnated into tissues; Cleaning preparations in the form of foams; Cleaning solutions for dental ultrasonic sterilization apparatus; Cleaning sprays; Cleaning substances for household use; Cleansers for household purposes; Cleansers for intimate personal hygiene purposes, non medicated; Cleansing balm; Cleansing cream; Cleansing creams; Cleansing creams [cosmetic]; Cleansing foam; Cleansing gels; Cleansing lotions; Cleansing masks; Cleansing milk; Cleansing milk for cosmetic purposes; Cleansing milk for toilet purposes; Cleansing milks for skin care; Cleansing mousse; Cleansing oil; Cleansing products for the eyes; Cloths impregnated with a detergent for cleaning; Cloths impregnated with a detergent for cleaning camera lenses; Cloths impregnated with a skin cleanser; Cloths impregnated with polishing preparations for cleaning; Cobblers' wax; Cocoa butter for cosmetic purposes; Coconut oil for cosmetic purposes; Cold cream; Cold cream, other than for medical use; Cold creams; Cold creams for cosmetic use; Cold waving solutions; Collagen for cosmetic purposes; Collagen preparations for cosmetic application; Collagen preparations for cosmetic purposes; Cologne; Cologne impregnated disposable wipes; Cologne water; Colognes; Color- [colour-] brightening chemicals for household purposes [laundry]; Color run prevention laundry sheets; Colorants for toilet purposes; Color-brightening chemicals for household purposes [laundry]; Coloring preparations for cosmetic purposes; Color-***removing*** preparations; Color-***removing*** preparations for hair; Colour cosmetics; Colour cosmetics for children; Colour cosmetics for the eyes; Colour cosmetics for the skin; Colour removers for the hair; Colour run prevention laundry sheets; Colour-brightening chemicals for household purposes [laundry]; Colouring lotions for the hair; Colouring preparations for cosmetic purposes; Colour-***removing*** preparations; Combing oil; Commercial laundry detergents; Common toilet water; Compacts containing make-up; Compounds for skin care after exposure to the suns rays; Concealers; Concealers for lines and wrinkles; Concealers for spots and blemishes; Conditioners for treating the hair; Conditioners for use on the hair; Conditioners in the form of sprays for the scalp; Conditioning balsam; Conditioning creams; Conditioning preparations for the hair; Conditioning sprays for animals; Corundum [abrasive]; Cosmetic bath salts; Cosmetic body mud; Cosmetic body scrubs; Cosmetic breast firming preparations; Cosmetic cotton wool; Cosmetic creams; Cosmetic creams and lotions; Cosmetic creams for dry skin; Cosmetic creams for firming skin around eyes; Cosmetic creams for skin care; Cosmetic creams for the skin; Cosmetic dyes; Cosmetic eye gels; Cosmetic eye pencils; Cosmetic face powders; Cosmetic facial lotions; Cosmetic facial masks; Cosmetic facial packs; Cosmetic foams containing sunscreens; Cosmetic hair care preparations; Cosmetic hair dressing preparations; Cosmetic hair lotions; Cosmetic hair regrowth inhibiting preparations; Cosmetic hand creams; Cosmetic kits; Cosmetic masks; Cosmetic massage creams; Cosmetic moisturisers; Cosmetic mud masks; Cosmetic nail care preparations; Cosmetic nail preparations; Cosmetic nourishing creams; Cosmetic oils; Cosmetic oils for the epidermis; Cosmetic paste for application to the face to counteract glare; Cosmetic pencils; Cosmetic pencils for cheeks; Cosmetic powder; Cosmetic preparations; Cosmetic preparations against sunburn; Cosmetic preparations for bath and shower; Cosmetic preparations for baths; Cosmetic preparations for body care; Cosmetic preparations for dry skin during pregnancy; Cosmetic preparations for eye lashes; Cosmetic preparations for eyelashes; Cosmetic preparations for nail drying; Cosmetic preparations for protecting the skin from the sun's rays; Cosmetic preparations for skin care; Cosmetic preparations for skin firming; Cosmetic preparations for skin renewal; Cosmetic preparations for slimming purposes; Cosmetic preparations for the care of mouth and teeth; Cosmetic preparations for the hair and scalp; Cosmetic preparations for use as aids to slimming; Cosmetic products for the shower; Cosmetic products in the form of aerosols for skin care; Cosmetic products in the form of aerosols for skincare; Cosmetic rouges; Cosmetic skin enhancers; Cosmetic skin fresheners; Cosmetic soap; Cosmetic soaps; Cosmetic sun milk lotions; Cosmetic sun oils; Cosmetic sun-protecting preparations; Cosmetic sunscreen preparations; Cosmetic suntan lotions; Cosmetic suntan preparations; Cosmetic sun-tanning preparations; Cosmetic tanning preparations; Cosmetic white face powder; Cosmetic-impregnated tissues; Cosmetics; Cosmetics all for sale in kit form; Cosmetics and cosmetic preparations; Cosmetics containing hyaluronic acid; Cosmetics containing keratin; Cosmetics containing panthenol; Cosmetics for animals; Cosmetics for children; Cosmetics for eye-brows; Cosmetics for eye-lashes; Cosmetics for personal use; Cosmetics for protecting the skin from sunburn; Cosmetics for suntanning; Cosmetics for the treatment of dry skin; Cosmetics for the use on the hair; Cosmetics for use in the treatment of wrinkled skin; Cosmetics for use on the skin; Cosmetics in the form of creams; Cosmetics in the form of eye shadow; Cosmetics in the form of gels; Cosmetics in the form of lotions; Cosmetics in the form of milks; Cosmetics in the form of oils; Cosmetics in the form of powders; Cosmetics in the form of rouge; Cosmetics preparations; Cotton balls for cosmetic purposes; Cotton buds for cosmetic purposes; Cotton for cosmetic purposes; Cotton puffs for cosmetic purposes; Cotton puffs impregnated with make-up ***removing*** preparations; Cotton sticks for cosmetic purposes; Cotton swabs for cosmetic purposes; Cotton wool balls for cosmetic use; Cotton wool buds for cosmetic use; Cotton wool for cosmetic purposes; Cotton wool impregnated with make-up ***removing*** preparations; Cotton wool in the form of wipes for cosmetic use; Cover sticks; Cream cleaners (Non-medicated -); Cream for whitening the skin; Cream foundation; Cream soaps; Creams (Cosmetic -); Creams for cellulite reduction; Creams for firming the skin; Creams for fixing hair; Creams for leather; Creams for tanning the skin; Creams for the skin; Creams (Non-medicated -) for the body; Creams (Non-medicated -) for the eyes; Creams (Skin whitening -); Creams (Soap -) for use in washing; Creamy face powder; Creamy foundation; Creamy rouge; Creamy rouges; Cushions filled with fragrant substances; Cushions filled with perfumed substances; Cushions impregnated with fragrant substances; Cushions impregnated with perfumed substances; Cuticle conditioners; Cuticle cream; Cuticle oil; Cuticle oils; Cuticle removers; Cuticle ***removing*** preparations; Cuticle softeners; Dandruff shampoo; Dandruff shampoos, not for medical purposes; Day cream; Day creams; Day lotion; Decalcomanias for fingernails; Decorative cosmetics; Decorative transfers for cosmetic purposes; Degreasers other than for use in manufacturing processes; Degreasers, other than for use in manufacturing processes; Degreasing preparations for engines; Degreasing preparations for household purposes; De-greasing preparations for household purposes; Degreasing preparations with a solvent base; Degreasing solvents, other than for use in manufacturing processes; Degreasing sprays; Dental bleaching gel; Dental bleaching gels; Dental care preparations for animals; Dental polish; Dental rinses for non-medical purposes; Dental rinses, non medicated; Dentifrice; Dentifrice powder; Dentifrices; Dentifrices and mouthwashes; Dentifrices in the form of chewing gum; Dentifrices in the form of solid tablets; Denture polishes; Dentures (Preparations for cleaning -); Deodorant for personal use; Deodorant preparations for personal use; Deodorant soap; Deodorants and antiperspirants; Deodorants for animals; Deodorants for body care; Deodorants for human beings; Deodorants for human beings or for animals; Deodorants for personal use; Deodorants, for personal use in the form of sticks; Deodorants for personal use [perfumery]; Deodorants for pets; Deodorants for the feet; Depilatories; Depilatory creams; Depilatory lotions; Depilatory preparations; Depilatory wax; Depilatory waxes; Dermatological creams [other than medicated]; Descalants for household use; Descaling preparations for household purposes; Destainers; Detanglers; Detergent compositions for cleaning golf clubs; Detergent compositions for cleaning shoes; Detergent soap; Detergent strengtheners; Detergents; Detergents for automobiles; Detergents for household use; Detergents for machine dishwashing; Detergents other than for use in manufacturing operations and for medical purposes; Detergents, other than for use in manufacturing operations and for medical purposes; Detergents prepared from petroleum; Dewaxing preparations; Dhoop; Diamantine [abrasive]; Disclosing tablets for personal use in indicating tartar on the teeth; Dishwasher detergents; Dishwasher detergents in gel form; Dishwasher powder; Dishwasher rinsing agents; Dishwasher tablets; Dishwashing detergents; Dishwashing liquid; Dishwashing preparations; Disposable wipes impregnated with cleansing compounds for use on the face; Distilled oils for beauty care; Double eyelid tapes; Douching preparations for personal sanitary or deodorant purposes [toiletries]; Drain and sink unblocking preparations; Drain cleaning preparations; Dry cleaning fluids; Dry cleaning preparations; Dry shampoos; Dry-cleaning preparations; Drying agents for dishwashing machines; Dusting powder; Dusting powder [for toilet use]; Dyes (Cosmetic -); Dyes for the hair; Eau de cologne; Eau de Cologne; Eau de cologne [cologne water]; Eau de colognes; Eau de parfum; Eau de toilette; Eau-de-cologne; Eau-de-toilette; Eaux de cologne; Eaux de Cologne; Eaux de toilette; Emery; Emery cloth; Emery paper; Emollient preparations [cosmetics]; Emollient shampoos; Emollients; Emulsified essential oils; Emulsifying solvent cleaners; Epilating waxes; Essences (Ethereal -); Essences for skin care; Essential oils; Essential oils and aromatic extracts; Essential oils as fragrances for laundry use; Essential oils as perfume for laundry purposes; Essential oils for aromatherapy; Essential oils for aromatherapy use; Essential oils for cosmetic purposes; Essential oils for food flavorings; Essential oils for household purposes; Essential oils for household use; Essential oils for industrial use; Essential oils for personal use; Essential oils for soothing the nerves; Essential oils for the care of the skin; Essential oils for use in air fresheners; Essential oils for use in manufacturing processes; Essential oils for use in the manufacture of scented products; Essential oils of cedarwood; Essential oils of citron; Essential oils of lemon; Essential oils of sandalwood; Essential vegetable oils; Ethereal essences; Ethereal essences and oils; Ethereal oils; Etheric oils; Eucalyptus oil for cosmetic use; Exfoliant creams; Exfoliants; Exfoliants for the care of the skin; Exfoliants for the cleansing of the skin; Exfoliating body scrub; Exfoliating creams; Exfoliating scrubs for cosmetic purposes; Exfoliating scrubs for the body; Exfoliating scrubs for the face; Exfoliating scrubs for the feet; Exfoliating scrubs for the hands; Extracts of flowers; Extracts of flowers being perfumes; Extracts of flowers [perfumes]; Extracts of perfumes; Eye brightening correctors; Eye care products, non-medicated; Eye compresses for cosmetic purposes; Eye concealers; Eye cosmetics; Eye cream; Eye creams; Eye gel; Eye gels; Eye liner; Eye lotions; Eye make up remover; Eye makeup; Eye make-up; Eye makeup remover; Eye make-up removers; Eye pencils; Eye shadow; Eye shadows; Eye sticks; Eye stylers; Eye wrinkle lotions; Eyebrow colors; Eyebrow colors in the form of pencils and powders; Eyebrow cosmetics; Eyebrow gel; Eyebrow mascara; Eyebrow pencils; Eyebrow powder; Eyebrows [false]; Eyeglass lens cleaning solutions; Eyeglass wipes impregnated with a detergent; Eyelash dye; Eyelash tint; Eyelashes; Eyelashes (Adhesives for affixing false -); Eyelashes (Cosmetic preparations for -); Eyelashes (False -); Eyelid doubling makeup; Eyelid pencils; Eyelid shadow; Eyeliner; Eyeliner pencils; Eyeliners; Eyes make-up; Eyes pencils; Eyeshadow; Eye-shadow; Eyeshadow palettes; Eyeshadows; Eye-washes, not for medical purposes; Fabric brighteners; Fabric conditioners; Fabric conditioning preparations; Fabric softener; Fabric softener for laundry; Fabric softener for laundry use; Fabric softeners; Fabric softeners for laundry; Fabric softeners for laundry use; Face and body creams; Face and body glitter; Face and body lotions; Face and body masks; Face blusher; Face cream (Non-medicated -); Face creams; Face creams for cosmetic use; Face dusting powders; Face gels; Face glitter; Face masks; Face oils; Face packs; Face packs [cosmetic]; Face paint; Face paints; Face powder; Face powder [for cosmetic use]; Face powder in the form of powder-coated paper; Face powder (Non-medicated -); Face powders; Face powders [for cosmetic use]; Face scrub; Face scrubs (Non-medicated -); Face wash; Face wash [cosmetic]; Face-powder on paper; Facial beauty masks; Facial butters; Facial care preparations; Facial cleansers; Facial cleansers [cosmetic]; Facial cleansing grains; Facial cleansing milk; Facial concealer; Facial conditioning preparations; Facial cream; Facial cream [for cosmetic use]; Facial creams; Facial creams [cosmetic]; Facial creams [cosmetics]; Facial creams [for cosmetic use]; Facial emulsions; Facial gels [cosmetics]; Facial lotion; Facial lotions; Facial lotions [cosmetic]; Facial makeup; Facial masks; Facial masks [cosmetic]; Facial massage oils; Facial moisturisers [cosmetic]; Facial moisturizers; Facial oil; Facial oils; Facial packs; Facial packs [cosmetic]; Facial packs for toilet purposes; Facial peel preparations for cosmetic use; Facial preparations; Facial scrubs; Facial scrubs [cosmetic]; Facial serum for cosmetic use; Facial soaps; Facial toner; Facial toners [cosmetic]; Facial wash; Facial washes; Facial washes [cosmetic]; Facial wipes impregnated with cosmetics; Fair complexion cream; Fair complexion creams; Fake blood; False eyelashes; False fingernails; False hair (Adhesives for affixing -); False nails; False toenails; Feminine deodorant sprays; Feminine hygiene cleansing towelettes; Fingernail decals; Fingernail overlay material; Fingernail sculpturing overlays; Fingernail tips; Flavorings [flavourings] for beverages [essential oils]; Flavorings for beverages [essential oils]; Flavour enhancers for food [essential oils]; Flavourings for beverages [essential oils]; Flavourings for cakes [essential oils]; Flexible abrasives; Floor buffing compound; Floor buffing compounds; Floor cleaning preparations; Floor finish removers; Floor polish; Floor polishes; Floor shining compositions; Floor stripping preparations; Floor treatment compositions; Floor wax; Floor wax remover; Floor wax removers; Floor wax removers [scouring preparations]; Floors (Non-slipping liquids for -); Floors (Non-slipping wax for -); Floral water; Flower perfumes (Bases for -); Flowers (Extracts of -) [perfumes]; Fluid creams [cosmetics]; Foam bath; Foam bath preparations; Foam cleaning preparations; Foam detergents; Foam for use in shaving; Foaming bath gels; Foaming bath liquids; Foams for the bath; Foams for use in shaving; Foams for use in the shower; Food flavoring, being essential oils; Food flavorings [essential oils]; Food flavorings prepared from essential oils; Food flavourings [essential oils]; Foot balms (Non-medicated -); Foot care preparations (Non-medicated -); Foot deodorant spray; Foot masks for skin care; Foot perspiration (Soap for -); Foot powder [non-medicated]; Foot scrubs; Foot smoothing stones; Foundation; Foundation make-up; Foundations; Fragrance emitting wicks for room fragrance; Fragrance for household purposes; Fragrance preparations; Fragrance refills for non-electric room fragrance dispensers; Fragrance sachets; Fragrance sachets for eye pillows; Fragrances; Fragrances for automobiles; Fragrances for personal use; Fragrant sachets; Fruit and vegetable wash; Fumigating incenses (Kunko); Fumigation preparations [perfumes]; Functional cosmetics; Furbishing preparations; Furniture cleaner; Furniture polish; Furniture polishes; Gargles, not for medical purposes; Gaultheria oil; Gel eye masks; Gel eye patches for cosmetic purposes; Gel nail removers; Gel sprays being styling aids; Gels (Dental bleaching -); Gels for cosmetic purposes; Gels for cosmetic use; Gels for fixing hair; Gels for use on the hair; General purpose scouring powder; Geraniol; Geraniol for cosmetic purposes; Geraniol for cosmetic use; Geraniol for fragrancing; Geraniol fragrancing compounds; Glass cleaners; Glass cleaning preparations; Glass cloth; Glass cloth [abrasive cloth]; Glass paper; Glaze (Laundry -); Glitter for cosmetic purposes; Glitter in spray form for use as a cosmetics; Glue for strengthening nails; Glue removers; Graffiti ***removing*** substances; Granular corundum; Granulated soap; Granulated soaps; Greasepaint; Grease-***removing*** preparations; Greases for cosmetic purposes; Grinding foils; Grinding preparations; Grinding preparations for semiconductors; Hair and body wash; Hair balm; Hair balms; Hair balsam; Hair bleach; Hair bleaches; Hair bleaching preparations; Hair care agents; Hair care creams; Hair care creams [for cosmetic use]; Hair care lotions; Hair care lotions [for cosmetic use]; Hair care masks; Hair care preparations; Hair care preparations, not for medical purposes; Hair care serum; Hair care serums; Hair chalks; Hair cleaning preparations; Hair color; Hair color removers; Hair colorants; Hair coloring preparations; Hair colour removers; Hair colourants; Hair colouring; Hair colouring and dyes; Hair colouring preparations; Hair conditioner; Hair conditioner bars; Hair conditioners; Hair conditioners for babies; Hair cosmetics; Hair cream; Hair creams; Hair curling preparations; Hair decolorant preparations; Hair decolorants; Hair desiccating treatments for cosmetic use; Hair dressings for men; Hair dye; Hair dyeing preparations; Hair dyes; Hair emollients; Hair fixers; Hair fixing oil; Hair frosts; Hair gel; Hair gels; Hair glaze; Hair glazes; Hair grooming preparations; Hair lacquer; Hair lacquers; Hair lighteners; Hair liquid; Hair liquids; Hair lotion; Hair lotions; Hair mascara; Hair masks; Hair moisturisers; Hair moisturising conditioners; Hair moisturizers; Hair mousse; Hair mousses; Hair neutralizers; Hair nourishers; Hair oil; Hair oils; Hair permanent treatments; Hair permanent wave kit; Hair piece bonding glue; Hair pomades; Hair powder; Hair preparations and treatments; Hair preservation treatments for cosmetic use; Hair protection creams; Hair protection gels; Hair protection lotions; Hair protection mousse; Hair relaxers; Hair relaxing preparations; Hair ***removal*** and shaving preparations; Hair ***removal*** preparations; Hair ***removing*** cream; Hair rinses; Hair rinses [for cosmetic use]; Hair rinses [shampoo-conditioners]; Hair serums; Hair shampoo; Hair shampoos; Hair spray; Hair sprays; Hair straightening preparations; Hair strengthening treatment lotions; Hair styling gel; Hair styling gels; Hair styling lotions; Hair styling preparations; Hair styling spray; Hair styling waxes; Hair texturizers; Hair tinting preparations; Hair tonic; Hair tonic [for cosmetic use]; Hair tonic [non-medicated]; Hair tonics; Hair tonics [for cosmetic use]; Hair treatment preparations; Hair waving preparations; Hair wax; Hairdressing preparations; Hairspray; Hairstyling masks; Hairstyling serums; Hair-washing powder; Hair-waving preparations; Hand and body butter; Hand cleaner; Hand cleaners [hand cleaning preparations]; Hand cleaning preparations; Hand cleansers; Hand cream; Hand creams; Hand gels; Hand lotion (Non-medicated -); Hand lotions; Hand masks for skin care; Hand milks; Hand oils (Non-medicated -); Hand powders; Hand scrubs; Hand soap; Hand soaps; Hand washes; Handmade soap; Helichrysum [essential oils]; Helichrysum (essential oils); Heliotropin; Heliotropin for cosmetic use; Heliotropin fragrancing compounds; Heliotropine; Henna; Henna [cosmetic dye]; Henna for cosmetic purposes; Henna powders; Herbal extracts for cosmetic purposes; Horse oil cream for skin care; Household bleach; Household cleaning substances; Household cleansers; Household detergents; Household fragrances; Humectant preparations [cosmetics]; Humectants; Hydrating creams for cosmetic use; Hydrating masks; Hydrogen peroxide for cosmetic purposes; Hydrogen peroxide for use on the hair; Hydrolyzed collagen for cosmetic purposes; Hypochloride (Potassium -); Impregnated cleaning pads impregnated with cosmetics; Impregnated cleaning pads impregnated with toilet preparations; Impregnated cloths for cosmetic use; Impregnated cloths for polishing; Impregnated paper tissues for cleaning dishware; Impregnated tissues for cleaning [non-medicated, for use on the person]; Incense; Incense cones; Incense sachets; Incense spray; Incense sticks; Industrial abrasives; Industrial soap; Ionone [perfumery]; Japanese hair fixing oil (bintsuke-abura); Jasmine oil; Javelle water; Jelly (Petroleum -) for cosmetic purposes; Jewellers' rouge; Joss sticks; Kettle cleaner; Kits (Cosmetic -); Lacquer for cosmetic purposes; Lacquer ***removing*** compositions; Lacquer-***removing*** preparations; Laundry additives; Laundry additives for water softening; Laundry balls containing laundry detergent; Laundry bleach; Laundry bleaching preparations; Laundry blue; Laundry blueing; Laundry detergents; Laundry detergents for household cleaning use; Laundry fabric conditioner; Laundry glaze; Laundry liquids; Laundry powder; Laundry preparations; Laundry preparations for attracting dirt; Laundry preparations for attracting dyes; Laundry sizing; Laundry soaking preparations; Laundry soap; Laundry soaps; Laundry starch; Laundry wax; Lavatory cleaning compositions; Lavender oil; Lavender oil for cosmetic use; Lavender water; Leather and shoe cleaning and polishing preparations; Leather bleaching preparations; Leather (Creams for -); Leather dressings; Leather polishes; Leather preservatives; Leather preservatives [polishes]; Leather preserving polishes; Leaves of plants (Preparations to make shiny the -); Lemon [Essential oils of -]; Lime removers; Linen (Sachets for perfuming -); Liners [cosmetics] for the eyes; Lint for cosmetic purposes; Lip balm; Lip balm [non-medicated]; Lip balms; Lip balms [non-medicated]; Lip care preparations; Lip coatings [cosmetic]; Lip coatings (Non-medicated -); Lip conditioners; Lip cosmetics; Lip cream; Lip gloss; Lip gloss palettes; Lip glosses; Lip liner; Lip liners; Lip makeup; Lip neutralizers; Lip pencils; Lip polisher; Lip pomades; Lip protectors [cosmetic]; Lip protectors (Non-medicated -); Lip rouge; Lip stains [cosmetics]; Lip stains for cosmetic purposes; Lip tints; Lipstick; Lipstick cases; Lipsticks; Liquid bath soap; Liquid bath soaps; Liquid dentifrice; Liquid dishwasher detergents; Liquid eyeliners; Liquid floor polishes; Liquid foundation; Liquid foundation (mizu-oshiroi); Liquid latex body paint for cosmetic purposes; Liquid laundry detergents; Liquid perfumes; Liquid rouge; Liquid rouges; Liquid soap; Liquid soap for dish washing; Liquid soap for laundry; Liquid soap used in foot bath; Liquid soap used in foot baths; Liquid soaps; Liquid soaps for hands and face; Liquid soaps for laundry; Liquids for floors (Non-slipping -); Litter tray cleaners incorporating a deodorizer; Long lash mascaras; Loofah soaps; Loose face powder; Lotions for beards; Lotions for cellulite reduction; Lotions for cosmetic purposes; Lotions for face and body care; Lotions for strengthening the nails; Lotions for the skin; Lotions (Tissues impregnated with cosmetic -); Make up foundations; Make up ***removing*** preparations; Makeup; Make-up; Make-up bases in the form of pastes; Make-up for compacts; Make-up for the face; Make-up for the face and body; Make-up foundation; Make-up foundations; Make-up kits; Make-up pads of cotton wool; Make-up pencils; Make-up powder; Make-up preparations; Make-up preparations for the face and body; Make-up primer; Make-up primers; Make-up remover; Make-up removers; Make-up ***removing*** creams; Make-up ***removing*** gels; Make-up ***removing*** lotions; Make-up ***removing*** milk; Make-up ***removing*** milks; Make-up ***removing*** preparations; Makeup setting sprays; Mascara; Mascaras; Mask pack for cosmetic purposes; Masks (Beauty -); Massage candles for cosmetic purposes; Massage creams, not medicated; Massage gels other than for medical purposes; Massage gels, other than for medical purposes; Massage oil; Massage oils; Massage oils and lotions; Massage oils, not medicated; Massage waxes; Metal polish; Metal polishes; Micellar water; Microdermabrasion polish; Milk (Cleansing -) for toilet purposes; Milk for cosmetic purposes; Milks [cosmetics]; Milky lotions for skin care; Mineral oils [cosmetic]; Mineral water sprays for cosmetic purposes; Mint essence [essential oil]; Mint for perfumery; Moist paper hand towels impregnated with a cosmetic lotion; Moist wipes for sanitary and cosmetic purposes; Moist wipes impregnated with a cosmetic lotion; Moistened tooth powder; Moisture body lotion; Moisturiser; Moisturisers; Moisturisers [cosmetics]; Moisturising body lotion [cosmetic]; Moisturising concentrates [cosmetic]; Moisturising creams; Moisturising creams, lotions and gels; Moisturising gels [cosmetic]; Moisturising preparations; Moisturising skin creams [cosmetic]; Moisturising skin lotions [cosmetic]; Moisturizers; Moisturizing body lotions; Moisturizing creams; Moisturizing milk; Moisturizing preparations for the skin; Mould ***removing*** preparations; Mousses being hair styling aids; Mousses [cosmetics]; Mousses [toiletries] for use in styling the hair; Moustache wax; Mouth [breath] fresheners, not for medical use; Mouth sprays, not for medical use; Mouth washes; Mouth washes, not for medical purposes; Mouthwash; Mouthwashes; Mouthwashes, not for medical purposes; Multifunctional cosmetics; Multifunctional makeup; Musk [natural]; Musk [perfumery]; Mustache wax; Nail art stickers; Nail base coat [cosmetics]; Nail buffing preparations; Nail care preparations; Nail conditioners; Nail cosmetics; Nail cream; Nail decolorants; Nail enamel; Nail enamel remover; Nail enamel removers; Nail enamels; Nail gel; Nail glitter; Nail hardeners; Nail hardeners [cosmetics]; Nail makeup; Nail paint [cosmetics]; Nail polish; Nail polish base coat; Nail polish pens; Nail polish remover; Nail polish remover pens; Nail polish removers; Nail polish removers [cosmetics]; Nail polish top coat; Nail polishing powder; Nail primer [cosmetics]; Nail repair preparations; Nail strengtheners; Nail tips; Nail tips [cosmetics]; Nail varnish; Nail varnish for cosmetic purposes; Nail varnish remover [cosmetics]; Nail varnish removers; Nail varnish ***removing*** preparations; Nail varnishes; Nail whiteners; Nail-polish removers; Nails (False -); Nappy cream [non-medicated]; Nasal cleaning preparations for personal sanitary purposes; Natural cosmetics; Natural essential oils; Natural floor polishes; Natural floor waxes; Natural makeup; Natural musk; Natural oils for cleaning purposes; Natural oils for cosmetic purposes; Natural oils for perfumes; Natural perfumery; Natural starches for laundry purposes; Neutralizers for permanent waving; Neutralizing hair preparations; Night cream; Night creams; Night creams [cosmetics]; Non medicated skin toners; Non-medicated antiperspirants; Non-medicated balm for hair; Non-medicated bath oils; Non-medicated bath preparations; Non-medicated bath salts; Non-medicated beauty preparations; Non-medicated body care preparations; Non-medicated body soaks; Non-medicated bubble bath preparations; Non-medicated cleansing creams; Non-medicated cosmetics; Non-medicated cosmetics and toiletry preparations; Non-medicated creams; Non-medicated dental rinse; Non-medicated dentifrices; Non-medicated diaper rash cream; Non-medicated douches; Non-medicated face care preparations; Non-medicated foot cream; Non-medicated foot lotions; Non-medicated foot soaks; Non-medicated hair lotions; Non-medicated hair shampoos; Non-medicated hair treatment preparations for cosmetic purposes; Non-medicated lip balms; Non-medicated lip care preparations; Non-medicated lotions; Non-medicated massage preparations; Non-medicated moisturisers; Non-medicated mouth rinse; Non-medicated mouth sprays; Non-medicated mouth washes; Non-medicated mouth washes for pets; Non-medicated mouthwashes; Non-medicated oils; Non-medicated pet shampoos; Non-medicated preparations for the relief of sunburn; Non-medicated scalp treatment cream; Non-medicated shampoos; Non-medicated shower oils; Non-medicated skin balms; Non-medicated skin care preparations; Non-medicated skin clarifying lotions; Non-medicated skin creams; Non-medicated skin lotions; Non-medicated skin serums; Non-medicated skincare preparations; Non-medicated soaps; Non-medicated stimulating lotions for the skin; Non-medicated sun care preparations; Non-medicated toilet preparations; Non-medicated toilet soaps; Non-medicated toiletries; Non-medicated toiletry preparations; Non-medicated toothpaste; Non-slipping liquids for floors; Non-slipping wax for floors; Nutritional creams (Non-medicated -); Odour fresheners for animals; Oil baths for hair care; Oil of turpentine for degreasing; Oils for cleaning purposes; Oils for cosmetic purposes; Oils for hair conditioning; Oils for moisturising the skin after sunbathing; Oils for perfumes and scents; Oils for the skin; Oils for toilet purposes; Oils for toiletry purposes; Ointments for cosmetic use; Oral hygiene preparations; Organic cosmetics; Organic makeup; Oven cleaners; Oven cleaners [preparations]; Oven cleaning preparations; Paint remover; Paint removers; Paint ***removing*** compositions; Paint ***removing*** preparations; Paint stripper; Paint strippers; Paint stripping preparations; Paper hand towels impregnated with cleaning agents; Paper hand towels impregnated with cosmetics; Paper soaps for personal uses; Parquet floor wax; Pastes for cleaning shoes; Pastes for razor strops; Patches containing sun screen and sun block for use on the skin; Pedicure preparations; Pencils (Cosmetic -); Pencils (Eyebrow -); Pencils for cosmetic purposes; Pencils for cosmetic use; Peppermint crude oil; Peppermint oil [perfumery]; Perfume; Perfume oils; Perfume oils for the manufacture of cosmetic preparations; Perfume water; Perfumed body lotions [toilet preparations]; Perfumed creams; Perfumed lotions [toilet preparations]; Perfumed oils for skin care; Perfumed potpourris; Perfumed powder; Perfumed powder [for cosmetic use]; Perfumed powders; Perfumed powders [for cosmetic use]; Perfumed sachets; Perfumed soap; Perfumed soaps; Perfumed tissues; Perfumed toilet waters; Perfumed water; Perfumeries; Perfumery; Perfumery and fragrances; Perfumery, essential oils; Perfumery products; Perfumes; Perfumes for cardboard; Perfumes for ceramics; Perfumes for industrial purposes; Perfumes in solid form; Perfuming preparations for the atmosphere; Perfuming sachets; Permanent wave preparations; Permanent waving and curling preparations; Permanent waving lotions; Permanent waving (Neutralizers for -); Permanent waving preparations; Personal deodorants; Pet odor removers; Pet shampoos; Pet stain removers; Petroleum jelly for cosmetic purposes; Pets (Shampoos for -); Phytocosmetic preparations; Pine oil; Pine oils for cleaning floors; Piperonal for cosmetic use; Piperonal fragrancing compounds; Plants (Preparations to make shiny the leaves of -); Polish; Polish for furniture and flooring; Polish for musical instruments; Polishes; Polishes (Denture -); Polishes for guitars; Polishing creams; Polishing paper; Polishing powders; Polishing preparations; Polishing rouge; Polishing stones; Polishing wax; Pomades for cosmetic purposes; Pomanders; Pomanders [aromatic substances]; Pores tightening mask packs used as cosmetics; Pot pourri; Potassium hypochloride; Potpourri; Pot-pourri; Potpourri sachets for incorporating in aromatherapy pillows; Potpourris; Potpourris [fragrances]; Powder compact refills [cosmetics]; Powder compacts [cosmetics]; Powder for forming sculpted finger nail tips; Powder for laundry purposes; Powder for make-up; Powder laundry detergents; Powder (Make-up -); Pre-moistened cosmetic tissues; Pre-moistened cosmetic towelettes; Pre-moistened cosmetic wipes; Pre-moistened towelettes impregnated with a detergent for cleaning; Pre-moistened towelettes impregnated with dishwashing detergent; Preparation for cleaning dentures; Preparations and products for fur care; Preparations for cleaning dentures; Preparations for cleaning teeth; Preparations for cleaning the teeth; Preparations for permanent hair waves; Preparations for protecting coloured hair; Preparations for protecting the hair from the sun; Preparations for reinforcing the nails; Preparations for ***removing*** gel nails; Preparations for setting hair; Preparations for soaking laundry; Preparations for stripping wax from floors; Preparations for the bath; Preparations for the bath and shower; Preparations for the care of the body; Preparations for the conditioning of the body; Preparations for the shower; Preparations for unblocking drain pipes; Preparations for unblocking sinks; Preparations for use after shaving; Preparations for use before shaving; Preparations for use in the bath or shower; Preparations to make shiny the leaves of plants; Preparations to make the leaves of plants shiny; Prepared wax for polishing; Preservative creams for leather; Preservatives for leather; Preservatives for leather [polishes]; Pre-shave creams; Pre-shave foams; Pre-shave gels; Pre-shave preparations; Pre-shaving lotions; Pre-shaving preparations; Pressed face powder; Procollagen for cosmetic purposes; Pro-collagen for cosmetic purposes; Products for protecting coloured hair; Pumice stone; Pumice stones for personal use; Pumice stones for use on the body; Quillaia bark for washing; Razor strops (Pastes for -); Recovery creams for cosmetic use; Reed diffusers; Refill packs for body cleansing product dispensers; Refill packs for cosmetics dispensers; Refill packs for hair fixer dispensers; Refill packs for hand soap dispensers; Refill packs for shampoo dispensers; Refill packs for shower gel dispensers; Refill packs for skin care cream dispensers; Refills for electric room fragrance dispensers; Removable tattoos for cosmetic purposes; Removers (Floor wax -) [scouring preparations]; Retinol cream for cosmetic purposes; Rinse aids; Rinsing agents for laundry; Rinsing aids for use when washing clothes; Roll-on deodorants [toiletries]; Room fragrances; Room fragrancing preparations; Room fragrancing products; Room perfume sprays; Room perfumes in spray form; Room scenting sprays; Rose oil; Rose oil for cosmetic purposes; Rosemary oil for cosmetic use; Rouge; Rouge (Jewellers' -); Rouges; Rust removers; Rust ***removing*** preparations; Sachets for perfuming linen; Saddle soap; Saddle soaps; Safrol; Salt crystal removers; Salves [non-medicated]; Sandcloth; Sanding gloves; Sandpaper; Sandpaper for sharpening drawing pencils; Sandpaper pads for sharpening drawing pencils; Sanitary preparations being toiletries; Scale ***removing*** preparations for household purposes; Scalp treatments (Non-medicated -); Scented bathing salts; Scented body creams; Scented body lotions; Scented body lotions and creams; Scented body spray; Scented ceramic stones; Scented fabric refresher spray; Scented fabric refresher sprays; Scented linen sprays; Scented linen water; Scented oils; Scented oils used to produce aromas when heated; Scented pine cones; Scented room sprays; Scented sachets; Scented soaps; Scented toilet waters; Scented water; Scented wax melts; Scented wood; Scents; Scouring liquids; Scouring powders; Scouring preparations; Scouring solutions; Scouring substances; Scrubbing powder; Seaweed for cosmetology; Seaweed gelatine for laundry use (funori); Seaweed gelatine for laundry use [funori]; Self tanning creams [cosmetic]; Self tanning lotions [cosmetic]; Self tanning preparations; Self-adhesive false eyebrows; Self-tanning preparations [cosmetic]; Self-tanning preparations [cosmetics]; Serums for cosmetic purposes; Sets of cosmetic oral care products; Shampoo; Shampoo bars; Shampoo for animals; Shampoo-conditioners; Shampoos; Shampoos for animals [non-medicated grooming preparations]; Shampoos for babies; Shampoos for human hair; Shampoos for personal use; Shampoos for pets; Shampoos for pets [non-medicated grooming preparations]; Shampoos for vehicles; Sharpening preparations; Shave balm; Shave creams; Shave gel; Shaving balm; Shaving balms; Shaving cream; Shaving creams; Shaving foam; Shaving foams; Shaving gel; Shaving gels; Shaving lotion; Shaving lotions; Shaving mousse; Shaving oil; Shaving oils; Shaving preparations; Shaving preparations in liquid form; Shaving sets, comprised of shaving cream and aftershave; Shaving soap; Shaving soaps; Shaving sprays; Shaving sticks [preparations]; Shaving stones; Shaving stones [astringents]; Shaving stones [astringents for cosmetic purposes]; Shaving stones being astringents for cosmetic purposes; Shining preparations being polish; Shining preparations for fruit; Shining preparations for fruits; Shining preparations for plant leaves; Shining preparations [polish]; Shiny (Preparations to make the leaves of plants -); Shoe and boot cream; Shoe black [shoe polish]; Shoe cleaners [preparations]; Shoe cream; Shoe polish; Shoe polish and creams; Shoe polish applicators containing shoe polish; Shoe polishes; Shoe sprays; Shoe wax; Shoemakers' wax; Shower and bath foam; Shower and bath gel; Shower and bath preparations; Shower cream; Shower creams; Shower foams; Shower gel; Shower gels; Shower oils; Shower preparations; Shower salts not for medical purposes; Shower soap; Silicon carbide [abrasive]; Silicon carbide for use as an abrasive; Skin balms [cosmetic]; Skin balms (Non-medicated -); Skin care (Cosmetic preparations for -); Skin care cosmetics; Skin care creams [cosmetic]; Skin care creams, other than for medical use; Skin care lotions [cosmetic]; Skin care mousse; Skin care oils [cosmetic]; Skin care oils [non-medicated]; Skin care preparations; Skin care products for animals; Skin clarifiers; Skin cleaners [non-medicated]; Skin cleaning and freshening sprays; Skin cleansers; Skin cleansers [cosmetic]; Skin cleansers [non-medicated]; Skin cleansing cream; Skin cleansing cream [non-medicated]; Skin cleansing foams; Skin cleansing lotion; Skin conditioners; Skin conditioning creams for cosmetic purposes; Skin cream; Skin cream [for cosmetic use]; Skin creams; Skin creams [cosmetic]; Skin creams [for cosmetic use]; Skin creams [non-medicated]; Skin emollients; Skin emollients [non-medicated]; Skin, eye and nail care preparations; Skin foundation; Skin fresheners; Skin fresheners [cosmetics]; Skin hydrators; Skin lighteners; Skin lightening compositions [cosmetic]; Skin lightening creams; Skin lotion; Skin lotions; Skin make-up; Skin masks; Skin masks [cosmetics]; Skin moisturiser; Skin moisturisers; Skin moisturizer; Skin moisturizer masks; Skin moisturizers; Skin moisturizers used as cosmetics; Skin polishing rice bran (arai-nuka); Skin recovery creams [cosmetics]; Skin soap; Skin softening preparations; Skin texturizers; Skin toner; Skin toners; Skin toners [cosmetic]; Skin tonics [non-medicated]; Skin whitening creams; Skin whitening preparations; Skin whitening preparations [cosmetic]; Skincare cosmetics; Skincare preparations; Slimming aids [cosmetic], other than for medical use; Slimming purposes (Cosmetic preparations for -); Smoothing emulsions [cosmetics]; Smoothing emulsions for the skin; Smoothing preparations [starching]; Smoothing stones; Soaking laundry (Preparations for -); Soap; Soap (Antiperspirant -); Soap (Cakes of -); Soap (Deodorant -); Soap for brightening textile; Soap for foot perspiration; Soap free washing emulsions for the body; Soap pads; Soap powder; Soap powders; Soap products; Soap sheets; Soap solutions; Soaps; Soaps and gels; Soaps for body care; Soaps for brightening textiles; Soaps for household use; Soaps for laundry use; Soaps for personal use; Soaps for toilet purposes; Soaps in gel form; Soaps in liquid form; Soapy gels; Soda (Bleaching -); Soda lye; Softeners (Fabric -) for laundry use; Softening agents for laundry purposes; Solid perfumes; Solid powder for compacts; Solid powder for compacts [cosmetics]; Solid powder for cosmetic compacts; Solid toothpaste tablets; Solvents for ***removing*** paints; Solvents for ***removing*** varnishes; Sparkling fluid for the body; SPF sun block sprays; Spirit gum for cosmetic use; Spirit gum remover; Sponges impregnated with soaps; Sponges impregnated with toiletries; Spot remover; Spot removers [preparations]; Spray cleaners for freshening athletic mouth guards; Spray cleaners for household use; Spray cleaners for use on textiles; Spray polish; Sprays (Breath freshening -); Stain removers; Stain ***removing*** agents; Stain ***removing*** benzine; Stain ***removing*** preparations; Stain ***removing*** preparations for use on household goods; Starch for abrasive purposes; Starch for cleaning purposes; Starch for laundry purposes; Starch glaze for laundry purposes; Stick pomade; Strips (Breath freshening -); Styling gels; Styling gels for the hair; Styling lotions; Styling mousse; Styling paste for hair; Styling sprays for the hair; Substances for laundry use; Sugar soap; Sun barriers [cosmetics]; Sun block [cosmetics]; Sun block preparations; Sun blocking lipsticks [cosmetics]; Sun blocking oils [cosmetics]; Sun blocking preparations [cosmetics]; Sun bronzers; Sun care lotions; Sun care lotions [for cosmetic use]; Sun care preparations; Sun care preparations for cosmetic use; Sun creams; Sun creams [for cosmetic use]; Sun protecting creams [cosmetics]; Sun protection preparations; Sun protectors for lips; Sun screen; Sun screen preparations; Sun tan gel; Sun tan lotion; Sun tan milk; Sun tan oil; Sunblock; Sun-block lotions; Suncare lotions; Suncare lotions [for cosmetic use]; Sunscreen; Sunscreen cream; Sunscreen creams; Sunscreen creams [for cosmetic use]; Sunscreen [for cosmetic use]; Sunscreen lotions; Sunscreen preparations; Sunscreen sticks; Sun-screening preparations; Sunscreens; Sunscreens [for cosmetic use]; Suntan creams; Suntan creams [self-tanning creams]; Suntan lotion [cosmetics]; Suntan lotions; Suntan oils [cosmetics]; Suntan oils for cosmetic purposes; Sun-tanning creams; Sun-tanning creams and lotions; Sun-tanning gels; Sun-tanning lotions; Suntanning oil [cosmetics]; Sun-tanning oils; Suntanning preparations; Sun-tanning preparations; Sun-tanning preparations [cosmetics]; Swallowable toothpaste; Synthetic detergents for clothes; Synthetic musk; Synthetic perfumery; Synthetic vanillin [perfumery]; Tailors' and cobblers' wax; Tailors' wax; Talc; Talc [toiletries]; Talcum powder; Talcum powder [for cosmetic use]; Talcum powder, for toilet use; Talcum powder [for toilet use]; Talcum powder (Non-medicated -) for babies; Talcum powders; Talcum powders [for cosmetic use]; Talcum powders for toilet use; Tanning creams; Tanning gels [cosmetics]; Tanning milks [cosmetics]; Tanning oils [cosmetics]; Tanning preparations; Tanning preparations [cosmetics]; Tea-tree oil; Teeth cleaning lotions; Teeth cleaning (Preparations for -); Teeth whitening preparations; Teeth whitening strips; Teeth whitening strips impregnated with teeth whitening preparations [cosmetics]; Temporary tattoo transfers for use as cosmetics; Temporary tattoos for cosmetic purposes; Terpenes [essential oils]; Theatrical makeup; Throat sprays [non-medicated]; Time-release solid drain detergent; Tints for the beard; Tints for the hair; Tissues impregnated with a skin cleanser; Tissues impregnated with cosmetic lotions; Tissues impregnated with cosmetics; Tissues impregnated with essential oils, for cosmetic use; Tissues impregnated with leather gloss agents; Tissues impregnated with make-up ***removing*** preparations; Tissues impregnated with preparations for cleaning; Toilet bowl detergents; Toilet cleaners; Toilet milk for cleansing purposes; Toilet powders; Toilet preparations; Toilet soap; Toilet soaps; Toilet water; Toilet water containing snake oil; Toilet waters; Toiletries; Toiletry preparations; Toners for cosmetic use; Tonics [cosmetic]; Toning creams [cosmetic]; Toning lotion, for the face, body and hands; Toning spritz; Tooth care preparations; Tooth cleaning preparations; Tooth gel; Tooth paste; Tooth polish; Tooth polishes; Tooth powder; Tooth powder [for cosmetic use]; Tooth powders; Tooth powders [for cosmetic use]; Tooth whitening creams; Tooth whitening pastes; Tooth whitening preparations; Toothpaste; Toothpaste in soft cake form; Toothpastes; Topical skin sprays for cosmetic purposes; Transfers (Decorative -) for cosmetic purposes; Tripoli stone for polishing; Turpentine, for degreasing; Turpentine for degreasing; Unblocking drain pipes (Preparations for -); Under eye correctors; Under-eye enhancers; Upholstery cleaners; Vaginal washes for personal sanitary or deodorant purposes; Vanilla perfumery; Varnish (Nail -); Varnish removers; Varnish-***removing*** preparations; Vehicle cleaning preparations; Vehicle shampoos; Vehicle tyre polish; Volatile alkali [ammonia] [detergent]; Volcanic ash for cleaning; Wallpaper cleaning preparations; Washing agents for textiles; Washing conservation agents; Washing creams; Washing liquids; Washing powder; Washing preparations; Washing preparations for household purposes; Washing preparations for personal use; Washing soda, for cleaning; Washing-up detergent; Washing-up liquids; Waterless shampoo; Waterless shampoos; Waterless soap; Waterproof sunscreen; Water-resistant sunscreen; Wave-set lotions; Waving preparations for the hair; Wax (Cobblers' -); Wax (Depilatory -); Wax for floors (Non-slipping -); Wax for parquet floors; Wax (Laundry -); Wax (Moustache -); Wax (Parquet floor -); Wax (Polishing -); Wax stripping preparations; Wax strips for ***removing*** body hair; Wax (Tailors' -); Wax treatments for the hair; Waxes for leather; Whitening the skin (Cream for -); Whitewall cleaners; Whiting; Window cleaners in spray form; Window cleaners [polish]; Window cleaning compositions; Windscreen cleaning fluids; Windscreen cleaning liquids; Windscreen cleaning preparations; Windshield cleaner fluids; Windshield cleaning liquids; Windshield washing fluid; Wintergreen oil; Wipes impregnated with a cleaning preparation; Wipes impregnated with a skin cleanser; Wipes incorporating cleaning preparations; Wiping cloth impregnated with a cleaning preparation for cleaning eye glasses; Wood treatment preparations for polishing; Wrinkle ***removing*** skin care preparations; Wrinkle resistant cream; Wrinkle resistant creams; Wrinkle resistant creams [for cosmetic use]; Wrinkle-minimizing cosmetic preparations for topical facial use.Class 5 Acai powder dietary supplements; Activated charcoal dietary supplements; Albumin dietary supplements; Alginate dietary supplements; Anti-oxidant food supplements; Anti-oxidant supplements; Antibiotic food supplements for animals; Calcium supplements; Casein dietary supplements; Colostrum supplements; Delivery agents in the form of coatings for tablets that facilitate the delivery of nutritional supplements; Delivery agents in the form of dissolvable films that facilitate the delivery of nutritional supplements; Dietary and nutritional supplements; Dietary food supplements; Dietary food supplements used for modified fasting; Dietary pet supplements in the form of pet treats; Dietary supplements; Dietary supplements and dietetic preparations; Dietary supplements and dietetic preparations containing CBD oil; Dietary supplements consisting of vitamins; Dietary supplements consisting primarily of calcium; Dietary supplements consisting primarily of iron; Dietary supplements consisting primarily of magnesium; Dietary supplements for animals; Dietary supplements for controlling cholesterol; Dietary supplements for human beings; Dietary supplements for human beings and animals; Dietary supplements for humans; Dietary supplements for humans not for medical purposes; Dietary supplements for infants; Dietary supplements for medical use; Dietary supplements for pets; Dietary supplements for pets in the nature of a powdered drink mix; Dietary supplements promoting fitness and endurance; Dietary supplements with a cosmetic effect; Enzyme dietary supplements; Feed supplements for veterinary use; Fitness and endurance supplements; Flaxseed dietary supplements; Flaxseed oil dietary supplements; Fodder supplements for veterinary purposes; Folic acid dietary supplements; Food supplements; Food supplements consisting of amino acids; Food supplements consisting of trace elements; Abrasive fluids for dental use; Abrasive pads for dental purposes; Abrasives (Dental -); Absorbent articles for personal hygiene; Absorbent cotton; Absorbent cotton for medical purposes; Absorbent cotton wadding; Absorbent cotton wool [for medical purposes]; Absorbent diapers of cellulose for pets; Absorbent diapers of paper for pets; Absorbent sanitary articles; Absorbent wadding; Acai powder dietary supplements; Acaricides; Acaricides for industrial purposes; Acetaminophen; Acetaminophen [for relief of pain]; Acetates for pharmaceutical purposes; Acids for pharmaceutical purposes; Acne cleansers [pharmaceutical preparations]; Acne cream [pharmaceutical preparations]; Acne creams [pharmaceutical preparations]; Acne medication; Acne medications; Acne treatment preparations; Aconitine; Activated charcoal dietary supplements; Activated charcoal for adsorption of toxins for medical purposes; Activated charcoal for medical use; Activated charcoal used as an antidote to poisons; Adhesive backed films for medical purposes; Adhesive band for medical use; Adhesive bandages; Adhesive bandages for skin wounds; Adhesive bands for medical purposes; Adhesive compositions for medical use; Adhesive dressing strips; Adhesive dressings; Adhesive films for medical use; Adhesive patches for medical purposes; Adhesive plaster; Adhesive plasters; Adhesive plasters for medical purposes; Adhesive skin patches for medical use; Adhesive strips for dentures; Adhesive strips for medical purposes; Adhesive tapes for medical purposes; Adhesives (Fly catching -); Adhesives for affixing prostheses; Adhesives for dental and dentistry use; Adhesives for dental use; Adhesives for dentures; Adjuvants for medical purposes; Adrenal hormone preparations; Adult diapers; ***Agricultural*** biopesticides; ***Agricultural*** pesticides; Air deodorants; Air deodoriser gel; Air deodoriser sprays; Air deodorisers; Air deodorising and air purifying preparations; Air deodorising preparations; Air deodorizer; Air deodorizing preparations; Air deodorizing preparations comprised of activated charcoal; Air freshener refills; Air freshener sprays; Air fresheners; Air purifying preparations; Air refresheners; Air sanitizing preparations; Air-freshening preparations; Albumin dietary supplements; Albuminous foodstuffs for medical purposes; Albuminous preparations for medical purposes; Alcohol detoxifying agents; Alcohol for medicinal purposes; Alcohol for pharmaceutical purposes; Alcohol for topical use; Alcohol swabs for medical purposes; Alcohol-based antibacterial skin sanitizer gels; Aldehydes for pharmaceutical purposes; Algae ***removing*** preparations; Algaecide chemicals for swimming pools; Algaecide for swimming pools; Algaecides [chemicals for swimming pool maintenance]; Algicides; Algicides for ***agricultural*** use; Algicides for swimming pools; Alginate dietary supplements; Alginate solutions for pharmaceutical purposes; Alginate tablets for pharmaceutical purposes; Alginates for pharmaceutical purposes; Alkaline iodides for pharmaceutical purposes; Alkaloids for medical purposes; Alkaloids used as analgesics; Alkaloids used as antipyretics; Alkaloids used as stimulants; Alkaloids used for pharmaceutical purposes; Abrasive fluids for dental use; Abrasive pads for dental purposes; Abrasives (Dental -); Absorbent articles for personal hygiene; Absorbent cotton; Absorbent cotton for medical purposes; Absorbent cotton wadding; Absorbent cotton wool [for medical purposes]; Absorbent diapers of cellulose for pets; Absorbent diapers of paper for pets; Absorbent sanitary articles; Absorbent wadding; Acai powder dietary supplements; Acaricides; Acaricides for industrial purposes; Acetaminophen; Acetaminophen [for relief of pain]; Acetates for pharmaceutical purposes; Acids for pharmaceutical purposes; Acne cleansers [pharmaceutical preparations]; Acne cream [pharmaceutical preparations]; Acne creams [pharmaceutical preparations]; Acne medication; Acne medications; Acne treatment preparations; Aconitine; Activated charcoal dietary supplements; Activated charcoal for adsorption of toxins for medical purposes; Activated charcoal for medical use; Activated charcoal used as an antidote to poisons; Adhesive backed films for medical purposes; Adhesive band for medical use; Adhesive bandages; Adhesive bandages for skin wounds; Adhesive bands for medical purposes; Adhesive compositions for medical use; Adhesive dressing strips; Adhesive dressings; Adhesive films for medical use; Adhesive patches for medical purposes; Adhesive plaster; Adhesive plasters; Adhesive plasters for medical purposes; Adhesive skin patches for medical use; Adhesive strips for dentures; Adhesive strips for medical purposes; Adhesive tapes for medical purposes; Adhesives (Fly catching -); Adhesives for affixing prostheses; Adhesives for dental and dentistry use; Adhesives for dental use; Adhesives for dentures; Adjuvants for medical purposes; Adrenal hormone preparations; Adult diapers; ***Agricultural*** biopesticides; ***Agricultural*** pesticides; Air deodorants; Air deodoriser gel; Air deodoriser sprays; Air deodorisers; Air deodorising and air purifying preparations; Air deodorising preparations; Air deodorizer; Air deodorizing preparations; Air deodorizing preparations comprised of activated charcoal; Air freshener refills; Air freshener sprays; Air fresheners; Air purifying preparations; Air refresheners; Air sanitizing preparations; Air-freshening preparations; Albumin dietary supplements; Albuminous foodstuffs for medical purposes; Albuminous preparations for medical purposes; Alcohol detoxifying agents; Alcohol for medicinal purposes; Alcohol for pharmaceutical purposes; Alcohol for topical use; Alcohol swabs for medical purposes; Alcohol-based antibacterial skin sanitizer gels; Aldehydes for pharmaceutical purposes; Algae ***removing*** preparations; Algaecide chemicals for swimming pools; Algaecide for swimming pools; Algaecides [chemicals for swimming pool maintenance]; Algicides; Algicides for ***agricultural*** use; Algicides for swimming pools; Alginate dietary supplements; Alginate solutions for pharmaceutical purposes; Alginate tablets for pharmaceutical purposes; Alginates for pharmaceutical purposes; Alkaline iodides for pharmaceutical purposes; Alkaloids for medical purposes; Alkaloids used as analgesics; Alkaloids used as antipyretics; Alkaloids used as stimulants; Alkaloids used for pharmaceutical purposes; All purpose deodorizing preparations for household, commercial or industrial use; Allergy capsules; Allergy medication; Allergy medications; Allergy relief medication; Allergy tablets; Alloys of precious metal for use in dentistry and dentistry technology; Alloys of precious metals as dental implants; Alloys of precious metals for dental purposes; Almond milk for pharmaceutical purposes; Almond oil for pharmaceutical purposes; Almonds (Milk of -) for pharmaceutical purposes; Aloe vera gel for therapeutic purposes; Aloe vera preparations for pharmaceutical purposes; Aloe vera preparations for therapeutic purposes; Aluminium acetate for pharmaceutical purposes; Amalgam for dental purposes; Amalgams (Dental -); Amalgams for dental purposes; Amalgams for dental use; Amino acid preparations for medical purposes; Amino acid preparations for medical use; Amino acid preparations for pharmaceutical use; Amino acid preparations for veterinary purposes; Amino acid preparations for veterinary use; Amino acids for medical or veterinary purposes; Amino acids for medical purposes; Amino acids for veterinary purposes; Ammonia inhalants; Anaesthetic preparation for injection; Anaesthetic preparations; Anaesthetic preparations for inhalation; Anaesthetics; Analeptic stimulants; Analeptics; Analgesic balm; Analgesic preparations; Analgesics; Analgesics for medical use; Analgesics for pharmaceutical use; Androgen preparations; Anesthetics for non-surgical use; Anesthetics for surgical use; Angostura bark for medical purposes; Anhidrotics; Animal dips [preparations]; Animal flea collars; Animal repellent formulations; Animal repellents; Animal semen for artificial insemination; Animal sperm; Animal washes; Animal washes [insecticides]; Anoretics; Antacid preparations; Antacids; Anthelmintics; Anti fly lotion; Anti-adhesion gels for use with wound drainage devices; Antiallergic medicines; Anti-allergy sprays; Antiarrhythmic agents; Antiarrhythmics; Antibacterial acne preparations; Antibacterial clay preparations; Anti-bacterial face washes (Medicated -); Antibacterial facial cleanser; Antibacterial gels; Antibacterial hand lotions; Antibacterial handwash; Antibacterial handwashes; Antibacterial lathering cleanser; Antibacterial mouthwashes; Anti-bacterial pharmaceutical preparations; Antibacterial pharmaceuticals; Antibacterial preparations; Anti-bacterial preparations; Antibacterial soap; Anti-bacterial soap; Antibacterial sprays; Antibacterial substances for medical purposes; Antibacterial substances for medical use; Antibacterial wipes; Antibacterials for pharmaceutical use; Antibiotic creams; Antibiotic dermatological products; Antibiotic food supplements for animals; Antibiotic handwash; Antibiotic ointments; Antibiotic preparations; Antibiotic tablets; Antibiotics; Antibiotics for detoxification purposes; Antibiotics for fish; Antibiotics for human use; Antibiotics for use in dentistry; Antibiotics for veterinary use; Antibiotics in the form of lotions; Antibodies; Anti-cancer drugs; Anticancer preparations; Anti-cancer preparations; Anti-cancer preparations from hormones and antagonists; Anti-cancer preparations of chemical origin; Anti-cancer preparations of microbial origin; Anti-cancer preparations of plant origin; Anticatarrhals for detoxification purposes; Anticavity mouth rinses for medical purposes; Anticavity mouthwash; Anticoagulants; Anticonvulsants; Anti-cough drops; Anticryptogamic preparations; Antidepressants; Anti-dermoinfectives; Antidiabetic pharmaceuticals; Anti-diabetic pharmaceuticals; Antidiabetic preparations; Anti-diabetic preparations; Antidotes; Antiemetics; Antiemetics for morning sickness; Anti-emetics obtained from chemical sources; Anti-emetics obtained from plant sources; Anti-emetics used for treating nausea; Anti-emetics used for treating vomiting; Antiepileptic drugs; Anti-epileptic pharmaceutical preparations; Antiflatulants; Anti-flea collars for pets; Antifungal antibiotics; Antifungal creams for medical use; Anti-fungal dermatological preparations for use on the nails; Antifungal medication; Antifungal preparations; Antigens; Antihemorrhoidal ointments; Antihemorrhoidal preparations; Antihemorrhoidal suppositories; Antihistamines; Anti-horsefly oils; Anti-horse-fly oils; Antihypertensives; Anti-infective antibiotics; Anti-infective preparations; Anti-infective preparations for veterinary use; Anti-infective products for veterinary use; Anti-infectives; Anti-inflammatories; Anti-inflammatory analgesic plasters; Anti-inflammatory gels; Anti-inflammatory ointments; Anti-inflammatory preparations; Anti-inflammatory salves; Anti-inflammatory sprays; Anti-insect spray; Anti-insect sprays; Anti-itch creams; Anti-itch ointments; Anti-leprotic agents; Anti-malarials; Antimicrobial clay; Antimicrobial facewashes; Anti-microbial handwash; Antimicrobial mouthwashes; Anti-microbial preparations; Antimicrobial preparations for inhibiting microbiological decomposition; Antimicrobials for dermatologic use; Antimigraine drugs; Anti-motion sickness agents; Antimuscarinic antispasmodics; Anti-nauseants; Antineoplastic drugs; Anti-neoplastic preparations from hormones and antagonists; Anti-neoplastic preparations of chemical origin; Anti-neoplastic preparations of microbial origin; Anti-neoplastic preparations of plant origin; Antineoplastics; Anti-oxidant food supplements; Antioxidant pills; Anti-oxidant supplements; Antioxidants; Anti-oxidants comprising enzymes; Anti-oxidants derived from honey; Anti-oxidants for dietary use; Anti-oxidants for medicinal use; Anti-oxidants obtained from herbal sources; Anti-parasitic collars; Antiparasitic collars for animals; Anti-parasitic collars for animals; Antiparasitic preparations; Antiparasitic preparations for pets; Antiparasitic preparations from chemical sources; Antiparasitic preparations from plant sources; Antiparasitics; Antiparkinson agents; Antipyretic analgesics; Antipyretic drugs with sedative effect; Antipyretic preparations; Antipyretics; Anti-sarcoma preparations; Antiseizure drugs; Antiseptic body care preparations; Antiseptic cleansers; Antiseptic cotton; Antiseptic liquid bandages; Antiseptic mouthwashes; Antiseptic mouthwashes for rinsing; Antiseptic ointments; Antiseptic preparations; Antiseptic preparations for wound care; Antiseptic sprays in aerosol form for use on hard surfaces; Antiseptic sprays in aerosol form for use on the skin; Antiseptic washing preparations; Antiseptics; Antiseptics with prophylactic effect; Antiseptics with therapeutic effect; Antiserums for diagnostic purposes; Antispasmodics; Anti-syphilitics; Antitoxic sera; Antitoxins; Antituberculous drugs; Anti-tuberculous preparations; Antitumor drugs; Anti-tussive expectorants; Antitussives; Anti-uric preparations; Antivenins; Antivenom for the treatment of bites; Antivenom for the treatment of stings; Anti-viral agents; Antiviral antibiotics; Antiviral drugs for treating HIV; Antiviral drugs for treating influenza; Antiviral preparations; Antiviral prodrugs; Antivirals; Appetite stimulant preparations; Appetite suppressant pills; Appetite suppressants; Appetite suppressants for medical purposes; Aquatic algaecide; Aquatic herbicides; Aquatic weed killers; Arachnicides; Arisaema roots for medical purpose; Arsenic detoxification agents for medical purposes; Arterial grafts; Artificial sweeteners adapted for diabetics; Artificial tea [for medicinal use]; Artificial tears; Aseptic cotton; Aspirin; Aspirin in tablet form; Asthma treatment preparations; Asthmatic tea; Astringents for medical purposes; Astringents for medical use; Astringents [pharmaceutical]; Athlete's foot lotions; Athletes' foot powders; Athlete's foot preparations; Attractants for pet animals; Autoantigens; Automobile deodorizers; Autonomic drugs; Autonomic drugs for medical purposes; Babies' creams [medicated]; Babies' diaper-pants; Babies' diapers; Babies' diapers [napkins]; Babies' diapers of cellulose or paper; Babies' diapers of paper; Babies' disposable diaper pants of cellulose; Babies' disposable diaper pants of paper; Babies' disposable napkins made of cellulose; Babies' disposable napkins made of paper; Babies' food; Babies' napkin-pants; Babies' napkin-pants [diaper-pants]; Babies' napkins; Babies' napkins [diapers]; Babies' napkins made of paper; Babies' nappies; Babies' nappies [paper or cellulose]; Babies' nappy-pants; Babies' swim diapers; Baby diapers; Baby food; Baby foods; Bacteria fighting cleanser; Bacteria poisons; Bacteria removers; Bacterial poisons; Bacterial preparations for medical and veterinary use; Bacterial preparations for medical purposes; Bacterial preparations for veterinary purposes; Bactericides; Bacteriological culture mediums; Bacteriological cultures (Bouillons for -); Bacteriological cultures (Media for -); Bacteriological preparations for medical and veterinary use; Bacteriological preparations for medical purposes; Bacteriological preparations for pharmaceutical use; Bacteriological preparations for veterinary purposes; Balms for medical purposes; Balms for pharmaceutical purposes; Balsamic preparations for medical purposes; Bandages for dressings; Bandages for making casts; Bandages for skin wounds; Bandages for the oral cavity; Bandages for the prevention of blisters; Bandages (Hygienic -); Bandages (Menstruation -); Bands (Adhesive -), for medical purposes; Barium for X-ray use; Bark extract for medical use; Bark extract for nutraceutical use; Bark extract for pharmaceutical use; Bark extract for veterinary use; Bark for nutraceutical purposes; Bark powder for medical use; Bark powder for veterinary use; Barks for pharmaceutical purposes; Barrier lotions for protection against poisonous plants; Barrier lotions for protection from toxic oils of poisonous plants; Bath preparations for medical purposes; Bath preparations, medicated; Bath salts for medical purposes; Bath (Therapeutic preparations for the -); Bathroom deodorants; Baths (Oxygen -); Baths (Salts for mineral water -); Bee pollen for nutraceutical use; Bee pollen for use as a dietary food supplement; Behaviour modifying chemicals for controlling pests; Belts for sanitary napkins [towels]; Benzol detoxification agents for medical purposes; Beta blockers; Beverages adapted for medicinal purposes; Beverages for infants; Bicarbonate of soda for pharmaceutical purposes; Biochemical preparations for medical use; Biochemical preparations for veterinary use; Biocides; Biological adjuvants for medical purposes; Biological fungicides; Biological herbicides; Biological implants; Biological indicators for monitoring sterilization processes for medical or veterinary purposes; Biological preparations for medical purposes; Biological preparations for the treatment of cancer; Biological preparations for veterinary purposes; Biological reagents for medical use; Biological reagents for veterinary use; Biological tissue cultures for medical purposes; Biological tissue cultures for veterinary purposes; Biological tissue for implantation; Biopharmaceuticals for the treatment of cancer; Biotechnological preparations for medical use; Bird repellants; Bismuth preparations for pharmaceutical purposes; Bismuth subnitrate for pharmaceutical purposes; Blood cleaners for detoxification purposes; Blood components; Blood for medical purposes; Blood plasma; Blood protein fractions; Blood substitutes; Blood tonics; Body creams for pharmaceutical use; Body creams [medicated]; Body gels for pharmaceutical use; Bonding and primer materials for dental purposes; Bone cement for medical purposes; Bone cement for surgical and orthopaedic purposes; Bone cement for surgical and orthopedic purposes; Bone cements for orthopaedic purposes; Bone cements for surgical purposes; Bone fillers consisting of living materials; Bone growth media consisting of biological materials for medical purposes; Bone void fillers comprised of living tissues; Bone void fillers consisting of natural materials; Bouillons for bacteriological cultures; Bowel evacuant preparations; Bracelets impregnated with insect repellent; Bread (Diabetic -) adapted for medical use; Bread products for diabetics; Breast-nursing pads; Breath refreshers for medical purposes; Breath-freshening chewing gum for medicinal purposes; Bromine for pharmaceutical purposes; Bronchial dilators; Bronchodilating preparations; Bunion pads; Burn dressings; Burn relief medication; Burns (Preparations for the treatment of -); By-products of the processing of cereals for dietetic or medical purposes; By-products of the processing of cereals for medical purposes; Cachets for medicinal purposes; Cachets for pharmaceutical purposes; Cachou for pharmaceutical purposes; Caffeine preparations for medical use; Caffeine preparations for stimulative use; Calamine lotion; Calcium channel blockers; Calcium chews for medical use; Calcium fortified candy; Calcium supplements; Calcium tablets as a food supplement; Callouses (Preparations for -); Calomel; Calomel [fungicide]; Camphor for medical purposes; Camphor oil for medical purposes; Camphor tablets being insect repellents; Camphor wood blocks for repelling moths; Candy for medical purposes; Candy, medicated; Cannabis for medical purposes; Cantharides extract for pharmaceutical use; Cantharides (Powder of -); Cantharides preparations for medical use; Cantharides preparations for veterinary use; Capillary lotions (Medicated -); Capillary stabilizing agents for medical purposes; Capsules for medicines; Capsules for pharmaceutical purposes; Capsules made of dendrimer-based polymers, for pharmaceuticals; Capsules sold empty for pharmaceuticals; Car air freshener; Car air fresheners; Car deodorants; Carbolineum [parasiticide]; Cardiotonics; Cardiovascular agents for medical purposes; Cardiovascular drugs for use in treating hypertension; Cardiovascular drugs used in angina pectoris; Cardiovascular drugs used in myocardial infarction; Cardiovascular drugs used in treating arrhythmias; Cardiovascular drugs used in treating congestive heart failure (CHF); Cardiovascular drugs used in treating shocks; Cardiovascular pharmaceutical preparations; Cardiovascular pharmaceuticals; Cardiovascular preparations; Carpet deodorizers; Casein dietary supplements; Castor beans for pharmaceutical purposes; Castor oil as a coating for pharmaceuticals; Castor oil for medical purposes; Castor oil [for medical purposes]; Cat repellents; Cattle washes; Cattle washes [insecticides]; Caustic pencils; Caustics for pharmaceutical purposes; Cedar wood for use as an insect repellent; Cell growth media for growing cells for medical use; Cells for medical use; Cellular function activating agents for medical purposes; Cellulose esters for pharmaceutical purposes; Cellulose ethers for pharmaceutical purposes; Cellulose for pharmaceutical purposes; Cellulose wadding for medical purposes; Cellulose wool for medical use; Cellwall synthesis inhibitors; Cement for animal hooves; Cements for dental prostheses; Central nervous system stimulants; Ceramic alloys used in dental crowns; Ceramic materials for dental use for fillings; Ceramic materials for use as dental fillings; Ceramics for the construction of dentures; Ceramics for use in the reconstruction of dentures; Cerebral hemorrhage prophylactic agents; Charcoal for pharmaceutical purposes; Chemical adjuvants for medical purposes; Chemical conductors for electrocardiograph electrodes; Chemical conductors for use with ekg electrodes; Chemical conductors for use with electrocardiograph electrodes; Chemical contraceptive sponges; Chemical contraceptives; Chemical diagnostic reagents for medical use; Chemical pessaries; Chemical preparations for medical purposes; Chemical preparations for pesticidal purposes; Chemical preparations for pharmaceutical purposes; Chemical preparations for sanitary purposes; Chemical preparations for sanitary use; Chemical preparations for testing blood for medical purposes; Chemical preparations for the diagnosis of diabetes; Chemical preparations for the diagnosis of pregnancy; Chemical preparations for treating diseases affecting cereal plants; Chemical preparations for treating diseases affecting vine plants; Chemical preparations for treating mildew; Chemical preparations for treating phylloxera; Chemical preparations for treating wheat blight; Chemical preparations for treating wheat smut; Chemical preparations for use in dna analysis [medical]; Chemical preparations for veterinary purposes; Chemical preparations to treat mildew; Chemical preparations to treat wheat blight; Chemical preparations to treat wheat blight [smut]; Chemical preparations to treat wheat smut; Chemical reagents for medical or veterinary purposes; Chemical reagents for medical use; Chemical reagents for veterinary use; Chemical test reagents [medical]; Chemical test reagents [veterinary]; Chemically treated papers for use in the detection of fecal occult blood; Chemicals for pharmaceutical use; Chemico-pharmaceutical preparations; Chemotherapeutics; Chewing gum for medical purposes; Chilblain preparations; Chinese traditional medicinal herbs; Chinoline for medical purposes; Chloramphenicol preparations; Chlorine detoxification agents for medical purposes; Chloroform; Cholesterol reducers; Chondroitin preparations; Chromatic alginate dental impression material; Chromatographic supports for medical use; Cigarettes (Tobacco-free -) for medical purposes; Cinchona for medical purposes; Clay for pharmaceutical use; Clay for treating skin conditions; Clay for use in mud baths [health spas]; Cleaners [preparations] for sterilising dental instruments; Cleaners [preparations] for sterilising surgical instruments; Cleaning cloths impregnated with disinfectant for hygiene purposes; Cleaning preparations (Contact lens -); Cleaning preparations for contact lenses; Cleaning solvents for ***removing*** adhesive plasters; Cleansing solutions for medical use; Clinical diagnostic reagents; Clinical medical reagents; Cloth diapers; Clothing (Deodorants for -) and textiles; Coca alkaloid preparations for medical use; Cocaine; Coconut oil for medical purposes; Cod liver oil; Cod-liver oil capsules; Cod-liver oil drops; Cold cream for medical use; Cold sore treatment preparations; Collagen for medical purposes; Collars for animals (Antiparasitic -); Collodion for pharmaceutical purposes; Collyrium; Colostrum supplements; Colouring reagents for detecting dental plaque; Combinations of calcium salts for pharmaceutical use; Complementary feed; Composite materials for dental and dental technical purposes; Composite materials for dental purposes; Composite materials for dental use; Compounds for sanitising eggs; Compounds for treating cancer; Compounds for treating correlated pulmonary syndromes; Compounds for treating respiratory diseases; Compresses; Compresses for use as dressings; Compression bandages [dressings]; Conductive lacquer for dental purposes; Conductive lacquers for dental use; Conductors (Chemical -) for electrocardiograph electrodes; Condurango bark for medical purposes; Confectionery for medicinal purposes; Constipation (Medicines for alleviating -); Contact lens cleaning preparations; Contact lens cleaning solutions; Contact lens disinfectants; Contact lens solutions; Contact lens wetting solutions; Contact lenses (Solutions for use with -); Contraceptive foams; Contraceptive preparations; Contraceptive sponges; Contraceptives (Chemical -); Contrast media for in vivo imaging; Contrast media for use in medical imaging; Contrast media for use with medical equipment; Contrast media for use with medical ultrasound apparatus; Contrast media for use with X-ray equipment; Contrasting agents for diagnostic ultrasound imaging; Cooling sprays for medical purposes; Cord blood; Cord blood for medical purposes; Corn and callus creams; Corn pads; Corn plasters; Corn remedies; Corn rings for the feet; Coronary artery bypass grafts; Corrosive agents for the surface treatment of teeth; Cotton for medical purposes; Cotton for medical use; Cotton sticks for medical purposes; Cotton swabs for medical purposes; Cotton swabs for medical use; Cotton wool for medical purposes; Cotton wool for medical use; Cotton wool for pharmaceutical purposes; Cotton wool for surgical use; Cotton wool in the form of buds for medical use; Cotton wool in the form of sticks for medical use; Cotton wool swabs for medical use; Cough capsules; Cough drops; Cough medicine; Cough mixtures; Cough pastilles for medical use; Cough suppressants; Cough syrups; Cough tablets; Court plaster; Cream of tartar for pharmaceutical purposes; Creams for dermatological use; Creams (Medicated -) for application after exposure to the sun; Creams (Medicated -) for the feet; Creams (Medicated -) for the lips; Creosote for pharmaceutical purposes; Croton bark; Croton bark for medical purposes; Crude drugs; Crystallized rock sugar for medical purposes; Crystals for therapeutic purposes; Culture media for medical use; Culture media for veterinary use; Cultures for medical use; Cultures for veterinary use; Cultures of microorganisms for medical and veterinary use; Cultures of microorganisms for medical or veterinary use; Curare; Curare for medical purposes; Cyclooxygenase inhibitors; Cytostatic drugs for medical purposes; Cytostatics for medical purposes; Cytostatics for pharmaceutical purposes; Dandruff (Pharmaceutical preparations for treating -); Decoctions for pharmaceutical purposes; Decoctions of medicinal herb; Decongestant capsules; Decongestant nasal sprays; Decongestants; Delivery agents in the form of coatings for tablets that facilitate the delivery of nutritional supplements; Delivery agents in the form of dissolvable films that facilitate the delivery of nutritional supplements; Dementholized peppermint oil for medical purposes; Demineralised water for medical purposes; Dental abrasives; Dental adhesives; Dental alloys; Dental amalgams; Dental amalgams of gold; Dental anaesthetics; Dental blanks; Dental bonding material; Dental cement; Dental cement for fillings; Dental cements; Dental ceramic material; Dental ceramics; Dental composite materials; Dental composites; Dental etching materials; Dental impression materials; Dental lacquer; Dental mastics; Dental materials for duplicating models of teeth; Dental materials for making models of teeth; Dental materials for packing the teeth; Dental materials for stopping the teeth; Dental porcelain materials; Dental preparations and articles; Dental preparations and articles, and medicated dentifrices; Dental preparations for disclosing plaque; Dental resin cements; Dental resin for temporary bridges, crowns and veneers; Dental resins; Dental restoration compounds; Dental rinse; Dental stone; Dental varnishes for sealing teeth; Dental veneers for use in dental restoration; Dental wax; Dental wax for the preparation of dental moulds; Dental waxes; Denture base materials; Dentures (Adhesives for -); Deodorants for clothing; Deodorants for clothing and textiles; Deodorants for refrigerators; Deodorants for textiles; Deodorants for upholstery; Deodorants, other than for human beings or for animals; Deodorising room sprays; Deodorizers for garbage disposals; Deodorizers for litter trays; Deodorizing preparations for carpets; Deodorizing preparations for household, commercial or industrial use; Deodorizing room sprays; Depuratives; Dermatological pharmaceutical products; Dermatological pharmaceutical substances; Dermatological preparations; Detergents for medical purposes; Dextrins for pharmaceutical use; Diabetic bread adapted for medical use; Diabetic fruit juice beverages adapted for medical purposes; Diabetic fruit juice beverages adapted for medical use; Diabetic fruit nectars adapted for medical purposes; Diabetic fruit nectars adapted for medical use; Diagnosis of pregnancy (Chemical preparations for the -); Diagnostic agents for medical use; Diagnostic agents for pharmaceutical use; Diagnostic biomarker reagents for medical purposes; Diagnostic chemical reagents for medical use; Diagnostic preparations and materials; Diagnostic preparations for medical and veterinary use; Diagnostic preparations for medical or veterinary purposes; Diagnostic preparations for medical purposes; Diagnostic preparations for veterinary purposes; Diagnostic preparations for veterinary use; Diagnostic radiopharmaceutical preparations; Diagnostic reagents for medical use; Diagnostic reagents for medicinal use; Diagnostic substances for medical use; Diagnostic testing materials for medical use; Diaper changing mats, disposable, for babies; Diaper liners; Diaper-pants (Babies' -); Diapers [babies' napkins]; Diapers for babies; Diapers for incontinence; Diapers for incontinents; Diapers for pets; Diapers made of cellulose; Diapers made of paper; Diaphoretics; Diarrhea medication; Diastase for medical purposes; Diet capsules; Dietary and nutritional preparations; Dietary and nutritional supplements; Dietary fiber; Dietary fiber to aid digestion; Dietary fibre; Dietary food supplements; Dietary food supplements used for modified fasting; Dietary pet supplements in the form of pet treats; Dietary supplement drink mixes; Dietary supplement drinks; Dietary supplemental drinks; Dietary supplements; Dietary supplements and dietetic preparations; Dietary supplements and dietetic preparations containing CBD oil; Dietary supplements consisting of vitamins; Dietary supplements consisting primarily of calcium; Dietary supplements consisting primarily of iron; Dietary supplements consisting primarily of magnesium; Dietary supplements for animals; Dietary supplements for controlling cholesterol; Dietary supplements for human beings; Dietary supplements for human beings and animals; Dietary supplements for humans; Dietary supplements for humans not for medical purposes; Dietary supplements for infants; Dietary supplements for medical use; Dietary supplements for pets; Dietary supplements for pets in the nature of a powdered drink mix; Dietary supplements promoting fitness and endurance; Dietary supplements with a cosmetic effect; Dietetic and nutritional preparations; Dietetic beverages adapted for medical purposes; Dietetic beverages for babies adapted for medical purposes; Dietetic confectionery adapted for medical purposes; Dietetic food adapted for medical use; Dietetic food adapted for veterinary use; Dietetic food preparations adapted for medical purposes; Dietetic food preparations adapted for medical use; Dietetic foods adapted for infants; Dietetic foods adapted for invalids; Dietetic foods adapted for medical purposes; Dietetic foods adapted for medical use; Dietetic foods for medicinal purposes; Dietetic foods for use in clinical nutrition; Dietetic foodstuffs for medical purposes; Dietetic infusions for medical use; Dietetic preparations adapted for medical purposes; Dietetic preparations adapted for medical use; Dietetic preparations for children; Dietetic products for invalids; Dietetic products for medical purposes; Dietetic substances adapted for medical use; Dietetic substances adapted for veterinary use; Dietetic substances for babies; Dietetic sugar for medical use; Dietetic sugar substitutes for medical use; Dietetic sweeteners for medical purposes; Digestants; Digestive enzymes; Digestives for pharmaceutical purposes; Digitalin; Dihydropyridine calcium channel blockers; Dill oil for medical purposes; Diluents for medical use; Disinfectant dressings; Disinfectant soap; Disinfectant swabs; Disinfectants; Disinfectants and antiseptics; Disinfectants for chemical toilets; Disinfectants for contact lenses; Disinfectants for dental apparatus and instruments; Disinfectants for household use; Disinfectants for hygiene purposes; Disinfectants for hygienic purposes; Disinfectants for medical apparatus and instruments; Disinfectants for medical instruments; Disinfectants for medical use; Disinfectants for sanitary purposes; Disinfectants for sanitary use; Disinfectants for swimming pools; Disinfectants for veterinary use; Disinfectants impregnated into tissues; Disinfecting handwash; Disposable adult diapers; Disposable babies' diaper-pants; Disposable babies' diapers of paper and cellulose; Disposable babies' napkins of cellulose; Disposable babies' napkins of paper; Disposable baby diapers; Disposable diapers; Disposable diapers for incontinence; Disposable diapers of cellulose for babies; Disposable diapers of cellulose for incontinents; Disposable diapers of paper for babies; Disposable diapers of paper for incontinents; Disposable liners for babies' diapers; Disposable liners for incontinence diapers; Disposable liners of cellulose for napkins; Disposable napkins for incontinents; Disposable napkins made of paper for infants; Disposable napkins of cellulose for babies; Disposable napkins of cellulose for incontinents; Disposable napkins of paper for babies; Disposable napkins of paper for incontinents; Disposable nappies; Disposable nappies made of cellulose for babies; Disposable nappies made of cellulose for incontinents; Disposable nappies made of cellulose for infants; Disposable nappies made of paper for babies; Disposable nappies made of paper for incontinents; Disposable nappies made of paper for infants; Disposable nappy liners; Disposable pads for incontinence; Disposable pants of cellulose for holding a babies' napkin in place; Disposable pants of paper for holding a babies napkin in place; Disposable paper diapers; Disposable pet diapers; Disposable sanitising wipes; Disposable sanitizing wipes; Disposable swim diapers for babies; Disposable swim diapers for children and infants; Disposable training pants; Disposable training pants [diapers]; Disposable training pants of cellulose for infants; Disposable training pants of paper for infants; Disposable training pants of paper or cellulose; Dissolvable strips to stop bleeding from minor cuts and grazes; Diuretic pharmaceutical preparations; Diuretic preparations; Diuretics; Diuretics for detoxification purposes; DNA synthesis inhibitors; Dog lotions for veterinary purposes; Dog washes [insecticides]; Dogs (Repellents for -); Domestic biopesticides; Domestic pesticides; Donkey-hide gelatin (Ejiao) for Chinese medicinal use; Double sided adhesive tapes for medical use; Douching preparations for medical purposes; Dragees [medicines]; Dressing retention materials; Dressings for wounds; Dressings, medical; Dressings (Surgical -); Dried Chinese boxthorn fruits for Chinese medicinal use; Drinks (Medicinal -); Drug delivery agents; Drug delivery agents in the form of coatings for tablets that facilitate the delivery of pharmaceutical preparations; Drug delivery agents in the form of dissolvable films that facilitate the delivery of pharmaceutical preparations; Drug delivery agents in the form of edible wafers for wrapping powdered pharmaceuticals; Drug delivery agents that facilitate the delivery of pharmaceutical preparations; Drug detoxifying agents; Drugs for medical purposes; Dry rot fungus (Preparations for destroying -); Dysmenorrhea treatment preparations; Ear bandages; Ear candles; Ear candles for therapeutic purposes; Ear drops; Ectoparasite repellents; Edible fish oils for medical purposes; Effervescent analgesic pharmaceutical preparations; Effervescent vitamin tablets; Egg sanitizing preparations; Elastic bandages [dressings]; Elastic dressings; Electrocardiograph electrodes (Chemical conductors for -); Electrodes (Chemical conductors for electrocardiograph -); Electrolyte drinks for medical purposes; Electrolyte replacement beverages for medical purposes; Electrolyte solutions for medical use; Electrolytes for medical use; Elixirs for calming the skin; Elixirs for eczema; Elixirs for preventing chills; Elixirs for preventing colds; Elixirs for preventing throat infections; Elixirs for psoriasis; Elixirs for relieving asthma; Elixirs for relieving chills; Elixirs for relieving colds; Elixirs [pharmaceutical preparations]; Embedding material for dental use; Emetics; Emmenagogues; Emollients for medical purposes; Empty capsules for pharmaceuticals; Endogenous antigens; Enema preparations; Enzyme dietary supplements; Enzyme preparations for medical purposes; Enzyme preparations for veterinary purposes; Enzymes for medical purposes; Enzymes for veterinary purposes; Epidermal growth factor preparations for the treatment of burns; Epsom salts; Ergot for pharmaceutical purposes; Erythromycin preparations; Esters for pharmaceutical purposes; Estrogen preparations; Ethanol for pharmaceutical purposes; Ethers for medical use; Ethers for pharmaceutical purposes; Eucalyptol for pharmaceutical purposes; Eucalyptus for pharmaceutical purposes; Evacuants; Evacuants [purgatives]; Evening primrose oil for medical use; Exogenous antigens; Expectorants; Extracts of hops for pharmaceutical purposes; Extracts of medicinal herbs; Extracts of medicinal plants; Eye bandages for medical use; Eye compresses; Eye drops; Eye lotions for medical use; Eye ointment for medical use; Eye pads for medical use; Eye patches for medical purposes; Eyepatches for medical purposes; Eye-washes; Fabric deodorisers; Fabric deodorizers; Face cream (Medicated -); Face scrubs (Medicated -); Fat emulsions for medical infusions; Fat emulsions for parenteral hyperalimentation; Febrifuges; Feed supplements for veterinary use; Feeding stimulants for animals; Feminine hygiene pads; Feminine hygiene products; Fennel for medical purposes; Ferments for medical or veterinary use; Ferments for pharmaceutical purposes; Ferments (Milk -) for pharmaceutical purposes; Fertility enhancement preparations; Fever blister treatment preparations; Fiber (Dietary -); Fibre (Dietary -); Filled first aid kits; Filled syringes for medical purposes [containing pharmaceuticals]; First aid boxes sold filled; First aid dressings; First aid kits; First aid kits for domestic use; First-aid boxes, filled; First-aid kits; Fish meal for pharmaceutical purposes; Fish oil for medical purposes; Fissure sealant for dental and dental technical purposes; Fissure sealants for dental use; Fitness and endurance supplements; Fixing materials for dental purposes; Fixing materials for dental use; Flaxseed dietary supplements; Flaxseed for pharmaceutical purposes; Flaxseed meal for pharmaceutical purposes; Flaxseed oil dietary supplements; Flea collars; Flea exterminating preparations; Flea powders; Flea sprays; Flour for pharmaceutical purposes; Flowers of sulfur for pharmaceutical purposes; Flowers of sulphur for pharmaceutical purposes; Fly catching adhesive; Fly catching adhesives; Fly catching paper; Fly combating preparations; Fly destroying preparations; Fly glue; Fly paper; Fodder additives for medical purposes; Fodder supplements for veterinary purposes; Folic acid dietary supplements; Folic acid synthesis inhibitors; Food additives (Medicated -) for animals; Food esters for pharmaceutical purposes; Food for babies; Food for diabetics; Food for infants; Food for medically restricted diets; Food supplements; Food supplements consisting of amino acids; Food supplements consisting of trace elements; Food supplements for dietetic use; Food supplements for medical purposes; Food supplements for non-medical purposes; Food supplements for sportsmen; Food supplements for veterinary use; Food supplements in liquid form; Foodstuffs for diabetics [specially made for]; Foot balms (Medicated -); Foot care preparations for medical use; Foot creams (Medicated -); Foot perspiration (Remedies for -); Foot rot vaccines; Forestry (chemicals for -), [fungicides]; Forestry (chemicals for -), [herbicides]; Forestry (chemicals for -), [insecticides]; Forestry (chemicals for -), [parasiticide]; Formic aldehyde for pharmaceutical purposes; Freeze-dried food adapted for medical purposes; Freeze-dried meat adapted for medical purposes; Frostbite salve for pharmaceutical purposes; Fumigants; Fumigating pastilles; Fumigating sticks; Fumigating sticks as disinfectants; Fumigation preparations for medical purposes; Fungicidal fungal agents; Fungicidal preparations; Fungicides; Fungicides for ***agricultural*** use; Fungicides for domestic use; Fungicides for horticultural use; Fungicides for killing vermin; Fungicides for medical use; Galactagogues; Gallic acid for pharmaceutical purposes; Gamboge for medical purposes; Ganoderma lucidum spore powder dietary supplements; Gas mixtures for medical use; Gases and gas mixtures for medical imaging use; Gases for dental use; Gases for medical purposes; Gastroenteric preparations; Gastrointestinal cleaning agents; Gastrointestinal preparations; Gauze; Gauze compresses; Gauze for dressings; Gauzes for use as dressings; Gelatin capsules for pharmaceuticals; Gelatine for medical purposes; Gels for dermatological use; General anaesthetics; General anesthetics; Genetic identity tests comprised of reagents for medical purposes; Gentian for pharmaceutical purposes; Germicidal detergents; Germicidal preparations [other than soap]; Germicides; Ginseng capsules for medical purposes; Ginseng for medicinal use; Glossy ganoderma for pharmaceutical purposes; Glucose dietary supplements; Glucose for medical purposes; Glucose for use as an additive to foods for medical purposes; Glucose preparations for medical purposes; Glue coated strips for use against vermin; Glue (Fly -); Glycerine for medical purposes; Glycerophosphates; Gold amalgam for dental purposes; Gold (Dental amalgams of -); Goulard water; Gravel as a digestive aid for birds; Greases for medical or veterinary purposes; Greases for medical purposes; Greases for veterinary purposes; Ground flaxseed fiber for use as a dietary supplement; Guaiacol for pharmaceutical purposes; Gum for medical purposes; Gummed taffeta plasters; Gummy vitamins; Gurjun balsam for medical purposes; Gurjun [gurjon, gurjan] balsam for medical purposes; Gypsum for dental purposes; Haematogen; Haemoglobin; Haemorrhoid preparations; Haemostatic pencils; Haemostatic preparations; Hair growth preparations (Medicinal -); Hair growth stimulants; Hand creams for medical use; Hand lotion (Medicated -); Hand-sanitising preparations; Hand-sanitizing preparations; Headache relief sticks; Health food supplements for persons with special dietary requirements; Health food supplements made principally of minerals; Health food supplements made principally of vitamins; Heating patches for medical purposes; Heatstroke treating agents; Hematogen; Hemoglobin; Hemorrhoid preparations; Hemorrhoidal ointments; Hemostatic pencils; Hemostatics for medical purposes; Herb teas for medicinal purposes; Herbal anti-itch ointments for pets; Herbal beverages for medicinal use; Herbal compounds for medical use; Herbal creams for medical use; Herbal detoxification agents; Herbal dietary supplements for persons special dietary requirements; Herbal extracts for medical purposes; Herbal honey throat lozenges; Herbal male enhancement capsules; Herbal medicine; Herbal mud packs for therapeutic use; Herbal preparations for medical use; Herbal sore skin ointments for pets; Herbal sprays for medical use; Herbal supplements; Herbal tea for medicinal use; Herbal teas for medicinal purposes; Herbicide for ***agricultural*** use; Herbicides; Herbicides for ***agricultural*** use; Herbicides for domestic use; Herbicides [weedkillers]; Herbs for medicinal purposes; Herbs (Medicinal -); Herbs (Smoking -) for medical purposes; Homeopathic anti-inflammatory ointments; Homeopathic medicines; Homeopathic pharmaceuticals; Homeopathic supplements; Homogenised food adapted for medical purposes; Homogenized food adapted for medical purposes; Hooves (Cement for animal -); Hops (Extracts of -) for pharmaceutical purposes; Hormone preparations for pharmaceutical use; Hormone suppressing preparations; Hormones for medical purposes; Human allograft tissue; Human coagulation factors; Human growth hormone; Human immune globulin; Human plasma protein; Human vaccine preparations; Hydrastine; Hydrastinine; Hydrated chloral for pharmaceutical purposes; Hydrocortisone; Hydrocortisone creams; Hydrogen peroxide for medical purposes; Hygienic bandages; Hygienic lubricants; Hygienic preparations and articles; Hygienic preparations for veterinary use; Hypnotic sedatives; Hypnotics; Hypoglycemic agents; Hypoglycemic drugs; Hypolipidemic agents; Ibuprofen for use as an oral analgesic; Immunoassay reagents for medical use; Immunomodulators; Immunostimulants; Immunosuppressants for use following transplantation in the case of graft rejection; Immunotherapeutic agents for bacterial infections; Implantable materials for use in guided tissue regeneration; Implantable medicines; Implantable textile material to encourage the growth of tissue; Implants comprising living tissue; Implants for guided tissue regeneration; Implants (Surgical -) [living tissues]; Impregnated antiseptic wipes; Impregnated medicated pads; Impregnated medicated swabs; Impregnated medicated wipes; Impregnated pads containing medicated preparations; Impression materials for dental purposes; In vitro diagnostic preparations for medical use; In vitro gender prediction test kit; In vitro preparations for predicting ovulation; In vitro preparations for predicting ovulation for home use; Incense (Insect repellent -); Incontinence diapers; Incontinence garments; Incontinence napkins; Incontinence pads; Incontinents (Napkins for -); Incontinents (Pants, absorbent, for -); Indicators for medical diagnosis; Infant formula; Infants' diapers [disposable] of cellulose; Infants' diapers [disposable] of paper; Infants' disposable diapers of cellulose; Infants' disposable diapers of paper; Infants' disposable training pants of cellulose; Infants' disposable training pants of paper; Infusions (Medicinal -); Inhalant anesthetics; Inhalants; Inhaled pharmaceutical preparations for the treatment of respiratory diseases and disorders; Injectable dermal filler; Injectable dermal fillers; Injectable pharmaceuticals; Injectable pharmaceuticals for treatment of anaphylactic reactions; Insect attractants; Insect exterminating agents; Insect growth regulators; Insect repellants; Insect repellent agents; Insect repellent incense; Insect repellent preparations; Insect repellents; Insect repellents for use on animals; Insect repellents for use on humans; Insect repelling preparations; Insect repelling tags; Insecticidal animal shampoo; Insecticidal animal shampoos; Insecticidal preparations; Insecticidal veterinary washes; Insecticides; Insecticides for ***agricultural*** use; Insecticides for domestic use; Insect-repellents; Insemination (Semen for artificial -); Insulin; Insulin injectors sold filled with insulin; Intravenous fluids used for rehydration, nutrition and the delivery of pharmaceutical preparations; Iodides for pharmaceutical purposes; Iodine; Iodine for pharmaceutical purposes; Iodoform; Irish moss for medical purposes; Isopropyl alcohol for medical use; Isotopes for medical purposes; Jalap; Jelly (Petroleum -) for medical purposes; Jellyfish repellent sunscreens; Jujube, medicated; Knickers for sanitary purposes; Knickers (Menstruation -); Knickers (Sanitary -); Kretek (clove) cigarettes for medical use; Lacquer (Dental -); Lactagogues; Lacteal flour for babies; Lactose for pharmaceutical purposes; Lactose free infant's formula; Larvae exterminating preparations; Larvae inhibiting preparations; Larvicides; Laxative suppositories; Laxatives; Laxatives for detoxification purposes; L-carnitine for weight loss; Lead water; Lecithin dietary supplements; Lecithin for medical purposes; Leeches for medical purposes; Lice treatment preparations; Lice treatment preparations [pediculicides]; Lime (Preparations of -) for pharmaceutical purposes; Lime-based pharmaceutical preparations; Linctus; Liniments; Lining materials for dental purposes; Lining materials for dental use; Linseed dietary supplements; Linseed for pharmaceutical purposes; Linseed meal for pharmaceutical purposes; Linseed oil dietary supplements; Lint for medical purposes; Lipotropic factor preparations; Liquid antipruritic; Liquid antipruritics; Liquid bandage sprays; Liquid bandages for skin wounds; Liquid dietary supplements; Liquid herbal supplements; Liquid vitamin supplements; Liquorice for pharmaceutical purposes; Live organs and tissues for surgical purpose; Living cells for medical use; Living cells for veterinary use; Local anaesthetics; Local anesthetics; Lotions for pharmaceutical purposes; Lotions for treating athlete's foot; Lotions for veterinary purposes; Lotions (Tissues impregnated with pharmaceutical -); Low-salt bread adapted for medical use; Lozenges for pharmaceutical purposes; Lubricant gels for personal use; Lubricants for medical use; Lubricants for surgical purposes; Lubricating agents for medical use; Lupulin for pharmaceutical purposes; Lyophilised food adapted for medical purposes; Lyophilised meat adapted for medical purposes; Lyophilized food adapted for medical purposes; Lyophilized meat adapted for medical purposes; Lysine preparations; Magnesia for pharmaceutical purposes; Magnesium hydroxide for medicinal use; Magnesium oxide for medical use; Magnesium salts for pharmaceutical use; Magnesium sulphate for pharmaceutical use; Male fertility test kits; Malt albumin for pharmaceutical use; Malt extracts for pharmaceutical use; Malt for pharmaceutical purposes; Malted milk beverages for medical purposes; Mangrove bark for pharmaceutical purposes; Marijuana for medical purposes; Marine antifoulants; Massage candles for therapeutic purposes; Massage gels for medical purposes; Mastics (Dental -); Material for dental bridges; Material for dental crowns; Material for dental prostheses; Material for repairing teeth; Material for stopping teeth; Materials for artificial teeth; Materials for dental fillings; Materials for dental sealing purposes; Materials for dressing wounds; Materials for dressings; Materials for making dental impressions; Materials for oral prophylaxis; Materials for surgical casts; Materials for tooth fillings; Materials for tooth restoration; Meal for pharmaceutical purposes; Meal replacement powders; Media for bacteriological cultures; Medical adhesives for binding internal tissue; Medical adhesives for binding wounds; Medical and surgical dressings; Medical diagnostic reagents; Medical diagnostic reagents and assays for testing of body fluids; Medical diagnostic test strips; Medical dressings; Medical dressings, coverings and applicators; Medical foodstuff additives for veterinary use; Medical infusions; Medical mouthwashes; Medical plasters; Medical preparation for slimming purposes; Medical preparations; Medical preparations for slimming purposes; Medical wound dressings; Medicated additives for animal feeds; Medicated additives for animal foods; Medicated after-shave lotions; Medicated and sanitising soaps and detergents; Medicated animal feed; Medicated anti-cavity dental rinses; Medicated anti-cavity mouthwashes; Medicated baby oils; Medicated baby powders; Medicated balms; Medicated bath preparations; Medicated body gels; Medicated body powder; Medicated brush-on oral care gels; Medicated candies; Medicated candy; Medicated chewing gum; Medicated compresses; Medicated confectionery; Medicated creams; Medicated creams for the care of the feet; Medicated creams for treating dermatological conditions; Medicated dental rinses; Medicated dentifrices; Medicated diaper rash ointment; Medicated dry shampoos; Medicated eye-washes; Medicated face lotions; Medicated food supplements; Medicated foot powder; Medicated hair care preparations; Medicated hair lotions; Medicated hand wash; Medicated handwash; Medicated lip balm; Medicated lip care preparations; Medicated lotions; Medicated lotions for the hands; Medicated lotions for treating dermatological conditions; Medicated lozenges; Medicated massage candles; Medicated mouth care preparations; Medicated mouth spray; Medicated mouth treatment preparations; Medicated mouth wash; Medicated mouth washes; Medicated mouthwash; Medicated mouthwashes; Medicated muscle soaks; Medicated nappy rash lotions; Medicated nappy rash ointments; Medicated nasal spray preparations; Medicated ointments for application to the skin; Medicated ointments for treating dermatological conditions; Medicated oral care gels; Medicated plasters; Medicated preparations for skin treatment; Medicated preparations for treating halitosis; Medicated shampoo; Medicated shampoos; Medicated shampoos for pets; Medicated skin care preparations; Medicated skin creams; Medicated skin lotions; Medicated soap; Medicated sugar; Medicated supplements for animal feedstuffs; Medicated supplements for foodstuffs for animals; Medicated swabs; Medicated sweets; Medicated talcum powder; Medicated throat sprays; Medicated toilet preparations; Medicated toiletry preparations; Medicated toothpaste; Medicated wines; Medicinal alcohol; Medicinal beverages; Medicinal clay preparations; Medicinal clays; Medicinal creams for skin care; Medicinal creams for the protection of the skin; Medicinal drinks; Medicinal hair growing preparations; Medicinal hair growth preparations; Medicinal healthcare preparations; Medicinal herb extracts; Medicinal herb infusions; Medicinal herbal extracts for medical purposes; Medicinal herbs; Medicinal herbs in dried or preserved form; Medicinal infusions; Medicinal mud; Medicinal oils; Medicinal ointments; Medicinal preparations and substances; Medicinal preparations for stimulating hair growth; Medicinal preparations for the treatment of infectious diseases; Medicinal radix glycyrrhizae; Medicinal roots; Medicinal sediment [mud]; Medicinal sprays; Medicinal tea; Medicine; Medicine cases, portable, filled; Medicine tonics; Medicines for adjusting the menstrual cycle; Medicines for alleviating constipation; Medicines for animals; Medicines for dental purposes; Medicines for human purposes; Medicines for intestinal disorders; Medicines for prevention against milk fever; Medicines for the treatment of gastrointestinal diseases; Medicines for treating intestinal disorders; Medicines for veterinary purposes; Mediums (Bacteriological culture -); Melissa water for pharmaceutical purposes; Menstruation bandages; Menstruation knickers; Menstruation pads; Menstruation tampons; Menthol; Menthol for pharmaceutical purposes; Menthol vapor bath preparations for babies; Mercurial ointments; Mercurial ointments for medical use; Metabolic detoxifying agents; Metal alloys for dental restoration purposes; Metal alloys for dental use; Metal primers for dental purposes; Methionine preparations; Methylxanthines; Mice (Preparations for destroying -); Microbicides; Microbicides for wastewater treatment; Microorganisms (Cultures of -) for medical and veterinary use; Microorganisms (Nutritive substances for -); Microorganisms (Preparations of -) for medical and veterinary use; Migraine treatment preparations; Mildew (Chemical preparations to treat -); Mildew destroying preparations; Mildewcides; Mildewstats; Milk ferments for pharmaceutical purposes; Milk of almonds for pharmaceutical purposes; Milk powder for babies; Milk powders [foodstuff for babies]; Milk sugar; Milk sugar for medical purposes [lactose]; Milk sugar for pharmaceutical purposes; Milking grease; Mineral dietary supplements for animals; Mineral dietary supplements for humans; Mineral drinks (Medicated -); Mineral food preparations for medical purposes; Mineral food supplements; Mineral nutritional supplements; Mineral preparations and substances for medical use; Mineral preparations for medical purposes; Mineral salts for baths; Mineral salts for medical purposes; Mineral supplements; Mineral supplements for feeding livestock; Mineral supplements to foodstuffs; Mineral water salts; Mineral waters for medical purposes; Mint for pharmaceutical purposes; Mint-flavored chewing gum for medical use; Miticides; Miticides for ***agricultural*** use; Miticides for domestic use; Mixed antibiotic preparations; Mixed biological preparations for medical purposes; Mixed hormone preparations; Mixed vitamin preparations; Modeling wax for dental purposes; Moist paper hand towels impregnated with a pharmaceutical lotion; Moist wipes impregnated with a pharmaceutical lotion; Moisturising body lotion [pharmaceutical]; Moisturising creams [pharmaceutical]; Molding wax for dentists; Mole skin for use as a medical bandage; Moleskin for medical purposes; Moleskin for use as a medical bandage; Molluscicides; Mosquito killing preparations for application to mosquito nets; Mosquito repellant coils; Mosquito repellants for application to the skin; Mosquito repellents; Mosquito-repellent incense; Mosquito-repellent incenses; Mosquito-repellent patches for babies; Moss (Irish -) for medical purposes; Moss killers; Moth repellents; Mothballs; Mothproof paper; Mothproofing paper; Mothproofing preparations; Motion sickness medicines; Motion sickness treatment preparations; Moulding wax for dentists; Mouth cavity cleansers; Mouth rinses for medical use; Mouth sprays for medical use; Mouth washes for medical purposes; Mouthwashes for medical purposes; Mouthwashes [gargles] for medical purposes; Mud for baths; Mud (Medicinal -); Mugwort for medical purposes; Multi-purpose medicated analgesic balms; Multi-purpose medicated antibiotic creams; Multi-purpose medicated mentholated salves; Multivitamin preparations; Multi-vitamin preparations; Multivitamins; Muscle relaxants; Mustard for pharmaceutical purposes; Mustard oil for medical purposes; Mustard plasters; Mustard poultices; Mustard powder for medical purposes; Mustard preparations for medical purposes; Mycolic acid synthesis inhibitors; Myrobalan bark for pharmaceutical purposes; Nail care preparations for medical use; Nail fungus treatment preparations; Nail sanitizing preparations; Napkin-pants (Babies' -); Napkins (Babies' -) [diapers]; Napkins for babies; Napkins for babies [paper]; Napkins for incontinents; Nappies as baby diapers; Nappies for babies; Nappies for babies and incontinents; Nappies of cellulose for babies; Nappies of paper for babies; Nappies of paper for incontinents; Nappy changing mats, disposable, for babies; Nappy covers; Nappy cream [medicated]; Nappy liners of cellulose for incontinents; Nappy liners of paper for incontinents; Nappy pants for incontinents; Narcotics; Nasal cleaning preparations for medical purposes; Nasal decongestants; Nasal drops for the treatment of allergies; Nasal rinse; Nasal spray for the treatment of allergies; Nasal sprays for medical purposes; Natural biocides; Natural clay for therapeutic purposes; Natural dietary supplements for treating claustrophobia; Naturally derived antimicrobials for dermatological use; Nematicides; Nematocides; Nematode pesticide; Neoantigens; Nervines; Neutraceutical preparations for animals; Neutraceutical preparations for humans; Niacinamide preparations for the treatment of acne; Nicotine gum for use as an aid to stop smoking; Nicotine patches for use as aids to stop smoking; Night creams [medicated]; Non-dihydropyridine calcium channel blockers; Non-steroidal anti-inflammatory drugs; Nose drops; Nose drops for medical purposes; Noxious plants (Preparations for destroying -); Nucleic acid sequences for medical and veterinary purposes; Nursing pads; Nutraceutical preparations for therapeutic or medical purposes; Nutraceuticals for therapeutic purposes; Nutraceuticals for use as a dietary supplement; Nutritional additives to foodstuffs for animals, for medical purposes; Nutritional drink mix for use as a meal replacement; Nutritional supplement energy bars; Nutritional supplement meal replacement bars for boosting energy; Nutritional supplements; Nutritional supplements consisting of fungal extracts; Nutritional supplements consisting primarily of calcium; Nutritional supplements consisting primarily of iron; Nutritional supplements consisting primarily of magnesium; Nutritional supplements consisting primarily of zinc; Nutritional supplements for livestock feed; Nutritional supplements for veterinary use; Nutritional supplements made of starch adapted for medical use; Nutritive substances for microorganisms; Ocular pharmaceuticals; Odor neutralizing preparations for clothing and textiles; Odour absorbing materials; Oil (Cod liver -); Oil of turpentine for pharmaceutical purposes; Oiled paper for medical purposes; Oils (Medicinal -); Ointments for pharmaceutical purposes; Ointments for treating nappy rash; Ophthalmic muscle relaxants; Ophthalmic preparations; Ophthalmologic preparations; Ophthalmological preparations; Opiates; Opiod analgesics; Opium; Opium alkaloid preparations; Opodeldoc; Opotherapy preparations; Oral analgesics; Oral anti-epileptic pharmaceutical preparations; Oral contraceptives; Oral rehydration salts; Oral vaccine preparations; Organotherapeutic drugs; Organotherapeutic preparations; Organotherapeutics; Organotherapy preparations; Orgasm creams; Orthodontic alginate for dental impressions; Orthodontic alginate impression materials; Ovicides; Ovulation test kits; Oxygen baths; Oxygen cylinders, filled, for medical purposes; Oxygen for medical purposes; Oxytocics; Ozone for medical use; Pads (Breast-nursing -); Pads (Bunion -); Pads for feminine protection; Pads impregnated with medicated preparation; Pain relief medication; Pain relief medication for veterinary purposes; Pain relief preparations; Pain relieving creams; Pancreas hormone preparations; Pancreatic hormone preparations; Pant liners for incontinents; Panthenol preparations for medical use; Panties (Sanitary -); Pants, absorbent, for incontinence; Pants, absorbent, for incontinents; Pants (Sanitary -); Panty liners; Panty liners [sanitary]; Panty shields; Panty shields [sanitary]; Pantyliners; Paper diapers; Paper diapers for babies; Paper diapers for infants; Paper for mustard plasters; Paper for mustard poultices; Paper liners for diapers; Paper (Mothproof -); Paper nappies for babies; Paper nappies for infants; Paracetamol; Paracetamol modified release preparations; Paracetamol preparations for intravenous administration; Paracetamol preparations for oral administration; Parasiticides; Parasiticides for medical use; Parasympathomimetic agents; Parenteral anti-epileptic pharmaceutical preparations; Pastilles for pharmaceutical purposes; Pastilles (Fumigating -); Pearl powder for medical purposes; Pectin for pharmaceutical purposes; Pediculicidal shampoos; Penicillin preparations; Pepsins for pharmaceutical purposes; Peptones for pharmaceutical purposes; Perilla for pharmaceutical purposes; Personal lubricants; Personal sexual lubricants; Pest control preparations and articles; Pesticides; Pesticides for ***agricultural*** use; Pesticides for horticultural use; Pet odor neutralizer; Pet odour neutraliser; Petroleum jelly for medical or veterinary purposes; Petroleum jelly for medical purposes; Petroleum jelly for veterinary use; Pharmaceutical agents affecting digestive organs; Pharmaceutical agents affecting metabolism; Pharmaceutical agents affecting peripheral nervous system; Pharmaceutical agents affecting sensory organs; Pharmaceutical agents for epidermis; Pharmaceutical agents for treating physically caused lesions; Pharmaceutical antiallergic preparations and substances; Pharmaceutical cold preparations; Pharmaceutical compositions; Pharmaceutical cough preparations; Pharmaceutical creams; Pharmaceutical drugs; Pharmaceutical for the treatment of erectile dysfunction; Pharmaceutical implants; Pharmaceutical lipsalves; Pharmaceutical preparation for skin care; Pharmaceutical preparations; Pharmaceutical preparations acting on the central nervous system; Pharmaceutical preparations and substances; Pharmaceutical preparations and substances for the prevention of cancer; Pharmaceutical preparations and substances for the treatment of cancer; Pharmaceutical preparations and substances for the treatment of gastro-intestinal diseases; Pharmaceutical preparations and substances for use in gynecology; Pharmaceutical preparations and substances for use in oncology; Pharmaceutical preparations and substances for use in the field of anesthesia; Pharmaceutical preparations and substances for use in urology; Pharmaceutical preparations and substances with analgesic properties; Pharmaceutical preparations and substances with anti-inflammatory properties; Pharmaceutical preparations and substances with antipyretic properties; Pharmaceutical preparations containing caffeine; Pharmaceutical preparations for activating cellular function; Pharmaceutical preparations for animal skincare; Pharmaceutical preparations for animals; Pharmaceutical preparations for dental use; Pharmaceutical preparations for ear-related diseases; Pharmaceutical preparations for hair care; Pharmaceutical preparations for human use; Pharmaceutical preparations for hydrating the skin during pregnancy; Pharmaceutical preparations for immunity adjustment; Pharmaceutical preparations for inducing erections; Pharmaceutical preparations for inhalation for the treatment of pulmonary hypertension; Pharmaceutical preparations for inhalers; Pharmaceutical preparations for medical purposes; Pharmaceutical preparations for ocular or intraocular surgery; Pharmaceutical preparations for ophthalmological use; Pharmaceutical preparations for peripheral nervous system; Pharmaceutical preparations for preventing skin blemishes during pregnancy; Pharmaceutical preparations for regulating the immune system; Pharmaceutical preparations for skin care; Pharmaceutical preparations for skin wounds; Pharmaceutical preparations for suppressing tumors; Pharmaceutical preparations for the prevention of allergies; Pharmaceutical preparations for the prevention of autoimmune diseases; Pharmaceutical preparations for the prevention of autoimmune disorders; Pharmaceutical preparations for the prevention of diabetes; Pharmaceutical preparations for the prevention of diseases caused by bacteria; Pharmaceutical preparations for the prevention of diseases of the cardio-vascular system; Pharmaceutical preparations for the prevention of diseases of the endocrine system; Pharmaceutical preparations for the prevention of diseases of the genitourinary system; Pharmaceutical preparations for the prevention of diseases of the immune system; Pharmaceutical preparations for the prevention of diseases of the metabolic system; Pharmaceutical preparations for the prevention of diseases of the musculo-skeletal system; Pharmaceutical preparations for the prevention of diseases of the nervous system; Pharmaceutical preparations for the prevention of diseases of the respiratory system; Pharmaceutical preparations for the prevention of disorders caused by bacteria; Pharmaceutical preparations for the prevention of disorders of the cardio-vascular system; Pharmaceutical preparations for the prevention of disorders of the endocrine system; Pharmaceutical preparations for the prevention of disorders of the genitourinary system; Pharmaceutical preparations for the prevention of disorders of the immune system; Pharmaceutical preparations for the prevention of disorders of the metabolic system; Pharmaceutical preparations for the prevention of disorders of the musculo-skeletal system; Pharmaceutical preparations for the prevention of disorders of the nervous system; Pharmaceutical preparations for the prevention of disorders of the respiratory system; Pharmaceutical preparations for the prevention of inflammatory diseases; Pharmaceutical preparations for the prevention of inflammatory disorders; Pharmaceutical preparations for the prevention of ocular diseases; Pharmaceutical preparations for the prevention of ocular disorders; Pharmaceutical preparations for the prevention of osteoporosis; Pharmaceutical preparations for the prevention of stretch marks; Pharmaceutical preparations for the prevention of tumours; Pharmaceutical preparations for the relief of insect bites; Pharmaceutical preparations for the treatment of autoimmune diseases; Pharmaceutical preparations for the treatment of autoimmune disorders; Pharmaceutical preparations for the treatment of bone diseases; Pharmaceutical preparations for the treatment of bone fractures; Pharmaceutical preparations for the treatment of cancer; Pharmaceutical preparations for the treatment of cardiovascular disease; Pharmaceutical preparations for the treatment of central nervous system [CNS] diseases; Pharmaceutical preparations for the treatment of digestive diseases; Pharmaceutical preparations for the treatment of diseases caused by bacteria; Pharmaceutical preparations for the treatment of diseases of the endocrine system; Pharmaceutical preparations for the treatment of diseases of the genitourinary system; Pharmaceutical preparations for the treatment of diseases of the metabolic system; Pharmaceutical preparations for the treatment of diseases of the musculo-skeletal system; Pharmaceutical preparations for the treatment of disorders caused by bacteria; Pharmaceutical preparations for the treatment of disorders of the endocrine system; Pharmaceutical preparations for the treatment of disorders of the genitourinary system; Pharmaceutical preparations for the treatment of disorders of the metabolic system; Pharmaceutical preparations for the treatment of epilepsy; Pharmaceutical preparations for the treatment of esophagitis; Pharmaceutical preparations for the treatment of eye diseases and conditions; Pharmaceutical preparations for the treatment of gout; Pharmaceutical preparations for the treatment of heart rhythm disorders; Pharmaceutical preparations for the treatment of hormonal disorders; Pharmaceutical preparations for the treatment of hypercholesteremia; Pharmaceutical preparations for the treatment of hyperlipidemia; Pharmaceutical preparations for the treatment of immune system related diseases and disorders; Pharmaceutical preparations for the treatment of infectious diseases; Pharmaceutical preparations for the treatment of inflammatory diseases; Pharmaceutical preparations for the treatment of inflammatory disorders; Pharmaceutical preparations for the treatment of kidney diseases; Pharmaceutical preparations for the treatment of kidney disorders; Pharmaceutical preparations for the treatment of multiple sclerosis; Pharmaceutical preparations for the treatment of Musculo-skeletal disorders; Pharmaceutical preparations for the treatment of musculo-skeletal disorders; Pharmaceutical preparations for the treatment of osteoporosis; Pharmaceutical preparations for the treatment of Parkinson's disease; Pharmaceutical preparations for the treatment of tumours; Pharmaceutical preparations for the treatment of viral diseases; Pharmaceutical preparations for the treatment of worms in pets; Pharmaceutical preparations for treating allergic rhinitis; Pharmaceutical preparations for treating allergies; Pharmaceutical preparations for treating arthritis; Pharmaceutical preparations for treating asthma; Pharmaceutical preparations for treating chemical imbalances; Pharmaceutical preparations for treating chloasma; Pharmaceutical preparations for treating dandruff; Pharmaceutical preparations for treating diabetes; Pharmaceutical preparations for treating digestive system disorders; Pharmaceutical preparations for treating dry skin caused by pregnancy; Pharmaceutical preparations for treating epidermal problems; Pharmaceutical preparations for treating gastrointestinal disorders; Pharmaceutical preparations for treating halitosis; Pharmaceutical preparations for treating heatstroke; Pharmaceutical preparations for treating hypertension; Pharmaceutical preparations for treating hypoglycemia; Pharmaceutical preparations for treating malignant tumors; Pharmaceutical preparations for treating metabolic disorders; Pharmaceutical preparations for treating peripheral nervous system disorders; Pharmaceutical preparations for treating respiratory diseases; Pharmaceutical preparations for treating rheumatological diseases; Pharmaceutical preparations for treating sensory organ disorders; Pharmaceutical preparations for treating skeletal diseases; Pharmaceutical preparations for treating skin disorders; Pharmaceutical preparations for treating sports injuries; Pharmaceutical preparations for treating sunburn; Pharmaceutical preparations for treating the symptoms of radiation sickness; Pharmaceutical preparations for use in chemotherapy; Pharmaceutical preparations for use in dermatology; Pharmaceutical preparations for use in discouraging the smoking habit; Pharmaceutical preparations for use in hematology; Pharmaceutical preparations for use in oncology; Pharmaceutical preparations for use in ophthalmology; Pharmaceutical preparations for use in organ transplantation; Pharmaceutical preparations for use in tissue transplantation; Pharmaceutical preparations for use in urology; Pharmaceutical preparations for veterinary use; Pharmaceutical preparations for wounds; Pharmaceutical preparations in strip form; Pharmaceutical products and preparations against dry skin caused by pregnancy; Pharmaceutical products and preparations for chloasma; Pharmaceutical products and preparations for hydrating the skin during pregnancy; Pharmaceutical products and preparations for pregnancy blemishes; Pharmaceutical products and preparations for preventing skin blemishes during pregnancy; Pharmaceutical products and preparations to prevent stretch marks; Pharmaceutical products and preparations to prevent swelling in the legs; Pharmaceutical products for ophthalmological use; Pharmaceutical products for skin care for animals; Pharmaceutical products for the treatment of bone diseases; Pharmaceutical products for the treatment of cancer; Pharmaceutical products for the treatment of depression; Pharmaceutical products for the treatment of infectious diseases; Pharmaceutical products for the treatment of viral diseases; Pharmaceutical products for treating respiratory diseases; Pharmaceutical skin lotions; Pharmaceutical solutions used in dialysis; Pharmaceutical sweets; Pharmaceuticals; Pharmaceuticals and natural remedies; Pharmaceuticals for the treatment of erectile dysfunction; Pharmacological preparations for skin care; Phenol for pharmaceutical purposes; Pheromones; Pheromones for medical use; Phosphates for pharmaceutical purposes; Phylloxera (Chemical preparations for treating -); Phytotherapy preparations for medical purposes; Pills for tinnitus treatment; Pine pollen dietary supplements; Pituitary hormone preparations; Plant and herb extracts for medicinal use; Plant extracts for pharmaceutical purposes; Plant extracts for pharmaceutical use; Plants (Preparations for destroying noxious -); Plasma (Blood -); Plasters; Plasters [dressings]; Plasters for medical purposes; Plasters incorporating a magnet; Plasters, materials for dressings; Plasters (Mustard -); Poisons; Pollen dietary supplements; Polygonatum sibiricum for pharmaceutical purposes; Pomades for medical purposes; Pond herbicides; Porcelain for dental prostheses; Porcelain materials for use in dentistry; Portable first-aid kits; Potassium preparations for pharmaceutical purposes; Potassium salts for medical purposes; Poultices; Poultices (Mustard -); Powder of cantharides; Powdered fruit-flavored dietary supplement drink mix; Powdered milk foods for infants; Powdered milk for babies; Powdered nutritional supplement drink mix; Powdered nutritional supplement energy drink mix; Powders for killing fleas; Powders for killing fleas on animals; Prebiotic supplements; Pre-filled syringes for medical purposes; Pregnancy (Chemical preparations for the diagnosis of -); Pregnancy testing preparations; Pregnancy testing preparations for home use; Prenatal vitamins; Preparations for callouses; Preparations for cleansing the skin for medical use; Preparations for controlling insects; Preparations for deodorising the air; Preparations for destroying dry rot fungus; Preparations for destroying insects; Preparations for destroying lice in the hair; Preparations for destroying mice; Preparations for destroying noxious animals; Preparations for destroying noxious plants; Preparations for destroying parasites; Preparations for destroying vermin; Preparations for detecting genetic predispositions for medical purposes; Preparations for detecting mutation in prion genes for medical purposes; Preparations for facilitating sexual coupling; Preparations for inhibiting sexual coupling; Preparations for killing weeds; Preparations for making medicated beverages; Preparations for ocular lubrication; Preparations for preventing nail biting; Preparations for preventing sucking of the fingers; Preparations for preventing the formation of algae in water; Preparations for reducing sexual activity; Preparations for supplementing the body with essential vitamins and microelements; Preparations for the diagnosis of ovulation; Preparations for the diagnosis of pregnancy; Preparations for the neutralising of odours; Preparations for the treatment of acne; Preparations for the treatment of asthma; Preparations for the treatment of burns; Preparations for treating colds; Preparations for use as additives to food for human consumption [medicated]; Preparations for use in naturopathy; Preparations for use in the diagnosis of pregnancy; Preparations for use in vaginal lubrication; Preparations of lime for pharmaceutical purposes; Preparations of microorganisms for medical and veterinary use; Preparations of microorganisms for medical or veterinary use; Preparations of trace elements for animal use; Preparations of trace elements for human and animal use; Preparations of trace elements for human use; Preparations of vitamins; Preparations to facilitate teething; Preparations to prevent chewing or biting by animals; Preparations to prevent nail-biting; Pressure bandages [dressings]; Probiotic bacterial formulations for medical use; Probiotic bacterial formulations for veterinary use; Probiotic preparations for medical use; Probiotic preparations for medical use to help maintain a natural balance of flora in the digestive system; Probiotic supplements; Processed human donor skin for the replacement of soft tissue; Progesterone preparations; Propolis dietary supplements; Propolis for pharmaceutical purposes; Protective creams (Medicated -); Protective liners for panties; Protective panty liners; Protein dietary supplements; Protein powder dietary supplements; Protein supplement shakes; Protein supplements; Protein supplements for animals; Protein synthesis inhibitors; Pseudo-ginseng powder for medical purposes; Psychomotor stimulants; Psychotropics; Purgatives; Pyrethrum powder; Quassia for medical purposes; Quebracho bark for medical use; Quebracho for medical purposes; Quinine for medical purposes; Quinquina for medical purposes; Radiation sickness treating agents; Radioactive elements for medical use; Radioactive materials for medical purposes; Radioactive preparations veterinary diagnosis; Radioactive substances for medical purposes; Radio-isotope markers for therapeutic or diagnostic use; Radiological contrast substances for medical purposes; Radiopharmaceutical products; Radiotherapeutic hormones; Radium for medical purposes; Rat poison; Raticides; Reactants for medical diagnosis; Reactants for veterinary diagnosis; Reagent paper for medical or veterinary purposes; Reagent paper for medical purposes; Reagent paper for veterinary purposes; Reagents and media for medical and veterinary diagnostic purposes; Reagents (Chemical -) for medical or veterinary purposes; Reagents for analytical purposes [for medical purposes]; Reagents for analytical purposes [for veterinary purposes]; Reagents for blood grouping [for medical purposes]; Reagents for in-vitro laboratory use [for medical purposes]; Reagents for in-vitro laboratory use [for veterinary purposes]; Reagents for medical use; Reagents for microbiological analysis [for medical purposes]; Reagents for microbiological analysis [for veterinary purposes]; Reagents for use in analysis [for medical purposes]; Reagents for use in analysis [for veterinary purposes]; Reagents for use in diagnostic pregnancy tests; Reagents for use in diagnostic tests [for medical purposes]; Reagents for use in diagnostic tests [for veterinary purposes]; Reagents for use in medical genetic testing; Reagents for use in veterinary genetic testing; Reagents for use with analyzers [for medical purposes]; Reagents for use with analyzers [for veterinary purposes]; Reconstituted cells for clinical treatments for skin care; Reconstituted cells for medical treatments for skin care; Reducing sexual activity (Preparations for -); Refrigerator deodorants; Regulatory proteins for medical use; Rehydration preparations; Remedies for foot perspiration; Remedies for perspiration; Repellents for animals; Repellents for dogs; Repellents (Insect -); Respiratory stimulants; Rhubarb roots for pharmaceutical purposes; RNA synthesis inhibitors; Rodenticides; Roots (Medicinal -); Royal jelly dietary supplements; Royal jelly for medical purposes; Royal jelly for pharmaceutical purposes; Rubber for dental purposes; Rubbing alcohol; Sal ammoniac lozenges; Saline solution for sinus and nasal irrigation; Salivary gland hormone preparations; Salts for medical purposes; Salts for mineral water baths; Salts (Mineral water -); Salves [medicated]; Sandalwood for use as an insect repellent; Sandalwood oil for medical, pharmaceutical and veterinary purposes; Sanitary belts; Sanitary knickers; Sanitary napkins; Sanitary pads; Sanitary panties; Sanitary pants; Sanitary pants for pets; Sanitary panty liners; Sanitary panty shields; Sanitary preparations and articles; Sanitary preparations for medical purposes; Sanitary preparations for medical use; Sanitary preparations for veterinary use; Sanitary sterilising preparations; Sanitary tampons; Sanitary towels; Sanitary wear; Sanitisers for household use; Sanitising wipes; Sanitizers for household use; Sanitizing preparations for hospital use; Sanitizing wash for fruit and vegetables; Sanitizing wipes; Sarkomycin preparations; Sarsaparilla beverages [medicinal]; Sarsaparilla for medical purposes; Scalp treatments (Medicated -); Scapulars for surgical purposes; Scrubs [preparations] for medical use; Sea water for medicinal bathing; Sealed radioactive substances for medical use; Sealing agents for dental purposes; Sedatives; Sediment (Medicinal -) [mud]; Self adhesive dressings; Semen for artificial insemination; Serotherapeutic medicines; Serums; Sexual stimulant gels; Shaped metals for dentistry; Shaped napkins of cellulose for babies; Shaped napkins of paper for babies; Shark repellents; Sheep dips; Shoe deodorizers; Siccatives [drying agents] for medical purposes; Siccatives for medical purposes; Silicone-based personal lubricants; Skeletal muscle relaxants; Skin care creams for medical use; Skin care lotions [medicated]; Skin care (Pharmaceutical preparations for -); Skin care preparations for medical use; Skin grafts; Skin patches for the transdermal delivery of pharmaceuticals; Skin tonics [medicated]; Skin treatment [medicated] for animals; Slimming pills; Slimming purposes (Medical preparations for -); Slimming tea for medical purposes; Slug exterminating preparations; Smelling salts; Smoking herbs for medical purposes; Sodium salts for medical purposes; Soil fumigating preparations; Soil-sterilising preparations; Soil-sterilizing preparations; Solid oxygen for medical use; Solidified gases for medical purposes; Solutions for contact lenses; Solutions for disinfecting contact lenses; Solutions for medical use in washing the nasal passages; Solutions for neutralizing contact lenses; Solutions for rinsing contact lenses; Solutions for sterilising contact lenses; Solutions for use with contact lenses; Solvents for ***removing*** adhesive plasters; Soporifics; Soy isoflavone dietary supplements; Soy protein dietary supplements; Spermicidal creams; Spermicidal gels; Spermicides; Spermicides for application to condoms; Sponge material for healing wounds; Sponges for healing wounds; Sponges (Vulnerary -); Sporicides; Spring water for medical purposes; Starch for dietetic or pharmaceutical purposes; Starch for dietetic use; Starch for pharmaceutical purposes; Stem cells; Stem cells for medical purposes; Stem cells for veterinary purposes; Sterile plastic films for use as bandaging; Sterile solutions for medical purposes; Sterilising agents; Sterilising preparations; Sterilising (Soil- -) preparations; Sterilising solutions; Sterilising substances; Sterilized dressing; Sterilizing preparations; Steroids; Stick liquorice for pharmaceutical purposes; Sticking plasters; Sticking plasters for medical purposes; Sticking plasters for medical use; Sticks (Fumigating -); Sticks (Sulphur -) [disinfectants]; Stool softeners; Strengthening supplements containing parapharmaceutical preparations for prophylactic purposes and for convalescents; Streptomycin preparations; Strychnine; Strychnine poison; Styptic pencils; Styptic preparations; Substances in tablet form for use in the sterilisation of water; Substitutes for mothers milk; Sugar for medical purposes; Sugar substitutes for diabetics; Sulfonamide preparations; Sulfonamides [medicines]; Sulfur sticks [disinfectants]; Sulphonamide preparations; Sulphonamides as medicines; Sulphonamides [medicines]; Sulphur sticks as disinfectants; Sulphur sticks [disinfectants]; Sunburn ointments; Sunburn preparations for pharmaceutical purposes; Supplementary fodder mixes; Suppositories; Surgical bandages; Surgical cements; Surgical dressings; Surgical dyes; Surgical glues; Surgical implants comprised of living tissues; Surgical implants comprising living tissue; Surgical implants grown from stem cells; Surgical implants grown from stem cells [living tissues]; Surgical plasters; Surgical spirits; Surgical tape; Swabs for medical use; Sweets for medicinal purposes; Swim diapers, disposable, for babies; Swim diapers, reusable, for babies; Swim nappies, disposable, for babies; Swim nappies, reusable, for babies; Sympathomimetic agents; Synthetic biocides; Synthetic material for use in producing casts; Synthetic material for use in setting bones; Synthetic materials for dental use for fillings; Synthetic materials for use as dental fillings; Synthetic narcotics; Synthetic peptides for pharmaceutical purposes; Synthetic resins for medical use; Synthetic resins for use in dentistry; Syrups for pharmaceutical purposes; Taffeta plasters (Gummed -); Talcum powder (Medicated -) for babies; Tampons; Tampons for medical purposes; Tampons [sanitary]; Tanning pills; Tapes (Adhesive -), for medical purposes; Tapes for strapping [medical]; Tapes for varicose veins; Tartar for pharmaceutical purposes; Teat dips for dairy cows; Teeth filling material; Teething (Preparations to facilitate -); Test strips for measuring blood glucose levels; Testosterone preparations; Tetracycline preparations; Textiles (Deodorants for clothing and -); Therapeutic creams [medical]; Therapeutic medicated bath preparations; Therapeutic preparations for the bath; Thermal water; Thiolutin preparations; Thiomersal; Threonine preparations; Throat lozenges; Throat sprays [medicated]; Thymol for pharmaceutical purposes; Thyroid and parathyroid hormone preparations; Thyroid and para-thyroid hormone preparations; Tincture of iodine; Tinctures for medical purposes; Tisanes [medicated beverages]; Tissue-regenerative pharmaceutical preparations; Tissues for medical use; Tissues for surgical use; Tissues impregnated with antibacterial preparations; Tissues impregnated with insect repellants; Tissues impregnated with insect repellents; Tissues impregnated with pharmaceutical lotions; Tobacco extracts [insecticides]; Tobacco substitutes for medical purposes; Tobacco-free cigarettes for medical purposes; Toilet deodorants; Tonics for medical use; Tonics [medicines]; Tooth prophylactics; Topical analgesic creams; Topical analgesics; Topical anesthetics; Topical anti-infective substances for the treatment of infections of the eye; Topical antivirals; Topical first aid gels; Topical gels for medical and therapeutic use; Topical ophthalmic anti-infective substances for the treatment of infections; Towels (Sanitary -); Trace element preparations for human use; Trace element preparations for use by animals; Trace elements (Preparations of -) for human and animal use; Tranquillizers; Transdermal patches; Transdermal patches for medical treatment; Transplants [living tissues]; Triangular-shaped diapers [paper] for babies; Triangular-shaped napkins [paper] for babies; Trichomycin preparations; Trypsins for medical purposes; Tryptophane preparations; Tumor suppressing agents; Tumour antigens; Turpentine for pharmaceutical purposes; Udder creams for ***agricultural*** use; Underpads for incontinents; Underpants for sanitary purposes; Unit dose capsules sold empty for pharmaceutical use; Urease for medical purposes; Urinary tract disinfectants; Urinary tract preparations; Vaccine adjuvants; Vaccine preparations; Vaccines; Vaccines against flu; Vaccines against pneumococcal infections; Vaccines for cattle; Vaccines for horses; Vaccines for human use; Vaginal antifungals; Vaginal lubricants; Vaginal moisturizers; Vaginal washes; Vaginal washes for medical purposes; Vascular grafts [living tissue]; Vasoconstrictors; Vasopressors; Vermicides; Vermifuges; Vermin destroying preparations; Vermin repelling preparations; Vesicants; Veterinary diagnostic reagents; Veterinary preparations; Veterinary preparations and substances; Veterinary preparations for treatment of intestinal bacteria; Veterinary vaccines; Veterinary vaccines for bovine animals; Vine disease treating chemicals; Viral antigens; Viral vaccines; Virucides; Viscoelastic agents for eye use; Vitamin A preparations; Vitamin and mineral food supplements; Vitamin and mineral preparations; Vitamin and mineral supplements; Vitamin and mineral supplements for pets; Vitamin B preparations; Vitamin C preparations; Vitamin D preparations; Vitamin drinks; Vitamin drops; Vitamin enriched bread for therapeutic purposes; Vitamin fortified beverages for medical purposes; Vitamin preparations; Vitamin preparations in the nature of food supplements; Vitamin supplement patches; Vitamin supplements; Vitamin supplements for animals; Vitamin supplements for use in renal dialysis; Vitamin tablets; Vitamins and vitamin preparations; Vitamins for animals; Vitamins for pets; Vulnerary sponges; Wadding for dressings; Wadding for medical purposes; Wart pencils; Wart ***removing*** preparations; Washes (disinfectant -) [other than soap]; Washes (Sterilizing -); Water (Sea -) for medicinal bathing; Water-based personal lubricants; Waters (Mineral -) for medical purposes; Weedicides; Weedkillers; Wheat blight [smut] (Chemical preparations to treat -); Wheat dietary supplements; Wheat germ dietary supplements; Wheat smut (Chemical preparations to treat -); Wipes for medical use; Witch hazel; Worm repellents for use on turf or grass; Wound dressings; Wrist bands sold pre-filled with insect repelling preparations; X-ray contrast agents; X-ray contrast media for medical use; Yeast dietary supplements; Yeast extracts for medical, veterinary or pharmaceutical purposes; Yeast extracts for pharmaceutical purposes; Yeast for medical, veterinary or pharmaceutical purposes; Yeast for pharmaceutical purposes; Zinc dietary supplements; Zinc supplement lozenges.Class 44 Acupressure therapy; Acupuncture; Acupuncture services; Addiction treatment services; Advice in the field of childbirth; Advice relating to allergies; Advice relating to cosmetics; Advice relating to dentistry; Advice relating to hair care; Advice relating to immunology; Advice relating to nutrition; Advice relating to the breeding of animals; Advice relating to the feeding of animals; Advice relating to the medical needs of elderly people; Advice relating to the personal welfare of elderly people [health]; Advisory and consultancy services relating to the use of ***agricultural*** and horticultural fertilizers; Advisory and consultancy services relating to the use of fertilizers in ***agriculture***, horticulture and forestry; Advisory and consultancy services relating to the use of manure in ***agriculture***, horticulture and forestry; Advisory and consultancy services relating to the use of non-chemical treatments for sustainable ***agriculture*** and horticulture; Advisory and consultancy services relating to weed, pest and vermin control in ***agriculture***, horticulture and forestry; Advisory services relating to beauty; Advisory services relating to beauty care; Advisory services relating to beauty treatment; Advisory services relating to cosmetics; Advisory services relating to degenerative diseases; Advisory services relating to dental instruments; Advisory services relating to diet; Advisory services relating to health; Advisory services relating to horticulture; Advisory services relating to medical apparatus and instruments; Advisory services relating to medical instruments; Advisory services relating to medical problems; Advisory services relating to medical services; Advisory services relating to nutrition; Advisory services relating to pharmaceuticals; Advisory services relating to pharmacies; Advisory services relating to slimming; Advisory services relating to surgical instruments; Advisory services relating to the care of animals; Advisory services relating to the care of birds; Advisory services relating to the care of fish; Advisory services relating to the care of pet animals; Advisory services relating to the design of gardens; Advisory services relating to the design of turf; Advisory services relating to the laying of turf; Advisory services relating to the selection of turf; Advisory services relating to the treatment of degenerative diseases; Advisory services relating to water gardening; Advisory services relating to weight control; Advisory services relating to weight loss; Aerial and surface spreading of fertilisers and other ***agricultural*** chemicals; Aerial and surface spreading of fertilizers and other ***agricultural*** chemicals; Aerial seeding; Aerial spreading of ***agricultural*** chemicals; Aerial spreading of fertilisers; Aerial spreading of fertilizers; Aesthetician services; ***Agricultural*** advice; ***Agricultural*** advisory services; ***Agricultural*** consultancy; ***Agricultural***, horticulture and forestry services; ***Agricultural*** information services; ***Agricultural*** machinery (Rental of -); ***Agricultural*** services; ***Agricultural*** services relating to environmental conservation; ***Agriculture***, aquaculture, horticulture and forestry services; ***Agriculture***, horticulture and forestry services; ***Agriculture***, horticulture and forestry services relating to the recultivation of industrial wastelands; ***Agriculture*** services; Airbrush tanning salon services; Airbrush tanning services; Airbrush tanning services for the human body; Alcohol screening for medical purposes; Alternative medicine services; Ambulant medical care; Analysis of human serum for medical treatment; Analysis of human tissues for medical treatment; Animal beautician services; Animal beautician services for cats; Animal beautician services for dogs; Animal breeding; Animal clipping; Animal feed rationing service; Animal grooming; Animal grooming services; Animal healthcare services; Animal hospitals; Animal husbandry; Animal performance testing services; Animal-assisted therapy; Animals (Artificial insemination of -); Anti-smoking therapy; Application of cosmetic products to the body; Application of cosmetic products to the face; Aquaculture services; Aromatherapy services; Arranging of accommodation in convalescent homes; Arranging of accommodation in rest homes; Arranging of accommodation in sanatoria; Arranging of medical treatment; Acupressure therapy; Acupuncture; Acupuncture services; Addiction treatment services; Advice in the field of childbirth; Advice relating to allergies; Advice relating to cosmetics; Advice relating to dentistry; Advice relating to hair care; Advice relating to immunology; Advice relating to nutrition; Advice relating to the breeding of animals; Advice relating to the feeding of animals; Advice relating to the medical needs of elderly people; Advice relating to the personal welfare of elderly people [health]; Advisory and consultancy services relating to the use of ***agricultural*** and horticultural fertilizers; Advisory and consultancy services relating to the use of fertilizers in ***agriculture***, horticulture and forestry; Advisory and consultancy services relating to the use of manure in ***agriculture***, horticulture and forestry; Advisory and consultancy services relating to the use of non-chemical treatments for sustainable ***agriculture*** and horticulture; Advisory and consultancy services relating to weed, pest and vermin control in ***agriculture***, horticulture and forestry; Advisory services relating to beauty; Advisory services relating to beauty care; Advisory services relating to beauty treatment; Advisory services relating to cosmetics; Advisory services relating to degenerative diseases; Advisory services relating to dental instruments; Advisory services relating to diet; Advisory services relating to health; Advisory services relating to horticulture; Advisory services relating to medical apparatus and instruments; Advisory services relating to medical instruments; Advisory services relating to medical problems; Advisory services relating to medical services; Advisory services relating to nutrition; Advisory services relating to pharmaceuticals; Advisory services relating to pharmacies; Advisory services relating to slimming; Advisory services relating to surgical instruments; Advisory services relating to the care of animals; Advisory services relating to the care of birds; Advisory services relating to the care of fish; Advisory services relating to the care of pet animals; Advisory services relating to the design of gardens; Advisory services relating to the design of turf; Advisory services relating to the laying of turf; Advisory services relating to the selection of turf; Advisory services relating to the treatment of degenerative diseases; Advisory services relating to water gardening; Advisory services relating to weight control; Advisory services relating to weight loss; Aerial and surface spreading of fertilisers and other ***agricultural*** chemicals; Aerial and surface spreading of fertilizers and other ***agricultural*** chemicals; Aerial seeding; Aerial spreading of ***agricultural*** chemicals; Aerial spreading of fertilisers; Aerial spreading of fertilizers; Aesthetician services; ***Agricultural*** advice; ***Agricultural*** advisory services; ***Agricultural*** consultancy; ***Agricultural***, horticulture and forestry services; ***Agricultural*** information services; ***Agricultural*** machinery (Rental of -); ***Agricultural*** services; ***Agricultural*** services relating to environmental conservation; ***Agriculture***, aquaculture, horticulture and forestry services; ***Agriculture***, horticulture and forestry services; ***Agriculture***, horticulture and forestry services relating to the recultivation of industrial wastelands; ***Agriculture*** services; Airbrush tanning salon services; Airbrush tanning services; Airbrush tanning services for the human body; Alcohol screening for medical purposes; Alternative medicine services; Ambulant medical care; Analysis of human serum for medical treatment; Analysis of human tissues for medical treatment; Animal beautician services; Animal beautician services for cats; Animal beautician services for dogs; Animal breeding; Animal clipping; Animal feed rationing service; Animal grooming; Animal grooming services; Animal healthcare services; Animal hospitals; Animal husbandry; Animal performance testing services; Animal-assisted therapy; Animals (Artificial insemination of -); Anti-smoking therapy; Application of cosmetic products to the body; Application of cosmetic products to the face; Aquaculture services; Aromatherapy services; Arranging of accommodation in convalescent homes; Arranging of accommodation in rest homes; Arranging of accommodation in sanatoria; Arranging of medical treatment; Art therapy; Artificial insemination; Artificial insemination of animals; Artificial insemination services; Artificial insemination services for animals; Artificial suntanning services; Assisting individuals to stop smoking; Audiological testing services; Audiology services; Autogenic therapy services; Ayurveda therapy; Barber services; Barber shop services; Barber shops; Barbers' services; Barbers' shops; Barbershops; Baths for hygiene purposes (Public -); Baths (Public -) provision of facilities for personal hygiene; Baths (Turkish -); Baths (Turkish -) provision of facilities; Beautician services; Beauticians (Services of -); Beauty advisory services; Beauty care; Beauty care for animals; Beauty care for human beings; Beauty care of feet; Beauty care services; Beauty care services provided by a health spa; Beauty consultancy; Beauty consultancy services; Beauty consultation; Beauty consultation services; Beauty counselling; Beauty information services; Beauty salon services; Beauty salons; Beauty spa services; Beauty therapy services; Beauty therapy treatments; Beauty treatment; Beauty treatment services; Beauty treatment services especially for eyelashes; Beekeeping services; Behavioural analysis for medical purposes; Bioresonance treatment and care; Blood bank services; Blood banks; Blood donation; Blood pressure screening services; Body art; Body art services; Body piercing; Body piercing services; Body waxing services for hair ***removal*** in humans; Body waxing services for the human body; Bodywork therapy; Bonesetting services; Bowel cancer screening services; Branding of animals; Breast cancer screening services; Breeding and stud services; Breeding kennels; Breeding of animals; Breeding of dogs; Breeding of thoroughbred horses; Canine massage; Care of birds; Care of fish; Care of pet animals; Care of potted plants; Cat breeding services; Cattle breeding services; Cattle farming services; Cellulite treatment services; Cellulitis treatment services; Cervical cancer screening services; Charitable services, namely providing medical services; Charitable services, namely, providing medical services to needy persons; Chelation therapy services; Chemotherapy services; Chiropody; Chiropractic; Chiropractic services; Chiropractics; Chiropractitioner services; Cholesterol testing; Clinic (Medical -) services; Clinic services (Medical -); Clinics; Clinics (Medical -); Collation of information in the healthcare sector; Collection and preservation of human blood; Colonoscopy screening services; Colour analysis [beauticians' services]; Compilation of information relating to birds; Compilation of medical reports; Conducting of medical examinations; Conducting of psychological assessments and examination; Conducting screenings for cardiovascular disease risk factors; Conducting sleep studies for medical diagnostic or treatment purposes; Consultancy and advisory services relating to ***agriculture***, horticulture and forestry; Consultancy and information services provided via the Internet relating to pharmaceutical products; Consultancy and information services relating to biopharmaceutical products; Consultancy and information services relating to medical products; Consultancy and information services relating to pharmaceutical products; Consultancy in the field of body and beauty care; Consultancy in the field of nutrition; Consultancy in the field of viticulture; Consultancy provided via the Internet in the field of body and beauty care; Consultancy relating to ***agriculture***, horticulture and forestry; Consultancy relating to cosmetics; Consultancy relating to farming; Consultancy relating to health care; Consultancy relating to hearing tests; Consultancy relating to integral psychology; Consultancy relating to landscape design; Consultancy relating to nutrition; Consultancy relating to the cultivation of plants; Consultancy relating to tree planting; Consultancy services in the field of nutrition; Consultancy services related to nutrition; Consultancy services relating to ***agriculture***; Consultancy services relating to beauty; Consultancy services relating to cosmetics; Consultancy services relating to farming; Consultancy services relating to nutrition; Consultancy services relating to orthopaedic implants; Consultancy services relating to personal behaviour; Consultancy services relating to prosthetic implants; Consultancy services relating to slimming; Consultancy services relating to surgery; Consultation relating to bio-rhythms; Consultation services in the field of make-up; Consultation services in the field of weight management; Consultation services relating to beauty care; Consultation services relating to skin care; Consulting services relating to health care; Control of infestations of fleas in ***agriculture***; Convalescence homes; Convalescent home services; Convalescent homes; Cord blood bank services; Cosmetic analysis; Cosmetic and plastic surgery; Cosmetic and plastic surgery clinic services; Cosmetic body care services; Cosmetic dentistry; Cosmetic dentistry services; Cosmetic electrolysis; Cosmetic electrolysis for the ***removal*** of hair; Cosmetic facial and body treatment services; Cosmetic laser treatment for hair growth; Cosmetic laser treatment of skin; Cosmetic laser treatment of spider veins; Cosmetic laser treatment of tattoos; Cosmetic laser treatment of toenail fungus; Cosmetic laser treatment of unwanted hair; Cosmetic laser treatment of varicose veins; Cosmetic make-up services; Cosmetic skin tanning services for human beings; Cosmetic surgery services; Cosmetic treatment; Cosmetic treatment for the body; Cosmetic treatment for the face; Cosmetic treatment for the hair; Cosmetic treatment services for the body, face and hair; Cosmetician services; Cosmetics consultancy services; Counseling relating to occupational therapy; Counselling relating to diet; Counselling relating to nutrition; Counselling relating to occupational therapy; Counselling relating to the psychological relief of medical ailments; Counselling relating to the psychological treatment of medical ailments; Crop cultivation; Crop sowing; Cryotherapy services; Cultivation advisory services relating to ***agriculture***; Cultivation advisory services relating to horticulture; Cultivation of grapes for winemaking; Cultivation of plants; Cupping therapy; Cupping therapy services; Deep sea fishing services; Deep tissue massage; Dental assistance; Dental clinic services; Dental consultations; Dental hygienist services; Dental services; Dentist services; Dentistry; Dentistry services; Depilatory treatment; Depilatory waxing; Dermatological services for treating skin conditions; Dermatology services; Design (Landscape -); Design of gardens and landscapes; Destruction of parasites for ***agriculture***, horticulture and forestry; Development of individual physical rehabilitation programmes; Diabetes screening services; Diet planning and supervision; Dietary advice; Dietary and nutritional guidance; Dietary guidance; Dietetic advisory services; Dietetic counselling services [medical]; Dietician service; Dietitian services; Dispensing of pharmaceuticals; DNA screening for medical purposes; Dog grooming services; Dog-clipping; Drug, alcohol and DNA screening for medical purposes; Drug rehabilitation services; Drug screening for medical purposes; Drug testing for substance abuse; Drug testing of participants in sports for the use of illegal or prohibited performance enhancing substances; Drug use screening services; Electro therapy services for physiotherapy; Electrolysis for cosmetic purposes; Emergency assistance services in the medical field; Emergency medical assistance; Equine massage; Exercise facilities for health rehabilitation purposes (Provision of -); Exterminating (Vermin -) for ***agriculture***, horticulture and forestry; Eye bank services; Eyebrow dyeing services; Eyebrow shaping services; Eyebrow tattooing services; Eyebrow threading services; Eyebrow tinting services; Eyeglass-fitting; Eyelash curling services; Eyelash dyeing services; Eyelash extension services; Eyelash perming services; Eyelash tinting services; Facial beauty treatment services; Facial treatment services; Family planning; Farm seeding by air; Farming (animals); Farming apparatus (Rental of -); Farming (crops); Farming equipment rental; Farming services; Farrier services; Fertilizer spreading; Fertilizers and other ***agricultural*** chemicals (Aerial and surface spreading -); Fertilizers and other ***agricultural*** chemicals (Aerial and surface spreading of -); Fish farming services; Fitness testing; Fitting of artificial limbs; Fitting of artificial limbs, prosthetic devices and prostheses; Fitting of contact lenses; Fitting of eyeglasses; Fitting of hearing aids; Fitting of optical lenses; Fitting of orthopaedic devices; Fitting of orthopedic devices; Fitting of orthotic devices; Fitting of prosthetic devices; Fitting of prosthetics; Floral arrangement design services; Floral arranging; Floral design; Floral design services; Floral display hire services; Floristry; Flower arrangement design services; Flower arrangements (Rental of -); Flower arranging; Food nutrition consultation; Foot care; Foot massage services; ***Forest*** habitat restoration; Forestry services; Fumigation in ***agriculture***; Garden design services; Garden maintenance; Garden or flower bed care; Garden tree planting; Gardener and gardening services; Gardening; Gardening advice; Gardening information and advice; Gardening (Landscape -); Gardening services; Genetic counseling; Genetic testing for medical purposes; Genetic testing of animals; Genetic testing of animals for diagnostic or treatment purposes; Geriatric nursing; Grass cutting services; Greenhouse services; Grooming (Animal -); Grooming of animals; Grooming of pets; Grooming (Pet -); Grooming salon services for pet animals; Guidance on nutrition; Gynecological pap examination; Gynecology services; Hair braiding services; Hair care services; Hair coloring services; Hair colouring services; Hair curling services; Hair cutting; Hair cutting services; Hair dressing salon services; Hair highlighting services; Hair implantation; Hair implantation services; Hair perming services; Hair replacement; Hair restoration; Hair restoration services; Hair salon services; Hair salon services for children; Hair salon services for men; Hair salon services for military service members; Hair salon services for women; Hair straightening services; Hair styling; Hair styling services; Hair tinting services; Hair treatment; Hair treatment services; Hair weaving; Hair weaving services; Haircare services; Hairdressing; Hairdressing salon services; Hairdressing salons; Hairdressing services; Harvesting crops for others; Health advice and information services; Health assessment surveys; Health care; Health care consultancy services [medical]; Health care in the nature of health maintenance organizations; Health care relating to acupuncture; Health care relating to chiropraxis; Health care relating to fasting; Health care relating to homeopathy; Health care relating to hydrotherapy; Health care relating to naturopathy; Health care relating to osteopathy; Health care relating to relaxation therapy; Health care relating to remedial exercise; Health care relating to therapeutic massage; Health care services for assisting individuals to stop smoking; Health care services offered through a network of health care providers on a contract basis; Health center services; Health centers; Health centre services; Health centres; Health clinic services; Health clinic services [medical]; Health consultancy; Health counseling; Health counselling; Health farm services [medical]; Health hydro services; Health resort services [medical]; Health risk assessment surveys; Health screening; Health screening services; Health screening services in the field of asthma; Health screening services in the field of sleep apnea; Health spa services; Healthcare; Health-care; Healthcare advisory services; Healthcare consultancy services; Healthcare information services; Healthcare services; Health-care services; Hearing aid fitting services; Hearing tests; Heat therapy [medical]; Hepatitis screening services; Herbalism; Hire of farm apparatus; Hire of interior plants; Hire of roller-towel apparatus; Hire of washroom facilities; Hiring of dental instruments; Hiring of flowers; Hiring of medical instruments; Hiring of plants; Hiring of surgical instruments; Hiring of veterinary instruments; Holistic psychotherapy; Home health care services; Home nursing aid services; Homeopathic clinical services; Homes (Convalescent -); Homes (Convalescent -) services; Homes (Nursing -); Homes (Nursing -) services; Home-visit manicure services; Home-visit nursing care; Horse breeding and stud services; Horse breeding services; Horse farms; Horse stud services; Horticultural services; Horticulture; Horticulture, gardening and landscaping; Horticulture services; Hospice services; Hospices; Hospital nursing home services; Hospital services; Hospitals; Hot stone massage; Hot stone massage therapy services; Human fertility treatment services; Human healthcare services; Human hygiene and beauty care; Human sperm donation services; Human tissue bank services; Hydroponic farming services; Hydrotherapy; Hydrotherapy home services; Hydrotherapy services; Hygienic and beauty care; Hygienic and beauty care for animals; Hygienic and beauty care for human beings; Hygienic and beauty care for humans; Hygienic and beauty care services; Hygienic care for animals; Hygienic care for human beings; Hypnotherapy; In vitro fertilisation services; In vitro fertilization services; In vitro fertilization services for animals; Individual and group psychology services; Individual medical counseling services provided to patients; Infestations (control of -), fleas [in ***agriculture***]; Information relating to beauty; Information relating to beauty care; Information relating to blood donation; Information relating to health; Information relating to massage; Information relating to nutrition; Information services relating to contact lenses; Information services relating to farming; Information services relating to flora; Information services relating to health care; Information services relating to the use of chemicals used in ***agriculture***; Information services relating to the use of chemicals used in forestry; Information services relating to the use of chemicals used in horticulture; Information services relating to the use of fertilisers used in ***agriculture***; Information services relating to the use of fertilisers used in forestry; Information services relating to the use of fertilisers used in horticulture; Information services relating to the use of manures used in ***agriculture***; Information services relating to the use of manures used in forestry; Information services relating to the use of manures used in horticulture; Information services relating to the veterinary pharmaceutical industry; Information services relating to veterinary pharmaceuticals; Infrared sauna services; Injectable filler treatments for cosmetic purposes; Insect farming services; Insecticide spraying for ***agricultural***, horticultural and forestry purposes; Insecticide spraying for ***agriculture***; Insecticide spraying for forestry; Insecticide spraying for horticulture; Insecticide spraying in ***agriculture***; Insertion of subcutaneous microchips into pets for purposes of tracking and identification; Insomnia therapy services; Interpretation of electrocardiographic signals; Intradermal pigmentation services; Issuing of medical reports; Laboratory analysis services relating to the treatment of animals; Laboratory analysis services relating to the treatment of persons; Lactation consulting services; Landscape architecture services; Landscape design; Landscape design services; Landscape gardening; Landscape gardening design for others; Landscape gardening of floral displays for the interior of buildings; Landscape gardening services; Landscaping [gardening]; Laser hair ***removal*** services; Laser ***removal*** of spider veins; Laser ***removal*** of tattoos; Laser ***removal*** of toenail fungus; Laser ***removal*** of varicose veins; Laser skin rejuvenation services; Laser skin tightening services; Laser vision correction services; Laser vision surgery services; Lawn care; Lawn care services; Lawn maintenance services; Lawn mowing services; Lawn trimming equipment rental; Laying of artificial turf; Laying of turf; Leasing of livestock; Leasing of medical equipment; Leasing of showers; Leasing skin care equipment; Light therapy services; Liposuction services; Livestock farming services; Lung cancer screening services; Lymphatic drainage services; Lymphodrainage services; Make-up application services; Make-up consultation and application services; Make-up consultation services provided on-line or in-person; Make-up services; Mammography testing services; Managed health care services; Manicure and pedicure services; Manicure services; Manicuring; Manicuring services; Massage; Massage and therapeutic shiatsu massage; Massage services; Massages; Medical advice for individuals with disabilities; Medical advice in the field of pregnancy; Medical advisory services; Medical analysis for the diagnosis and treatment of persons; Medical analysis services; Medical analysis services for cancer diagnosis and prognosis; Medical analysis services for diagnostic and treatment purposes provided by medical laboratories; Medical analysis services for the diagnosis of cancer; Medical analysis services relating to the treatment of patients; Medical analysis services relating to the treatment of persons; Medical analysis services relating to the treatment of persons provided by a medical laboratory; Medical and health services relating to DNA, genetics and genetic testing; Medical and healthcare clinics; Medical and healthcare services; Medical assistance; Medical assistance consultancy provided by doctors and other specialized medical personnel; Medical assistance services; Medical care; Medical care and analysis services relating to patient treatment; Medical care of feet; Medical care services; Medical clinic day care services for sick children; Medical clinic services; Medical clinics; Medical consultancy for selecting appropriate wheelchairs, commodes, invalid hoists, walking frames and beds; Medical consultancy relating to hearing loss; Medical consultancy services; Medical consultation; Medical consultations; Medical counseling; Medical counseling relating to stress; Medical counseling services; Medical counselling; Medical counselling services; Medical diagnostic services; Medical equipment rental; Medical evaluation services; Medical examination of individuals; Medical examination of individuals (Provision of reports relating to the -); Medical examinations; Medical health assessment services; Medical house call services; Medical imaging services; Medical information; Medical information (Provision of -); Medical information retrieval services; Medical information services; Medical information services provided via the Internet; Medical laboratory services for the analysis of blood samples taken from patients; Medical laboratory services for the analysis of samples taken from patients; Medical nursing; Medical nursing services; Medical screening; Medical screening relating to the heart; Medical screening services in the field of asthma; Medical screening services in the field of sleep apnea; Medical screening services relating to cardiovascular disease; Medical services; Medical services for the diagnosis of conditions of the human body; Medical services for the treatment of conditions of the human body; Medical services for the treatment of skin cancer; Medical services for treatment of the skin; Medical services in the field of diabetes; Medical services in the field of in vitro fertilization; Medical services in the field of nephrology; Medical services in the field of oncology; Medical services in the field of treatment of chronic pain; Medical services, namely, in vitro fertilization; Medical services relating to the ***removal***, treatment and processing of bone marrow; Medical services relating to the ***removal***, treatment and processing of human blood; Medical services relating to the ***removal***, treatment and processing of human cells; Medical services relating to the ***removal***, treatment and processing of stem cells; Medical services relating to the ***removal***, treatment and processing of umbilical cord blood; Medical spa services; Medical tele-reporting [medical services]; Medical testing; Medical testing for diagnostic or treatment purposes; Medical testing services, namely, fitness evaluation; Medical testing services relating to the diagnosis and treatment of disease; Medical treatment services; Medical treatment services provided by a health spa; Medical treatment services provided by clinics and hospitals; Medication counseling; Meditation services; Mental health screening services; Mental health services; Meridian scraping therapy (Gua Sha); Microdermabrasion services; Microneedling treatment services; Micropigmentation services; Midwife services; Midwifery services; Monitoring of patients; Mounting gemstones in dentures; Moxibustion; Moxibustion therapy; Music therapy for physical, psychological and cognitive purposes; Music therapy services; Nail care services; Nail salon services; Naprapathy; Narcotic rehabilitation; Nuisance wildlife control services; Nurseries (Plant -); Nursing care; Nursing care (Provision of -); Nursing care services; Nursing home services; Nursing homes; Nursing, medical; Nursing services; Nursing services (Medical -); Nutrition and dietetic consultancy; Nutrition consultancy; Nutrition counseling; Nutrition counselling; Nutritional advice; Nutritional advisory and consultation services; Nutritional advisory services; Nutritional guidance; Obstetric services; Occupational psychology services; Occupational therapy and rehabilitation; Occupational therapy services; On-line make-up consultation services; Operation of public baths for sanitary purposes; Operation of sauna facilities; Ophthalmological services; Ophthalmology services; Optical imaging for medical diagnostic use; Optical services; Optical tests; Optician services; Opticians' services; Optometric services; Optometry; Optometry services; Orthodontic services; Osteopathy; Osteoporosis screening; Outpatient and inpatient care services; Oxygen bar services; Palliative care; Paramedical services; Pathology services; Pathology services relating to the treatment of persons; Pediatric nursing services; Pedicure services; Pedicurist services; Performing diagnosis of diseases; Permanent hair ***removal*** and reduction services; Permanent makeup services; Personal hair ***removal*** services; Personal therapeutic services relating to cellulite ***removal***; Personal therapeutic services relating to circulatory improvement; Personal therapeutic services relating to fat dissolution; Personal therapeutic services relating to hair regrowth; Personality assessment services [mental health services]; Personality testing for psychological purposes; Personality testing [mental health services]; Pest control for ***agriculture***; Pest control in ***agriculture***; Pest control services for ***agriculture***, aquaculture, horticulture and forestry; Pest control services for ***agriculture***, horticulture and forestry; Pet bathing services; Pet beauty salon services; Pet grooming; Pet grooming services; Pet hospital services; Pharmaceutical advice; Pharmaceutical advisory services; Pharmaceutical consultation; Pharmaceutical services; Pharmacists' services to make up prescriptions; Pharmacy advice; Pharmacy advisory services; Pharmacy services; Phlebotomy services; Physical examination; Physical examination services; Physical rehabilitation; Physical therapy; Physical therapy services; Physician services; Physicians' services; Physiotherapy; Physiotherapy [physical therapy]; Physiotherapy services; Pig breeding services; Planning [design] of gardens; Plant care services [horticultural services]; Plant nurseries; Plant nursery services; Planting of flora; Planting of trees; Plastic surgery; Plastic surgery services; Podiatrist; Postnatal care services for women; Poultry breeding services; Pre-employment drug screening; Pregnancy testing; Preparation and dispensing of medications; Preparation of prescriptions by pharmacists; Preparation of prescriptions in pharmacies; Preparation of psychological profiles for medical purposes; Preparation of psychological reports; Preparation of reports relating to health care matters; Preparation of reports relating to medical matters; Preparing psychological profiles; Private hospital services; Professional consultancy relating to ***agriculture***; Professional consultancy relating to diet; Professional consultancy relating to health; Professional consultancy relating to health care; Professional consultancy relating to nutrition; Prostate cancer screening services; Providing bath houses; Providing breastfeeding information; Providing cancer screening services; Providing health care information by telephone; Providing health information; Providing hot tub facilities; Providing hot-spring facilities; Providing information about ***agriculture***, horticulture, and forestry services; Providing information about beauty; Providing information about dietary supplements and nutrition; Providing information about gardening; Providing information about public bath facilities; Providing information about Turkish bath facilities; Providing information in the field of hair styling; Providing information in the field of health via a website; Providing information regarding plant and flower identification for horticultural purposes; Providing information relating to acupuncture; Providing information relating to animal breeding; Providing information relating to beauty salon services; Providing information relating to chiropractics; Providing information relating to dentistry; Providing information relating to dietary and nutritional guidance; Providing information relating to dietary and nutritional supplements; Providing information relating to farming equipment rental; Providing information relating to garden tree planting; Providing information relating to medical services; Providing information relating to moxibustion; Providing information relating to nursing care services; Providing information relating to physical examinations; Providing information relating to the preparation and dispensing of medications; Providing information relating to the rental of lawnmowers; Providing information relating to the rental of medical machines and apparatus; Providing information relating to the rental of potted plants; Providing information relating to the spreading of fertilizers; Providing information relating to the treatment of dislocated joints, sprains or bone fractures; Providing information relating to the use of fertilizers; Providing information relating to traditional Japanese massage; Providing information relating to vermin exterminating for ***agriculture***, horticulture or forestry; Providing information relating to veterinary services; Providing information relating to weed killing; Providing information to patients in the field of administering medications; Providing information via the Internet in the field of diabetes; Providing laser therapy for treating medical conditions; Providing long-term care facilities; Providing medical advice in the field of dermatology; Providing medical advice in the field of geriatrics; Providing medical advice in the field of weight loss; Providing medical information; Providing medical information from a web site; Providing medical information in the field of dermatology; Providing medical information in the field of geriatrics; Providing medical information in the field of weight loss; Providing medical information in the healthcare sector; Providing medical support in the monitoring of patients receiving medical treatments; Providing mental rehabilitation facilities; Providing news and information in the field of medicine; Providing nutritional information about drinks for medical weight loss purposes; Providing nutritional information about food; Providing nutritional information about food for medical weight loss purposes; Providing online information about ***agriculture***, horticulture, and forestry services; Providing on-line information relating to oncology; Providing on-line information relating to the prevention of cardiovascular disease and strokes; Providing online medical record services other than dentistry; Providing physical rehabilitation facilities; Providing portable toilets for events; Providing psychological treatment; Providing public bath facilities; Providing public baths for sanitary purposes; Providing sauna facilities; Providing smoking cessation treatment services; Providing turkish bath facilities; Providing veterinary information; Providing weight loss program services; Provision of dietetic advice; Provision of health care services; Provision of health care services in domestic homes; Provision of hygienic and beauty care services; Provision of information relating to behavioural modification; Provision of information relating to birds; Provision of information relating to medicine; Provision of information relating to nutrition; Provision of information relating to psychology; Provision of information relating to vaccination for overseas travel; Provision of medical assistance; Provision of medical facilities; Provision of medical facilities at sporting events; Provision of medical information; Provision of medical information relating to poisons; Provision of medical services; Provision of medical treatment; Provision of nursing care; Provision of pharmaceutical information; Provision of public bath facilities for personal hygiene; Provision of public conveniences; Provision of sauna facilities; Provision of solarium [sun tanning] facilities; Provision of spa facilities; Provision of trial plots for crop testing; Provision of trial plots for crop testing by chemical application; Provision of washroom facilities; Psychiatric consultation; Psychiatric services; Psychiatric testing; Psychiatry; Psychological assessment and examination services; Psychological assessment services; Psychological care; Psychological consultation; Psychological counseling; Psychological counseling of staff; Psychological counseling services in the field of sports; Psychological counselling; Psychological diagnosis services; Psychological examination; Psychological profiles for medical purposes (Preparation of -); Psychological testing; Psychological testing for medical purposes; Psychological testing services; Psychological tests; Psychological therapy for infants; Psychological treatment; Psychologist (Services of a -); Psychometric testing for medical purposes; Psychotherapists' services; Psychotherapy; Psychotherapy services; Public bath facilities [for hygienic purposes]; Public bath facilities (Provision of -) for personal hygiene; Public bath services for hygiene purposes; Public baths for hygiene purposes; Public health counseling; Rat extermination in ***agriculture***; Reflexology; Reflexology services; Reforestation services; Regenerative medicine services; Rehabilitation for substance abuse patients; Rehabilitation (Narcotic -); Rehabilitation of alcohol addicted patients; Rehabilitation of drug addicted patients; Rehabilitation of narcotic addicted patients; Rehabilitation of substance abuse patients; Rehabilitation services for substance abuse patients; Reiki services; Reintroduction and conservation of wildlife; ***Removal*** of body cellulite; Rental of ***agricultural*** equipment; Rental of ***agricultural*** implements; Rental of ***agricultural*** machinery; Rental of ***agricultural*** spraying machinery; Rental of animals and plants; Rental of animals for gardening purposes; Rental of apparatus and installations in the field of medical technology; Rental of beds specially made for medical treatment purposes; Rental of beehives; Rental of equipment for ***agriculture***, aquaculture, horticulture and forestry; Rental of equipment for human healthcare; Rental of equipment for human hygiene and beauty care; Rental of equipment for medical purposes; Rental of farming equipment; Rental of flower arrangements; Rental of gardening implements; Rental of hair styling apparatus; Rental of hospital equipment; Rental of lawnmowers; Rental of machines and apparatus for use in beauty salons or barbers' shops; Rental of medical and health care equipment; Rental of medical apparatus; Rental of medical apparatus and instruments; Rental of medical equipment; Rental of medical machines and apparatus; Rental of medical x-ray apparatus; Rental of mobile sanitary facilities; Rental of plants; Rental of portable restrooms; Rental of portable toilets; Rental of potted plants; Rental of sanitary installations; Rental of sanitation facilities; Rental of surgical robots; Rental of toilets (Portable -); Rental of ultrasonic diagnostic apparatus; Residential medical advice services; Residential medical treatment services; Respite care (provision of); Respite care services in the nature of home nursing aid; Respite care services in the nature of nursing aid services; Rest home services; Rest homes; RNA or DNA analysis for cancer diagnosis and prognosis; Salon services (Beauty -); Salon services (Hairdressing -); Salons (Beauty -); Salons (Hairdressing -); Sanatorium services; Sanatoriums; Sanitarium services; Sanitariums; Sauna facilities (Provision of -); Sauna services; Scraping therapy; Sedation dentistry; Seeds (Sowing of -); Semen extraction (Animal -); Services for the care of pet animals; Services for the care of pet birds; Services for the care of pet fish; Services for the care of the face; Services for the care of the feet; Services for the care of the hair; Services for the care of the scalp; Services for the care of the skin; Services for the drilling of seeds; Services for the planning of weight reduction programmes; Services for the preparation of medical reports; Services for the provision of medical care information; Services for the provision of medical facilities; Services for the provision of sauna facilities; Services for the provision of solarium facilities; Services for the testing of blood; Services for the testing of sera; Services for the testing of urine; Services of a barber; Services of a hair and beauty salon; Services of a make-up artist; Services of a psychologist; Services of a solarium; Services of a sperm bank; Services of sanatoriums; Services rendered by a dietician; Shampooing of the hair; Sheep breeding services; Shockwave therapy; Shoeing horses and maintaining horses' hooves; Sight-testing [opticians'] services; Skin care salon services; Skin care salons; Skin tanning service for humans for cosmetic purposes; Slimming salon services; Slimming treatment services; Smoking (Anti -) therapy; Solarium facilities (Provision of -); Solarium services; Sowing of seeds; Spa services; Spas; Speech and hearing therapy; Speech therapy; Speech therapy services; Sperm-bank services; Sports massage; Sports medicine services; Spray tanning salon services; Spray tanning services; Spraying (Insecticide -) in ***agriculture***; Spraying of crop protection products for ***agricultural*** purposes; Spreading of ***agricultural*** chemicals; Spreading of fertilisers; Spreading of fertilizers; Spreading of horticultural chemicals; Stem cell storage; Stem cell therapy services; Sterilising of animals; Stud services; Stud services (Animal -); Stud services for cattle; Stud services for horses; Sun tanning salon services; Supervision of weight reduction programmes; Supervision services in the field of weight management; Surface spreading of fertilizers; Surgery; Surgery (Cosmetic -); Surgery (Plastic -); Surgery (Tree -); Surgical diagnostic services; Surgical treatment services; Tanning salon and solarium services; Tanning salons; Tanning (Sun -) salon services; Tattoo parlors; Tattooing; Tattooing of pets for identification purposes; Tattooing services; Technical consultancy services relating to medical health; Technical consultation in the fields of feeding and raising fish, shrimp and other farm-raised marine life; Teeth cleaning services; Teeth whitening services; Telemedicine services; Tele-reporting (medical services); Termite control in ***agriculture***; Testicular cancer screening services; Thai massage; Thalassotherapy; The planting of trees for carbon offsetting purposes; Therapeutic treatment of the body; Therapeutic treatment of the face; Therapeutical pilates; Therapy (Physical -); Therapy services; Toilets (Portable -) rental of; Tonsorial services; Traditional Japanese massage; Trans-telephone heart monitoring services; Treatment of allergies; Treatment to joint-dislocation, sprain, bone-fracture or the like (judo-seifuku); Tree nurseries; Tree nursery services; Tree nurseryman services; Tree planting; Tree planting for carbon offsetting purposes; Tree surgeons' services; Tree surgery; Tree trimming equipment rental; Trichology services; Turkish bath facilities (Provision of -); Turkish bath services; Turkish baths; Ultrasound services for medical purposes; Vaccination services; Vascular screening; Vermin exterminating for ***agriculture***; Vermin exterminating for ***agriculture***, aquaculture, horticulture and forestry; Vermin exterminating (for ***agriculture***, aquaculture, horticulture or forestry); Vermin exterminating for ***agriculture***, horticulture and forestry; Vermin exterminating [for ***agriculture***, horticulture or forestry]; Vermin exterminating for ***agriculture***, horticulture or forestry, and providing information relating thereto; Vermin extermination for ***agriculture***; Veterinary advisory services; Veterinary and ***agricultural*** services; Veterinary assistance; Veterinary dentistry; Veterinary information services provided via the Internet; Veterinary services; Veterinary services (Professional consultancy relating to -); Veterinary surgeons' services; Veterinary surgery; Veterinary surgical services; Visagists' services; Vision screening services; Viticulture services; Voice and speech therapy services; Weed control; Weed killing; Weed killing for ***agriculture***, horticulture and forestry; Weedkilling services; Weight control evaluation; Weight control treatment; Weight management services; Weight reduction diet planning and supervision; Weight reduction diet planning services; Weight reduction services; Weight-reduction programmes (Planning of -); Weight-reduction programmes (Supervision of -); Wildlife casualty euthanasia services; Wildlife casualty handling services; Wildlife inventory services; Winching services for ***agriculture***, horticulture and forestry; Withdrawal treatment services for addicts; Withdrawal treatments for addicts; Wreath making; X-ray examinations for medical purposes; X-ray imaging for medical purposes; X-ray services; X-ray technician services; Yard care services.

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[***Council of the European Union: COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS An EU-wide assessment of National Energy and Climate Plans Driving forward the green transition and promoting economic recovery through integrated energy and climate planning PDF document ST 10874 2020 INIT18-09-2020***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60YG-W0J1-JDG9-Y1XD-00000-00&context=1516831)

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10874/20 RH/nsTREE.2B ENCouncil of theEuropean UnionBrussels, 18 September 2020(OR. en)10874/20ENER 295CLIMA 191COMPET 409RECH 316AGRI 277ENV 521COVER NOTEFrom: Secretary-General of the European Commission, signed by Ms MartineDEPREZ, Directordate of receipt: 17 September 2020To: Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Councilof the European UnionNo. Cion doc.: COM(2020) 564 finalSubject: COMMUNICATION FROM THE COMMISSION TO THE EUROPEANPARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC ANDSOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS AnEU-wide assessment of National Energy and Climate Plans Drivingforward the green transition and promoting economic recoverythrough integrated energy and climate planningDelegations will find attached document COM(2020) 564 final.Encl.: COM(2020) 564 finalEN ENEUROPEANCOMMISSIONBrussels, 17.9.2020COM(2020) 564 finalCOMMUNICATION FROM THE COMMISSION TO THE EUROPEANPARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIALCOMMITTEE AND THE COMMITTEE OF THE REGIONSAn EU-wide assessment of National Energy and Climate PlansDriving forward the green transition and promoting economic recovery throughintegrated energy and climate planning11. THE ROLE OF INTEGRATED NATIONAL ENERGY AND CLIMATE PLANS IN DELIVERING THE 2030 ***TARGETS*** AND CONTRIBUTING TO RECOVERY AND RESILIENCEThis Communication presents the EU-wide assessment of the 27 National Energy and Climate Plans (from here onwards NECPs or the plans) submitted by Member States in accordance with the EU’s Governance regulation1, across all the dimensions of the Energy Union and in the light of the European Green Deal2 and post-COVID 19 recovery context.This assessment comes at the end of an extensive process of preparation and coordination at national level and constant dialogue between the Member States, the Commission and the other EU institutions. Member States have engaged since 2018 to prepare their NECPs, to be submitted by 31 December 2019. In June 2019, the Commission examined the draft plans3 and provided individual feedback to the Member States4, which took into account most of the recommendations. All Member States have now presented their final plans5 containing an integrated vision of the energy and climate transition for the next ten years. This has been an unprecedented process, as the plans have been subject to extensive consultation with stakeholders, civil society and citizens to ensure ownership and wide public support6. The Council also discussed the preparation of the plans in various occasions.The 27 plans give an overview of how Member States are approaching the first phase of their transition towards climate neutrality and where they want to go in the period 2021–2030 across five areas: decarbonisation, energy efficiency, energy security, internal energy market, research and innovation and competitiveness. Member States’ long term decarbonisation strategies will complement the plans7.The assessment shows how the full implementation of the plans would lead Europe to overachieve the current 2030 greenhouse gas ***emissions*** reduction ***target***, establishing a springboard for the greater ambition proposed by the Commission in the Communication “Stepping up Europe’s 2030 climate ambition: Investing in a climate-neutral future for the benefit of our people” it is adopting in parallel, on the basis of an accompanying impact assessment.As the impact assessment shows, the plans also provide a solid base to aim in a realistic and responsible way to a higher greenhouse gas ***emissions*** reduction ***target*** for 2030 if additional action is taken at all levels to provide further momentum and to fill outstanding gaps and if the opportunities for a green recovery are fully taken up.1 Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action2 COM(2019) 640 final.3 COM(2019) 285 final.4 Commission Recommendations of 18 June 2019 on the draft integrated National Energy and Climate Plan of each Member State covering the period 2021-2030, C/2019/4401 to C/2019/44285 Ireland has asked to consider its intention to update its plan and the level of ambition in the near future.6 Several Member States organised local, regional, sectoral workshops to discuss the content of their final NECP with stakeholders (social partners, civil society, educational institutions, local institutions and environmental NGOs).7 Article 15 of the Governance Regulation: to be submitted by Member States by 1 January 2020.2The assessment takes into account the context of the post-COVID-19 recovery. NECPs are both a policy tool and an investment agenda that provide business and investors a forward-looking framework. They constitute a strong basis for Member States to design their green recovery and resilience strategies and deliver on broader European Green Deal objectives from a clean and circular economy to a zero pollution ambition. This Communication highlights how funding under the EU’s Recovery and Resilience Package can be used to support the investments and reforms identified in the national plans8, in particular by investing in energy efficiency, renovating buildings, deploying renewable energies, sustainable mobility, modernising electricity grids and boosting innovation in crucial technology areas such as renewable hydrogen and batteries.This Communication is a first step in a process that will involve other stages. The Commission will publish an in-depth assessment of each individual NECP in October together with the State of the Energy Union report, including country-specific guidance on how Member States can make further progress in implementing the plans. This will provide valuable input for Member States to draw on in preparing their national recovery and resilience plans and drive the investment agenda for green deal related projects that deliver jobs at the same time as a positive climate and environmental impact. It will also inform the Commission’s assessment of the recovery and resilience plans. Lastly, Member States need to ensure their Just Transition Plans (to be submitted in the context of the Just Transition Fund) are consistent with the NECPs.Throughout this process, the Commission will continue its dialogue with Member States with a view to supporting the full implementation of the plans, prepare their update due in 2023 and ensure they remain the compass to guide the national progress towards reaching ambitious energy and climate ***targets*** in 2030 and beyond. Coordination with Member States will also include the external aspects of the NECP’s and their implementation will be supported by energy and climate diplomacy.2. ASSESSMENT OF THE FINAL NECPS: WHAT HAVE THEY DELIVERED AND HOW CAN THEY SUPPORT RECOVERY AND RESILIENCE?2.1 Assessment of the renewable energy, energy efficiency and greenhouse gas reduction parts of the NECPs2.1.1 EU renewable energyThe assessment of NECPs shows that the share of renewable energy could reach, under existing and planned measures, a range of 33.1 to 33.7% in 2030 at Union level surpassing the ***target*** of at least 32% in 2030 and putting renewables at the forefront to achieve the objectives set out in the Communication on stepping up Europe’s 2030 climate ambition. 8 According to the IEA, a sustainable recovery plan could add 1.1 percentage points to global economic growth each year. The effect on employment would be significant, saving or creating roughly 9 million jobs a year over the next three years (IEA’s World Energy Outlook Special Report on Sustainable Recovery)3This would build on the back of continued relatively positive developments. The analysis of Eurostat figures for 2018 and projections at Member State level of the expected 2020 renewable energy share in final energy consumption show9 that the EU is projected to reach a renewables share of between 22.5% and 22.7% and that the vast majority of Member States are projected to meet their national binding ***targets***. Early estimates suggest that renewable power generation capacity continued to grow by 6.2% in 2019, with a market growth of 33% compared to 2018. Furthermore, several analysts suggest that while negatively impacted by the COVID-19 crisis, the renewables industry and the associated investments are showing relatively strong resilience. The EU thus appears well on track to achieve the European ***target*** of 20% renewables share in final energy consumption by 2020. Nonetheless, several Member States, notably those which are projected to lag behind at this stage should consider additional measures, including in the form of cooperation mechanisms, to ensure that they achieve their 2020 national binding ***targets***. The EU’s newly established renewable energy financing mechanism10 could in particular rapidly benefit larger scale offshore and innovative technologies. The flexible nature of the mechanism allows Member States to tap into the best potential for renewable energy generation across Europe and reduce the cost of support, helping Member States to achieve or even exceed their national ***target*** for 2020 and the EU’s 2030 ***target***. The mechanism can also be combined with other EU instruments such as CEF or InvestEU to further streamline funding for new renewable energy projects.Nearly all final NECPs have confirmed or in some cases increased their renewable energy ambition compared to the draft plans. However, the aggregate figures mask differences between Member State contributions. Several plans fail to include sectoral trajectories that are in line with the Renewable Directive requirements, remaining below cost-efficient national potentials. By contrast, a few Member States have set very ambitious sectoral ***targets*** for renewables. Austria and Sweden with the objective of 100% renewable electricity by 2030 and 2040, respectively.The analysis for the Communication on stepping up Europe’s 2030 climate ambition shows that higher shares of renewables are fundamental to achieve higher greenhouse gas ***emissions*** reduction ***targets***. As set out in the impact assessment, reducing greenhouse gas ***emissions*** by at least 55% would require a share of renewable energy in the EU of 38-40% by 2030. NECPs provide a vast number of matured projects of renewables that can also contribute to the economic recovery. Examples include the creation of 100.000 rooftops solar panel and small-scale storage programme in Austria; financial support to prosumers for installation of small-scale power plants in Lithuania, with an expected outcome of 696 MW of installed capacity as from 2024; investments to achieve 4 GW of offshore wind capacity in Denmark and 3.8 GW in Poland; the launch of six offshore wind tenders by 2023 aiming at 3.7 GW9 Uncertainty remains on 2020 energy demand impact by the pandemic and corresponding impacts on the society and the economy. Therefore, two distinct demand trends (low and high) are shown that appear likely as lower and upper boundaries.10 Renewable Energy Financing Mechanism C(2020)6123, operational as of January 20214capacity in France; and building solar farms and hydrogen infrastructure on former lignite mining sites in Greece and Portugal.NECPs and renewables: challenges and opportunities for the recovery and the European Green DealNECPs provide a clear signal from Member States that they back the rapid and cost-effective transition to a resilient carbon neutral economy, strongly based on renewables, which will help the private sector invest confidently. For example, at least 10 Member States have indicated their intention to phase out coal production of electricity in the coming years and the replacement of the decommissioned capacity mainly by renewable technologies. Clean mobility is also an example where a high number of Member States have set ambitious ***targets***, in particular for electro mobility11 and advanced biofuels12. However, NECPs fall short of identifying the potential of offshore renewables that is available to them, and the related challenges. The Commission will help address this in a strategic manner in its upcoming Strategy for Offshore Renewable Energy by identifying key actions in the area of maritime planning, upscaling technologies, and a new approach to infrastructure planning.Frontloading investments in these solutions respecting the “do no harm” principle would align government spending and the financial stimulus for recovery and resilience with the increased ambition to reduce ***emissions*** by at least 55% by 2030 the EU’s ambition to transition to climate neutrality by 2050. Additional investments in renewables can also have a quick and positive impact on the recovery of the economy (as well as reduce energy bills and improve air quality in the case of non-combustible renewable). Each €1 million shifted from brown to green energy would create a net increase of five jobs13.Frontloading investments would also accelerate demand and competition, making Europe’s manufacturing base stronger along its value chain while showing worldwide industrial leadership and deliver better jobs. Investments in renewables create jobs. In the EU almost 1.5 million people were employed in the renewables sector in 2018, including the indirect jobs in the value chain. The solar photovoltaic sector is the most intensive job creator with 12 jobs for each million euro of investment. In contrast, the wind industry creates 3 jobs for each million euro of investment, but because of the expected growth over the period from 2020 to 2030 it will become the largest job creator in the renewables sector in the EU. At the EU level, IRENA estimated 2.7 million jobs in renewables by 2050, 1.7 in energy efficiency and 0.8 in system flexibility14.11 In its NECP, Germany has set a ***target*** of 7-10 million electric vehicles by 2030 and up to 1 million public accessible recharging points by 2030. Greece includes a ***target*** of 30 % of electric passenger cars by 2030 and Italy of 6 million electric vehicle by 2030.12 Estonia estimates a ten-fold increase of biomethane by 2030; Finland of advanced biofuels to 30% by 2030.13 Modelling estimates suggest that while €1 million spending in fossil fuels would create 2.7 full-time equivalent jobs, that same spending would create 7.5 FTE jobs in renewable energy or 7.7 FTE jobs in energy efficiency; Garrett-Peltier (2017), [*https://www.sciencedirect.com/science/article/pii/S026499931630709X?via%3Dihub14*](https://www.sciencedirect.com/science/article/pii/S026499931630709X?via%3Dihub14) IRENA (International Renewable Energy Agency) Global Renewables Outlook: Energy transformation 2050.5Similarly, IEA estimates that solar photovoltaic together with energy efficiency in buildings and industry create the most jobs per million euro of investment15.The European renewables industry is well positioned for global leadership. Its gross value added amounted to €80 billion in 2018 (growing at 6-8% annually). The EU is strong in developing the technologies necessary for renewables (e.g offshore renewables), including a rich ecosystem of SMEs. Renewables may also provide replacement employment in eligible Just Transition regions and generally in a decentralised manner also opportunities for remote areas and islands. Thanks to huge cost reductions, the cost-competitiveness gap of renewables is closing rapidly in the EU and mature renewables are now cost competitive and bring down energy prices for European consumers16.Member States are invited to fast track and make better use of the following measures, which are generally not included or sufficiently detailed in their NECPs17. Explore and maximise the use of waste heat/cold, ensure that citizens are entitled to become a renewable self-consumer (including in combination with storage systems), and be part of renewable energy communities, while promoting electrification based on renewables in transport that facilitate variable renewable energy generation projects. Furthermore, predictability on planned tenders including volumes and breakdown of new and repowered capacity for renewables, streamlining permitting (e.g single contact point), swift procedures for repowering and power purchase agreements have a positive impact on stimulating both large-scale and small-scale investments.Further grid rules and infrastructure adaptation will be necessary to cater for both increasing decentralised generation, large offshore renewable production and integration of hybrid projects combining renewables with storage, in particular renewable hydrogen. The potential for cross-border regional initiatives18 remains to be further tapped through better cooperation between Member States and use of EU funds, including funds under the temporary recovery instrument ‘Next Generation EU’, and building on regulatory advances19. This will further boost competitiveness and decarbonise demand side sectors such as buildings, industry, and transport, which traditionally relied on fossil fuels. The impact assessment accompanying the Communication on stepping up Europe’s 2030 climate ambition20 also shows that investments at local and national level are needed to create more physical links between energy carriers in an integrated energy system. For example, investments in modern, low-temperature district heating systems should be promoted (as they15 IEA (International Energy Agency), World Energy Outlook, Special Report Sustainable Recovery, June 2020; on average the three above mentioned measures create between 10-15 jobs for every million euros.16 The upcoming annual Prices and Cost report will provide further details17 The actions proposed in the Energy System Integration Strategy COM (2020) 299 final are complementary to the renewable energy regulatory framework18 Grouping of a number of Member States like south east Europe, Baltic, central Europe etc.19 Good examples of the regional cooperation are the North Seas Initiative and Baltic Sea Region that could be replicated to other regions across Europe.20 Communication on Stepping Europe’s 2030 Climate Ambition COM(2020) 5626can connect local demand with renewable and waste energy sources), as well as the wider electric and gas grid in order to optimise supply and demand across energy carriers.2.1.2 Energy efficiencyThe assessment of the final plans shows that the energy efficiency aggregated ambition would amount to a reduction of 29.7% for primary energy consumption and 29.4% for final energy consumption21, reaching 1176 Mtoe and 885 Mtoe respectively in 2030. This means that the collective ambition for 2030 has been increased compared to the conservative scenario from the draft plans22, thanks to several Member States increasing their planned efforts and clarifying points. However, there remains a gap compared to the Union’s 2030 ***target*** of at least 32.5%, which still stands at 2.8 percentage points for primary energy consumption and at 3.1 percentage points for final energy consumption.The COVID-19 crisis currently impacts on energy consumption, which might unexpectedly bring the EU very close to reaching the 2020 energy efficiency ***targets***. However, this is not the result of structural changes nor adaptations and will not be long-lasting. Recovery from the COVID-19 crisis will lead to a rebound in energy consumption, which means that additional energy efficiency efforts and investments are needed to make energy efficiency gains structural23.The Energy Union has recognised a prominent role of energy efficiency and enshrined the guiding “Energy Efficiency First” principle into legislation24. Still, most final NECPs only set out limited details on the application of this principle despite the fact that energy efficiency plays a key role for the achievement of all ***targets***, and notably the reduction of greenhouse gas ***emissions***. Final plans include more details on electrification which is in line with the energy efficiency first principle. Co-benefits and possible trade-offs between energy efficiency measures and climate adaptation remain unrecognised and untapped.25 Member States need to consider cost-effective, technically, economically and environmentally sound energy efficiency measures as part of and as alternatives in planning, policy and investment decisions, and prior to making any future investment decisions on energy infrastructure.The Commission is preparing a dedicated guidance for the implementation of the Energy Efficiency First Principle for energy related policy planning and investment decisions across the economy. The Commission is already working towards implementing this principle in all its relevant energy policy proposals, such as the EU Strategy for Energy System Integration and the upcoming TEN-E revision.21 Compared to the projections of the 2007 Reference Scenario for 200722 The draft plans’ aggregated ambition ranged from 26.3%-30.2% for primary energy consumption and 26.5%-30.7 % for final energy consumption.23 Recent data BNEF shows that power consumption levels in several Member States is already back to normal.24 Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action25 Co-benefits include better insulation protecting against heatwaves (if coupled with adequate ventilation, while poorly executed energy efficiency measures that do not take into account vulnerability to climate hazards (such as flooding, hail, strong winds) are at risk of being damaged or destroyed.7Considering that additional action is in particular necessary in the built environment, it is welcome that NECPs include various energy efficiency measures in the building sector. In general, there is broad coverage in all NECPs (and in the national long term renovation strategies submitted so far) of supportive measures to building renovation. Some interesting approaches increase the level of stringency of ‘prescriptive’ measures, such as binding building renovation ***targets*** (e.g dwellings rented out having to meet a minimum performance class, tightening public procurement rules for buildings and legal limits on fossil fuel use for heating purposes, including bans). Several Member States have good examples to follow, including: Bulgaria has set an ambitious ***target*** to renovate over 5% of public buildings per year; Latvia intends to renovate 2 000 multi-apartment and 3 000 single family buildings by 2030; Romania has put in place specific financing schemes with an energy efficiency investment fund financed by private, national and EU funds; Cyprus has also co-financed programmes until 2020 to finance the renovation of 2 100 residential buildings and 164 SMEs.As the objectives, ***targets*** and contributions of the plans appear insufficient for the collective achievement of the EU’s energy efficiency objective for 2030, in line with Article 31 of the Governance Regulation the Commission shall propose measures and exercise its powers at Union level to ensure the achievement of the Union’s energy efficiency targets26. To that end, the Commission plans to review and possibly revise the Energy Efficiency Directive27 and if needed specific ***targeted*** provisions of the Energy Performance of Buildings Directive. It will also promote relevant Green Deal initiatives, notably the Renovation Wave and the Strategy for Energy Sector Integration, which will be key to promote further energy efficiency to bridge the gap. These would complement other actions ***targeting*** public procurement, energy audits, heating and cooling and recovery of waste heat (including from industrial sites and data centres28) energy services, administrative capacities, and skills. The integration of circular economy (i.e materials efficiency) would bring additional benefits to achieve climate and environmental objectives.Furthermore, the Commission is also preparing its Ecodesign and Energy Labelling Working Plan to identify priorities for the years ahead in terms of possible new or revised Ecodesign and Energy Labelling regulations whilst continuing to work with Member States to facilitate full and effective implementation and compliance.It is important to emphasise that the impact assessment accompanying the Communication on stepping up Europe’s 2030 climate ambition shows that the increased ambition for greenhouse gas ***emissions*** reductions by 2030 would also require higher energy efficiency ambition regardless of the scenario chosen. Final and primary energy consumption would have to decrease to around 39-41% and 36-37%, respectively, to achieve at least 55%greenhouse gas26 Article 31(3) of Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action27 [*https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12552-Review-of-Directive-2012-27-EU-on-energy-efficiency28*](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12552-Review-of-Directive-2012-27-EU-on-energy-efficiency28) The importance of the Primary Energy Factor in the facilitation of energy efficient decision between different energy carriers should be fully recognised.8emissions reductions. Thus, the challenge to increase energy efficiency efforts goes beyond the ambition gap of the final NECPs and additional measures need to match the ambition required by the Communication on stepping up Europe’s 2030 climate ambition.NECPs and energy efficiency: challenges and opportunities for recovery and European Green Deal objectivesEnergy efficiency and, in particular, building renovation and affordable housing are priorities for action and for investments to support the recovery through local jobs.Member States should explore the potential of speeding up building renovation in providing recovery stimulus where it is most needed: the local economies and SMEs (who account for 90% of the construction sector). Lowering energy bills, alleviating energy poverty, and, in the long-run, improving public health and comfortable living, can make society more resilient to potential future crisis. Worldwide, jobs in the energy efficiency sector are expected to total around 21 million by 205029. In particular, investment in social and affordable housing is a beneficial countercyclical economic measure that generates economic return in terms of employment during low economic conjuncture.Member States need to draw up and submit national long-term renovation strategies, broken down to action at regional and local levels30. As of end-August 2020, only 12 Member States31 had submitted their long-term strategies32. The Commission calls on all Member States who have not yet submitted their strategy to do so as a matter of urgency.The elements in the NECPs and in the limited number of these strategies submitted so far are an important building block for the policy vision to be set out in the Renovation Wave Initiative which will provide a political impetus to address cross-cutting challenges in the building sector. The initiative will build on three fundamental blocks: a solid regulatory framework, adequate financing and a strong governance framework based on long-term planning and stakeholder engagement. It will propose forward legislative and non-legislative instruments and enabling tools, including an important financing element, to ensure action at EU, national and local or regional levels.2.1.3 Greenhouse gas emissionsThe NECPs provide key information on how Member States aim to achieve their national ***emissions*** reduction ***targets*** set in the Effort Sharing Regulation (ESR)33. Currently, these ***targets*** range from 0 to -40% in 2030 compared to 2005 to achieve EU-wide minimum reductions in sectors not covered by the EU ***Emission*** Trading System (ETS)34 of 30%29 Global Renewables Outlook: Energy transformation 205030 Art. 11 of Governance Regulation on multilevel dialogue that aims to improve realism & buy-in by the levels of government implementing the strategies and plans.31 (NL, DK, FI, SE, AT, CY, FR, ES, CZ, LU, DE, EE). In Belgium, the regions of Brussels and Flanders32 The Energy Performance of Buildings Directive (EPBD) requires Member States to notify national long-term renovation strategies (LTRS) to the Commission by 10 March 2020.33 Regulation (EU) 2018/84234 The non-ETS sectors include effort sharing sectors such as, ***land*** transport, heating of buildings, ***agriculture***, waste and small industrial installations, and the ***Land*** Use ***Land*** Use Change and Forestry sector.9compared to 200535. Compared to their current ESR ***targets***, Luxembourg, Slovakia, Slovenia and Sweden have set more ambitious national ***targets*** in the sectors not covered by the EU ETS. Also many other Member States project that the implementation of their policies and measures planned in the NECPs reduces ***emissions*** beyond their ESR binding targets36.An aggregation of the projected ***emission*** impacts of the national measures currently planned in the NECPs shows that by 2030 the EU would reduce ***emissions*** by 32% in sectors not covered by the ETS (excluding the ***land*** use, ***land*** use change and forestry (LULUCF) sector). This represents a progress of around 4 percentage points compared to the draft NECPs and is already a welcome first step towards achieving the increased ambition levels of the 2030 Communication on stepping up Europe’s 2030 climate ambition37.The assessment of the NECPs shows that for the economy-wide greenhouse gas ***emissions*** reductions, including those covered by the EU ETS, ***emissions*** reduce under existing and planned measures by 41% below 1990 levels, surpassing the EU 40% reduction target38. This is an improvement of about 1.5 percentage points compared to the draft EU NECPs. To achieve these ***emissions*** reductions, the NECPs lay out a mix of sectoral and cross-sectoral measures. Several Member States intend to make increased use of carbon pricing. For example, Germany has adopted a national ***emissions*** trading law which is gradually introduced. It covers fossil fuel CO2 ***emissions*** so far not included in the EU ETS, notably those of the transport and building sectors. Luxembourg plans to bring in a gradually increasing minimum carbon tax for all fossil fuels, which will be constantly adapted to the objectives of the Paris Agreement. Ireland envisages a strong carbon tax trajectory and increased its carbon tax by 30% in 2020, with all revenues ring-fenced to support climate action and protect the most vulnerable people in the country. Other Member States such as Belgium study the design of a carbon pricing mechanism for buildings and transport.In addition, all Member States can use credits from the LULUCF sector to help achieve their ESR ***targets***. LULUCF is the only sector which is a net carbon sink, that is, which can sequester carbon from the atmosphere and store it in soils, biomass and harvested wood products. Member States can generate LULUCF credits if they report a larger carbon sink than the one which would have occurred if past management practices continued. If, on the contrary, the carbon sink is smaller than the business-as-usual counterfactual, then the corresponding ***emissions*** are considered debits and this sector creates net ***emissions***; these would need to be compensated by using allocations from the effort sharing sectors39. Most Member States plan to ensure that their carbon sink will be large enough to avoid generating35 There is significant flexibility on how to achieve the national ESR ***targets***, e.g transfers between Member States, limited use of EU ETS allowances for some Member States, or using a certain amount of additional ***emission*** ***removals*** in the ***land*** use and forestry sector.36 Croatia, Estonia, France, Greece, Hungary, Italy, Latvia, Lithuania, Portugal and Spain. In addition, while not providing ***emission*** projections reflecting their plans, Denmark and the Netherlands set national total greenhouse gas reduction ***targets*** in law which imply the need to meet if not surpass their non-ETS ***targets*** domestically.37 COM(2020) 56238 This is under the current 2030 ***target*** scope, including international aviation and excluding international navigation and the LULUCF sink.39 Regulation (EU) 2018/84110any debits, but very few of them give any indication in their NECPs of the extent to which they plan to generate and use LULUCF credits for ESR compliance. Several Member States indicate that their carbon sinks are decreasing due to ageing of ***forests***, harvesting and increasing natural disturbances. Aggregating the projection information included in the NECPs reveals that around a third of the 2005 EU carbon sink could be lost by 2030. The LULUCF sector may even become a net emitter after 2030.Member States were required to list climate adaptation goals in their NECPs, where available and as applicable to achieve the Energy Union objectives. Although national adaptation strategies are available in all Member States and the changes in climate are affecting the entire EU, around a quarter of Member States have not listed such goals, and some limit themselves to describing the framework for adaptation policy making, without quoting the goals themselves40.NECPs and greenhouse gas ***emissions*** reductions: challenges and opportunities for recovery and European Green Deal objectivesThe planned sectoral national policies are often strongly focused on a broad set of measures addressing transport. In ***emission*** terms, this is the largest non-ETS sector. As it is also an economically important sector, planned measures are relevant for reducing ***emissions*** and for the recovery and should mutually support each other. Measures planned in the NECPs help, for example, to boost demand for clean zero and low ***emission*** vehicles that reduce CO2 and pollutant ***emissions*** in line with ambitious EU standards and ensure a clear pathway towards zero-***emission*** mobility, in line with the priorities for fleet renewal as part of the overall economic recovery and resilience planning. This will be supported by an increased roll-out of recharging and refuelling infrastructure for zero and low ***emission*** vehicles and investments for green transition in the transport industry value chain (e.g batteries, hydrogen fuel cells). 20 NECPs included detailed measures to increasing the use of bicycles. Also the investment in public transport and promoting its use, as often planned, will help recovery. The upcoming strategy for sustainable and smart mobility will outline a comprehensive set of measures towards the decarbonisation of the transport sector.A lot of the measures to reduce ***agricultural*** ***emissions*** or increase the LULUCF sink enable synergies and significant opportunities for recovery and resilience. The main focus of NECP measures is on reducing ***emissions*** by optimising fertiliser use (through support to organic farming and precision farming) and addressing ***emissions*** from the livestock sector (grazing management, animal breeding/feeding and management). Anaerobic digestion measures reduce ***emissions***, recover nutrients and diversify farm income with the production of energy. Nature-based solutions and the protection of natural areas are also mentioned. Some Member States plan measures to increase the LULUCF sink, for instance by providing subsidies for converting organic soils from arable ***land*** to protected natural areas, or for afforestation in40 Good examples for integrating climate change adaptation aspects coherently into different NECP dimensions and/or providing some detail on adaptation measures are Croatia, Ireland, Italy, Slovenia and Spain.11agricultural land41. Member States refer to the Common ***Agricultural*** Policy (CAP) and its rural development programmes as the main tool for supporting measures to reduce ***agricultural*** ***emissions*** and enhance sustainable ***forest*** management, as well as afforestation and ***forest*** resilience. The NECPs will be an important starting point in the preparation of the national strategic plans, especially for describing how to achieve the climate objectives of the CAP. The actions described in the NECPs are also relevant in the context of the Biodiversity Strategy, ‘farm to fork strategy and the forthcoming forestry strategy.Another sector with significant opportunities for recovery and resilience is industry. The regulatory and policy frameworks at EU level (e.g EU ETS, Innovation Fund, new industrial policy and the circular economy action plan) and at national level can help to accelerate and support modernisation and deep transformation of the energy-intensive industry ecosystem to climate-neutrality, including through the use of hydrogen and carbon capture utilisation and storage. Other important areas of work are to create lead markets for climate-neutral and circular products and to develop climate-neutral solutions and finance their uptake. In this context, it will be important to ensure that (national) subsidies do not unduly distort competition and trade among Member States.Measures promoting the circular economy with its potential for growth and jobs creation will also help further reduce waste ***emissions***. The upcoming EU methane strategy will also support this. EU funding instruments available for renewable energy, energy efficiency and greenhouse gas reductions The costs for most renewables and the clean technologies needed to decarbonise energy-intensive industries are highly dependent on the cost of capital. The EU can play an important role in catalysing the development of private financing mechanisms that both attract capital and can be an effective means of reducing the cost of projects. Such mechanisms should also cater for small scale and technology specific needs so as to increase local participation and acceptance of the energy transition. This will be crucial for the deployment of renewables in the next decade at all levels. In this respect, early involvement of local authorities for continued public consultation and transparent planning is of utmost importance. Similarly boosting the Renovation Wave will require a huge amount of private capital. There is an array of instruments to help realise renewable, energy efficiency and other ***emissions*** reduction projects, which can, in certain instances, be complemented by private financing mechanisms. EU instruments available include the Connecting Europe Facility, Cohesion policy funds (including additional funding via REACT-EU), Just Transition Mechanism, InvestEU, Recovery and Resilience Facility, Innovation Fund, Modernisation Fund, Rural Development Fund, Horizon Europe, ELENA, Technical Support Instrument (TSI), and capacity building and market uptake measures under LIFE, Renewable energy EU Financing Mechanism, and the European Investment Bank.41 Belgium is considering shifting food production to the sea122.2 Promote investments and a just transition2.2.1 InvestmentsIn their NECPs, Member States presented an improved general overview of the expected investments needed to achieve the various objectives, ***targets*** and contributions. However, some of the plans lack details and do not allow to compare or add up the total investment needs for energy and climate objectives.Based on Commission calculations, to achieve the current EU 2030 climate and energy ***targets***, annual investments related to energy production and use will need to increase in 2021-2030 by just over 1 percentage points of GDP on average, compared to the previous decade, that is, an increase of around €260 billion per year. For an increased greenhouse gas ***emissions*** reduction ***target*** of 55% this figure would increase to around €350 billion.Most Member States reported energy-related investment needs in the building, industrial, and transport sectors. Few reported expected investment needs in the ***agricultural*** sector, the third largest source of ***emissions*** in non-ETS sectors. While for some Member States, EU funds will make up significant portions of planned investments, the achievement of ***targets*** contained in the plans cannot be conditional on obtaining additional allocations from the EU budget.13Full implementation of the NECPs over the coming years will require to mobilise important amounts of new public and private investments. The response to COVID-19 provides the opportunity to spearhead some of the needed green investments and reforms through the national and EU recovery and resilience strategies, especially as these offer major job creation potential in areas such as energy and resource efficiency and renewable energies. Following the unprecedented drops during the COVID-19 crisis42, rising uncertainty about future oil demand due to changes in patterns of work, production and consumption highlights the risks of investments in stranded assets. In this regard, sustainable finance tools, such as the EU taxonomy will help to identify sustainable economic activities and guide capital flows to green investments43 44.In the field of energy and climate, the priority areas for reforms and investments include:- the renovation of the building stock and access to affordable housing;- decarbonisation of industry and renewable energy;- sustainable mobility;- energy system integration including infrastructure, batteries and renewable hydrogen.A wide variety of forms of support in the form of grants and financial instruments (loans, guarantees, equity) are available under the Multi-annual Financial Framework (MFF), the recovery and resilience package, including the Recovery and Resilience Facility, and from funds under specific legislative instruments such as the EU ***Emissions*** Trading System for prioritising these areas critical to the clean energy transition.The priority given to energy and climate investments is reflected in the Commission’s proposal for the 2021-2027 EU long-term budget. It sets a share of the Cohesion Fund and European Regional and Development Fund to be obligatorily earmarked on investments for a greener and low-carbon Europe. The final NECPs mark a milestone towards fulfilling the enabling conditions, i.e the conditions that have to be met by Member States in order to receive this funding.The NECPs put forward reforms and investment needs in these priority areas. Based on the plans, it is estimated that for building renovations alone, Member States identified the need to collectively invest around €130 billion per year. In social housing, it is estimated that €57 billion per year is needed45.42 Q1/2020 also saw a drop in coal and gas power generation (38 TWh and 3 TWh), the highest ever renewables share in the power mix in the EU (40% having risen by 38TWh), and reduced natural gas imports of €10 billion43 The development of the EU taxonomy for environmentally sustainable economic activities is one of the key actions of 2018 Action Plan for Financing Sustainable Growth. The sustainable finance toolbox will be further expanded through the upcoming Renewed Sustainable Finance Strategy to move the behaviour of financial actors, companies, and policy-makers further towards environmentally sustainable economic activities. This should prevent further investments into potentially expensive stranded assets that could block technology leaps and the needed innovation for reaching climate neutrality44 World Energy Investments 2020 – Analysis IEA [*https://www.iea.org/reports/world-energy-investment-202045*](https://www.iea.org/reports/world-energy-investment-202045) Report of the high-level task force on investing in social infrastructure in Europe 2018 [*https://ec.europa.eu/info/sites/info/files/economy-finance/dp074\_en.pdf14In*](https://ec.europa.eu/info/sites/info/files/economy-finance/dp074_en.pdf14In) view of the 2030 objectives and the envisaged energy system integration, the energy infrastructure (transmission and distribution networks, heating and cooling, transport, and energy storage) investment needs are estimated at the level of €59 billion per year46.By 2030, total investments needs in hydrogen electrolysers are estimated between €24-42 billion plus €220-340 billion to scale up and directly connect 80-120 GW of solar and wind energy production capacity. About €65 billion is needed for hydrogen transport, distribution and storage47.2.2.2 Just transitionThe NECPs also address the social and territorial implications that the clean energy transition can have. The transformation of extractive industries (hard coal, lignite, peat or oil shale) and carbon-intensive industries (cement, steel, aluminium, fertiliser or paper production) will pose a significant challenge to territories that are strongly reliant on such activities and will require to restructure and/or diversify the economy, maintain social cohesion, and, (re)train the affected workers and youth to prepare them for future jobs. Many NECPs include this transition in the coal sector and its social and economic impacts. The NECPs show that the transition has further accelerated due to global changes in prices of fossil fuels and falling costs of renewable energies. Europe is phasing out coal sooner than initially expected, which helps reduce greenhouse gas ***emissions*** and air pollution (the latter often being the main driver at local level for such a move, based on health and well-being concerns). This requires adequate measures to accompany regions and ensure no one is left behind.A total of 21 Member States are either already coal-free (Estonia, Latvia, Lithuania, Belgium, Malta, Luxembourg, Cyprus)48, or have committed to phasing-out coal (including lignite and peat), indicating specific dates in their NECPs (see above chart). Two Member States (Slovenia, Czechia) are still considering coal phase out while four (Poland, Romania, Bulgaria, Croatia) have not planned any phase out yet. In this context, the use of coal is projected to decrease by 70% by 2030 compared to 2015, and renewable electricity will represent 60% of electricity produced in the EU.A large majority of Member States still needs to develop clearer strategies and objectives through a cross-cutting approach to identify and measure the social, employment and skills consequences and other distributional impacts of the energy transition and give proper consideration on how to address these challenges.The Just Transition Mechanism, and the Just Transition Fund at its core, is specifically designed to address the social and economic impacts of the transition, focusing on the regions, industries and workers who will face the greatest challenges.46 In-depth analysis in support of the Commission Communication COM(2018) 77347 A hydrogen strategy for a climate-neutral Europe COM(2020)30148 Starting in 2020, the Coal Regions in Transition Initiative also addresses peat (FI, IE) and oil shale regions (EE). EE is still relying on oil shale.15The EU legislative proposal for the Just Transition Fund Regulation, requires that the plans for just transition (Territorial Just Transition Plans) be coherent with the objectives and investment needs identified in NECPs. The approval of Territorial Just Transition Plans by the Commission will unlock dedicated financing not only from the Just Transition Fund but also from the dedicated just transition scheme under InvestEU and the EIB public sector loan facility (the two other pillars of the Just Transition Mechanism).Overall, the NECPs did not provide a clear prioritisation of funding needs regarding just transition, nor investment needs for reskilling and upskilling and for support of labour market adjustments. A description of how the different sources of funding will complement each other are needed to promote a just and fair transition.Also related to a just transition, many NECPs address energy poverty. This is a major challenge, since close to 40 million Europeans were unable to afford keeping their home adequately warm in 2018. Most Member States have presented a detailed overview of energy poverty. Many also reported detailed indicators to analyse its impact on their territories. Several Member States use the primary indicators developed by the European Energy Poverty Observatory. NECPs also address affordability often, notably in the context of the energy and climate transition. This is the case, for instance, in Austria, Belgium, France, the Netherlands or Denmark.16Based on the information in their NECPs, most Member States are only preparing to take a more systematic approach to address energy poverty, despite the clear focus set out in the Clean Energy Package.To help Member States take more determined and ***targeted*** action against energy poverty, the Commission will adopt guidance on the definition and on indicators of energy poverty this autumn. This will facilitate sharing of good practices and build on the work of the EU Energy Poverty Observatory.NECPs and just/fair transition: challenges and opportunities for recovery and European Green Deal objectivesBased on the EU wide assessment summarised above, and in the context of the Just Transition Mechanism, it would appear that Member States need to work further to develop specific actions for a clean and fair energy transition in the most affected regions, including mobilising private investment, and synergies with other funding sources and mechanisms for regional cooperation. In that respect, pillar II (InvestEU scheme) and pillar III (EIB public loan facility) of the Just Transition Mechanism will offer new ways of financing the transition, in particular by leveraging public and private investments. Member States are encouraged to finalise their Territorial and Just Transition plans so they can become eligible to the different pillars of the Just Transition Mechanism.Coal regions in transition is an EU initiative to help address challenges and opportunities in those areas49. The Commission supports regional and local level involvement in ‘just transition’ related initiatives, which are a driving force for Coal Regions in Transition. The Commission assists regions in building cross-regional consortia, identifying transition-related projects and matching projects with funding opportunities, including under EU funding programmes50 51.All stakeholders need to continue cooperating and providing support to regions in a tailored manner, including through implementing the Just Transition Mechanism and Fund. The Commission will continue working with Member States and affected territories to ensure a just transition, leaving no affected region and their people behind. The Just Transition Platform (add reference to the website), launched in June 2020, will support authorities and stakeholders working on just transition, by providing tailored technical assistance, not least to develop and then implement the transition plans for both coal regions and carbon intensive regions.49 All coal, peat and oil shale regions (DE, PL, CZ, BG, RO, ES, EL, IE, HU, SK) are supported via EU funds (Cohesion policy, LIFE, H2020). Support also comes in the form of technical assistance (Structural Reform Support Programme, the EIB-Commission support through Jaspers, ENER’s START programme and contract with the World Bank).50 The Initiative is an open forum for stakeholder dialogue with national, regional and local authorities, wider society, industry, trade unions, NGOs, academia, experts in energy transition, and the European Commission.51 E.g joint work by Commission and Polish partners in Poland’s coal country team set up under the initiative led to €100 million of ERDF and Cohesion Funds being reprogrammed in Silesia to support local ‘just transition’ projects. This highlights the need to anticipate consequences of the transition and adapt policies and objectives in a concerted manner. Most Member States currently planning the phase out of coal or other solid fossil fuels (peat, oil shale) would benefit from providing more specific information on the way to proceed with the transition until 2030 and beyond.17The Commission will also continue promoting dialogue and cooperation with and among local authorities through the Covenant of Mayors (already covering 320 million EU citizens in over 10 000 municipalities), the Clean Energy for EU Island Initiative (56 islands in 25 Member States)52, and the establishment of a new Climate Pact. Public-private partnerships53 for social housing can complement public-sector measures to combat energy poverty at local level.2.3 Energy security, internal energy market, R&I and competitiveness2.3.1 Energy securityThe COVID-19 crisis has shown the importance of a resilient energy system with appropriate business continuity plans. It has tested the resilience of critical energy infrastructures and highlighted their vulnerability to shortages in the supply of strategic components and technologies, as well as the importance of preserving strategic supply chains. It has also highlighted the interlinkages between different sectors and the need to protect against cyberattacks since the energy system is increasingly digitalised and decentralised54. A number of NECPs also acknowledge energy efficiency and domestic renewables as key factors contributing to their energy security (Malta, Luxembourg, France, Lithuania and Portugal). Even though most Member States flag their energy sector as vulnerable to climate change in their national adaptation strategy or even in the decarbonisation chapter, only five Member States have proposed corresponding measures under the chapter on energy security.In terms of external energy security, the EU remains dependent on imports for half of its primary energy consumption, but has diversified its supply routes, notably for natural gas. Regional cooperation is crucial in this respect. In their NECPs, seven Member States (Bulgaria, Italy, Estonia, Germany, Poland, Croatia, and Ireland) are considering or planning further LNG capacities to ensure supply security or increase competition on the gas markets.Member States with nuclear energy as part of their energy mix, presented their nuclear plans in their NECPs. The Commission will continue to secure the application of the highest safety standards for nuclear technologies, supporting the regulatory processes and cooperation between concerned Member States. Concerned Member States should maintain adequate capacities in all the parts of the nuclear supply chain and ensure security of fuel supply to lead to safer facilities for people and the environment, and focus on building up skills and industrial strategic capabilities for decommissioning and nuclear waste reprocessing.52 26 islands receive support for the development of their Clean Energy Transition Agenda (6 'pilots' and 20 'pioneers'), 13 more islands have signed the Island pledge in 2019 towards full decarbonisation; 16 additional islands receive support on specific technical aspects for projects being prepared.53 Such as the Papillon project (city-NGO-industry) in Belgium54 The Commission Staff Working Document Energy Security: good practices to address pandemic risks, contains a list of risks and challenges in the short-term and long term, as well as a series of 20 good practices to address risks in the energy sector that are associated with a pandemic. [*https://ec.europa.eu/energy/topics/energy-security/energy-supply-and-pandemic\_en18NECPs*](https://ec.europa.eu/energy/topics/energy-security/energy-supply-and-pandemic_en18NECPs) and energy security: challenges and opportunities for recovery and European Green Deal objectivesOn energy security, the pandemic highlighted the need to focus more on the resilience of clean technology supply chains. Developing strategic supply chains of industrial capabilities in clean technologies55 should be a focus of recovery and resilience plans56. Member States need to identify policies and measures from NECPs to improve preparedness and enhance resilience in this respect. This also requires cross-border cooperation and EU action, including beyond EU’s borders supported by an assertive energy diplomacy.Member States need to ensure that their energy systems are capable of meeting the challenges posed by both extreme events (storms, droughts, floods, heatwaves) and slow-onset pressure (e.g water scarcity, sea-level rise, permafrost thawing), not only within the EU, but also outside its borders in terms of energy imports. The EU is providing funding (Horizon 2020 call and future Horizon Europe funding) to reduce reliance on commodity modules by developing next generation solar photovoltaic manufacturing through innovative technologies for modules that bring together the whole value chain. As part of the new Security Union Strategy57, which addresses both critical infrastructure and cybersecurity, the Commission proposed actions to tackle the specific risks faced by critical energy infrastructures in an integrated energy system and infrastructure. A Network Code on cybersecurity in electricity will be developed with sector-specific rules to increase the resilience and cybersecurity aspects of cross-border electricity flows. This includes rules on common minimum requirements, planning, monitoring, reporting and crisis management.2.3.2 Internal Energy MarketA fully integrated and well-functioning internal energy market provides price signals to guide investment in green energy and technologies, secures energy supplies and enables the least-cost path to climate neutrality through smart technologies. The NECPs assessment highlights several shortcomings in the energy market (flexibility through smart grids, storage and limited demand-side response). These have a negative impact on costs for consumers and industry, hamper a successful recovery, and the transition towards climate neutrality.In this context, the NECPs are a tool to help ensure that the objectives the electricity and gas internal market legislation are achieved, and the right policy and financial framework is in place to meet the challenge of climate neutrality at least cost while safeguarding energy security. The NECPs also provide an opportunity to strengthen the role of consumers as active participants and beneficiaries of the green transition.Though most Member States recognise the importance of the new electricity market design, only some have a holistic approach to necessary changes in forward-looking objectives. In an55 Including photovoltaic, batteries, renewable hydrogen, wind and ocean energy, grid and electronic components56 Complementing the EU’s Action Plan on Critical Raw Materials, and upcoming European Raw Materials Alliance including energy. 57 EU Security Union Strategy COM(2020)605 final19integrated and cost-reflective energy system, efficient markets should provide transparent price signals for consumers to both contribute to and benefit from the transition. Many plans also lack key information on competition and market liquidity.A considerable number of NECPs refer to smart meter deployment with a specific and measurable ***target*** as enabling consumers to actively participate in the market. However, few set specific objectives and clear timelines, making it difficult to monitor progress towards the ***targets***.Fossil fuel subsidies remain a major impediment to a cost-efficient energy and climate transition and to a functioning internal market. The final plans show a slight improvement in the reporting of energy and fossil fuel subsidy amounts and measures to phase them out. Providing the necessary details overall would be important for an assessment of the extent to which fossil fuel subsidies in place are hampering climate objectives58. Only three countries (Italy, Denmark, and Portugal) have performed a comprehensive stocktake of fossil fuel subsidies and few Member States intend to phase them out or have formulated specific policies.Electricity interconnections together with local grids are a key enabler for decarbonisation, market integration, security of supply and competition. Most Member States have included interconnectivity ***targets*** or projections of interconnectivity level by 2030 in their final plans. On electricity, most Member States have already achieved and even far exceeded the EU interconnectivity ***target*** of 15% as set for 2030. The role of Projects of Common Interest (PCIs) in meeting this ***target*** is key59. The Commission will continue to assist the remaining Member States in increasing their interconnection capacity and ensure that existing interconnection capacity is fully used to maximise the benefits of the internal energy market in line with EU law60. Member States have indicated the investment needs relating to the internal energy market in their NECPs. On interconnections, Germany indicated that it needs €55 billion to upgrade its existing electricity transmission system and to build new onshore transmission infrastructure by 2030. A further €21 billion is needed for offshore electricity transmission infrastructure to allow for the installation of 17-20 GW offshore wind by 2030. Spain also planned to strengthen and expand transmission and distribution lines, including between islands, and interconnections with neighbouring countries, in particular France. On investments related to energy system integration and flexibility, Estonia indicated 500MW of pumped hydro storage by 2028, and Greece plans to implement ‘smart’ policies for islands58 Although Member States have addressed the recommendation describe and list energy subsidies in their NECPs, the quality of the information ranges from general descriptions to comprehensive and quantified lists of subsidies. 19 Member States have included information on fossil fuel subsidies. 12 Member States have indicated (the intention to) work on setting plans to phase out fossil fuel subsidies. Only six Member States have included a timeline to phase out some of the existing fossil fuel subsidies.59 Since the Energy Infrastructure Regulation (TEN-E) came into force in 2013, nearly 40 gas and electricity PCIs have been implemented and some further 79 Projects of Common Interest (PCIs) are expected by 2022. To this end, an amount equal to EUR 3.8 billion has been invested from the Connecting Europe Facility (CEF).60 Article 16.8 of the Regulation (EU) 2019/943 on the Internal Market for Electricity20that cannot be interconnected in a cost-effective way, for instance by setting up innovative hybrid renewable power generation with storage systems.NECPs and internal energy market: challenges and opportunities for recovery and European Green Deal objectivesThe focus on ensuring that markets remain liquid and competitive is key to delivering energy and climate goals as well as steering recovery investments to avoid distorted market signals. A more structured and coherent approach is needed to identify and promote sources of flexibility and address any barriers to market participation by new players and enable open and competitive markets for the transition. This should be fully reflected by Member States when implementing their NECPs.Though Member States follow different paths to sector integration, the recently adopted EU Strategy for Energy System Integration can constitute a reference point for Member States on more flexible energy systems and provide the next steps in adapting energy markets to climate neutrality needs.The Commission will also promote greater demand side flexibility through a Network Code61, revision of the State Aid guidelines, and consumer information.Member States need to fulfil their obligation to report on energy subsidies, in particular for fossil fuel subsidies, and measures to phase them out. In view of the international commitments to phase out fossil fuel subsidies in the G20 and the UN, as well as EU’s own policy commitments, the Commission will address this matter in the State of the Energy Union report 2020 and issue further guidelines to Member States to promote a shift away from fossil fuel subsidies. This will help Member States to address the incoherence between 2030 objectives and green recovery and resilience on the one hand, and the use of scarce financial resources to encourage fossil fuels consumption and prevent the needed technological shifts on the other. The Commission will pay particular attention to improving reporting on fossil fuel subsidies and progress towards phasing them, particularly as part of the integrated national energy and climate progress reports. In the context of the legislative reviews of the Energy Taxation Directive, as well as State Aid Guidelines, the Commission will consider the need to take further measures to ensure coherence among EU policies and address the EU Green Deal’s ambition to end fossil fuel subsidies.Concerning infrastructure, most plans identified as key actions the completion of PCI projects, strengthening of internal grids and the deployment of innovative technologies such as smart grids and new generation electricity grids62, including the revision of network codes for renewable energies. European grids must adapt to the changing energy system of more decentralised, digital real-time, and two way energy across sectors. To this aim the Commission will review the TEN-E and TEN-T Regulations and the Alternative Fuels61 To unlock the potential of electric vehicles, heat pumps and other electricity consumption to contribute to the flexibility of the energy system (starting end-2021).62 New generation electricity grids make efficient use of new communication technology (e.g digital platforms) to exploit the energy infrastructure in an innovative way (e.g flexible networks), by its users (generators, consumers and prosumers).21Infrastructure Directive, the scope and governance of the Ten Year Network Development Plans, and accelerate investment in smart, highly-efficient, renewables-based electricity, district heating and cooling, and in CO2 infrastructure.2.3.3 Research, innovation and competitivenessThere final NECPs fail to pay sufficient attention to R&I needs for delivering on climate and energy objectives. There is an overall decrease in national budgets devoted to R&I in clean energy technologies and a severe lack of national objectives and funding ***targets*** that show concrete and relevant pathways to 2030 and 2050. Most of the plans also outline only funding of existing non-energy specific programmes that run for fewer than five years.The cooperation between the Member States and the Commission through the Strategic Energy Technology Plan (SET-Plan) received full support in the vast majority of the NECPs as a basis for energy R&I planning and alignment. Some Member States specified areas of particular interest, but most did not specify how national funds and/or activities are allocated under the work packages (implementation plans) in which they are involved and how the SET Plan and their national energy and climate objectives are linked.Batteries will play an equally prominent role for the EU’s transport decarbonisation and power sector to keep system costs low (by providing ***emissions*** free balancing and flexibility and reducing grid expansion needs). Batteries are covered by NECPs in this respect for their necessary roles in stationary and mobility applications. NECPs cover partially the related needs for further R&I and the development of industrial manufacturing capabilities. The European Battery Alliance63, launched by the Commission three years ago, has helped to provide the necessary impetus among industrial stakeholders to invest in battery production in the EU. Member States, industry and other key stakeholders have responded massively and rapidly, including through Important Projects of Common European Interest (IPCEI). Over 500 actors are now part of the alliance that has attracted €100 billion of combined investments announced along the EU value chain. There are over 20 battery factories under development (at different maturity stages) with numerous projects across the whole value chain, including extraction and refining raw materials, battery materials, and recycling. The first resulting 11 EU factories that are being built should start producing by 2022-2023 and deliver 270GWh batteries per year by 2030. Industry estimates this results in value added of €250 billion annually from 2025 onwards, creating 4 to 5 million jobs, whilst overall transport electrification including road and rail in the EU could bring additional 600,000 jobs by 2030.Before the end of 2020, the Commission will adopt a new fit-for-future regulatory framework for batteries, which will aim to ensure that all batteries placed on the EU market (regardless of their origin) meet the highest standards regarding performance, durability, safety, responsible sourcing of raw materials and minimal environmental impact, including low carbon footprint63 To develop a strong, innovative, sustainable and competitive battery value chain in the EU, supporting transport electrification in response to the strong demand for electric vehicles, securing access to batteries strategic raw materials and increasing resilience and autonomy, capturing the skills and boosting manufacturing capacities.22over their life cycle. The new regulation should be complemented by high quality and timely standards to be developed by CEN/CENELEC.Some Member States give specific attention to long-term technologies such as carbon capture and use and storage (CCUS) which could contribute to decarbonise certain hard-to-abate sectors by 2030 and hydrogen, while incremental innovation in more near-term technologies such as energy efficiency, wind and solar receives less attention.The approach to competitiveness varies between NECPs. Some followed a narrow definition looking at patents and researchers, or even just at power prices. Other plans cover technology deployment aspects and thus take a broader competitiveness approach to national suppliers of clean technologies, including the value chains to develop such solutions. However, most plans lack quantitative indicators and are therefore not measurable.NECPs and R&I and competitiveness: challenges and opportunities for recovery and European Green Deal objectives A new strategic approach to clean energy R&I and competitiveness is needed to rebuild the European economy and accelerate the innovation and market uptake of new technologies and innovation for climate neutrality. Both EU and national R&I policies as well as funding and national industrial strategies need to be better aligned with energy and climate objectives and be made operational through NECPs. A range of funding instruments are available to help Member States do more in this area, such as Horizon Europe, the Innovation and Modernisation Funds and Invest EU. In September 2020, the Green Deal call will also support economic recovery by providing €1 billion of R&I funding (with €250-300 million for key energy priorities). The Innovation Fund launched a first call in July 2020, providing €1 billion to large-scale projects for clean and innovative technologies. A new call dedicated to small-scale projects (with a capital expenditure of less than €7.5 million) is being prepared and will be launched by the end of 2020.The Commission will revise the SET-Plan in 2021. This will support the EU’s green recovery and address the R&I needs of Member States, who also need to develop clear and ambitious national objectives and funding ***targets*** for R&I. The EU will also work with the private sector to increase their level of R&I spending and related deployment in clean energy technologies. Hydrogen strategy Most NECPs acknowledge64 the role of hydrogen in the energy transition. Half of the plans mention concrete hydrogen-related objectives for the domestic generation of renewable or low-carbon hydrogen, for end-use in industry and hard-to-electrify transport sectors (such as Luxembourg which aims to make steel more sustainable through renewable hydrogen use).64 France, Germany, Austria, The Netherlands for instance have concrete plans in their NECPs, while others such as Portugal are developing fast concrete strategies.23The Commission, Member States and industry will work together in the Clean Hydrogen Alliance on implementing the recently published EU Hydrogen Strategy. The goal is to develop an investment agenda with a pipeline of viable projects and further develop clean hydrogen supply chains and downstream technologies. Energy diplomacy and coordinated action beyond EU borders, particularly with the countries in the Neighbourhood, will be necessary for the successful implementation of the Hydrogen Strategy. Numerous projects are underway. Denmark and Germany building at Bornholm a 3-5 GW offshore wind energy production, including an electrolysis facility to fuel trucks, busses, ships and aircraft. Spain is planning since the submission of its NECPs the construction of a 100 MW PV plant, 20 MWh ion lithium battery storage system and hydrogen production system through electrolysis in Puertollano.Together with the State of the Energy Union Report, the Commission will present the first Competitiveness Progress Report in autumn 2020. This will analyse how competitive the clean technologies and solutions are and propose a common approach to assessing competitiveness and quantifying efforts. The underlying Clean Energy Transition - Technologies and Innovations Report will present a more detailed evidence-based analysis of the current and future status of clean technologies and solutions to help create a stronger link between R&I activities, clean technologies, and energy and climate objectives (at national and EU level).2.4 Regional cooperation and environmental aspects in the NECPs2.4.1 Increased cooperation between Member States and multi-level dialogueThe plans indicate that, though Member States understood well and described the need for regional cooperation, with some making use of existing regional fora in drawing up the plans, the full potential of regional cooperation has yet to be seized. Few Member States describe specific measures to optimise access to and use of regional facilities or how to plan better renewable energy deployment and energy efficiency measures in cooperation with other Member States.Building on the NECPs, Member States should make better practical use of regional cooperation. This should include using existing fora to address common issues affecting energy transition priorities, especially energy efficiency, transport, smart grids and renewables (such as planning, skills shortages for renewable energies, energy efficiency and buildings) thus enhancing the energy transition regionally. Examples of this happening already are the four existing groups: the Pentalateral and CESEC, the Northern Seas initiative, and the Baltic countries (for example Estonia and Latvia are planning a joint auction for offshore wind).24Regional planning of auctions, such as for offshore wind, would help build a steady pipeline of projects and underscore foresight and recovery contribution of this sector65.Member States should accelerate flagship projects with a regional dimension such as offshore wind and fast charging networks along TEN-T corridors. To do this they should use the recovery funds, CEF and regional aid funds, and the EU renewable energy financing mechanism, making full use of regional forums. Member states could also collaborate on the pilot testing of breakthrough energy efficiency or energy generation technologies, with a view to identifying the most efficient and cost-effective technologies and triggering their industrial production. The pooling of architectural heritage renovation projects could also trigger the large scale production of specific technologies such as solar shingles or photovoltaic glass, and render those a cost-effective option for the renovation of historic buildings.2.4.2 NECPs and environmental policiesAir pollution is a risk factor for certain illnesses, such as respiratory and cardiovascular diseases66. These are the diseases that put people at a higher risk from COVID-19.The Governance Regulation requires67 Member States to report on the impacts of industrial, ***agricultural***, transport and energy policies and measures on air pollution, linked to environmental legislation68. Despite some efforts made, there continues to be insufficient reporting of the projected impacts of the planned policies and measures on the ***emissions*** of air pollutants by Member States in their final plans. Only 13 Member States provided a sufficient level of detail and/or improved analysis of the air impacts compared to the draft plans. The final plans provide insufficient analysis of potential trade-offs between air and climate/energy objectives (mostly related to increasing amounts of bioenergy). It is welcome, though, that some Member States analysed impacts of planned measures on all air pollutants regulated under the National ***Emissions*** Reduction Commitment Directive69, with even sometimes a useful split by source sector, which helps define mitigating measures more efficiently.The assessment of the potential impacts of expanding bioenergy planned in several plans on carbon sinks, biodiversity, water, and air pollution is insufficient. They lack details on how to supply the required sustainable biomass, by feedstock and origin and trajectories for ***forest*** biomass, and how they are aligned with measures to maintain and increase the carbon sink.65 Slovenia has promoted regional cooperation in setting up smart grids and introduced innovative technologies in the wider region together with Croatia, using the Connecting Europe Facility.66 WHO estimates globally annual 7 million premature deaths due to air pollution and over 400,000 premature deaths in the EU according to the European Environmental Agency67 The Energy Union Governance Regulation stipulates that this obligation applies “where relevant”, which is the case in all sectors where air pollutants and GHG ***emissions*** originate from the same source (transport, energy, ***agriculture***, industry, domestic heating etc.).68 NEC Directive (EU) 2016/2284 on the reduction of national ***emissions*** of certain atmospheric pollutants.69 EU 2016/228425NECPs and environmental policies: challenges and opportunities for recovery and European Green Deal objectivesAll Member States should strengthen the link between National Air Pollution Control Programmes (NAPCPs) and NECPs, also in terms of implementation at local level70. This will improve the process of identifying synergies and avoiding or mitigating trade-offs, while promoting synergetic measures (e.g clean transport, increased share of non-combustible renewables).In most NECPs, further work is needed to integrate and quantify greenhouse gas ***emissions*** reductions associated to circular economy policies, and assess the synergies and trade-offs of specific policies with biodiversity (e.g role of ecosystem services for mitigation and adaptation, but also risks in terms of biodiversity loss). The analysis of such interactions could be expanded to other environmental domains, such as water and soil pollution, resource-efficiency and the water-energy nexus in line with the “do no harm” principle espoused in the European Green Deal. When assessing the potential to develop bioenergy, Member States should also evaluate the efficiency of bioenergy compared to other sources of renewable energy, including in terms of ***land***-use and carbon sinks, air quality and other environmental impacts. As set out in the Biodiversity Strategy, the EU will prioritise solutions such as ocean energy, offshore wind (that supports fish stock regeneration), solar-panel farms that provide biodiversity-friendly soil cover, and sustainable bioenergy.3. CONCLUSIONSThis assessment shows that the first implementation of the new integrated planning framework set out in the Governance Regulation has been very positive. All Member States have submitted final plans of good quality, albeit sometimes with some delay. The plans follow a comparable structure and cover integrated national objectives and policies for all the dimensions of the Energy Union. The plans were also the outcome of wide consultation and participation at national and subnational level, building a strong sense of ownership of the energy and climate transition objectives. This work represents a major effort by Member States and lays the foundation for stepping up the ambition to deliver climate neutrality in line with the European Green Deal, the proposed European Climate Law and the Communication on stepping up Europe’s 2030 climate ambition.The aggregate assessment at EU level has identified the following key takeaways and trends. The final plans are substantially more ambitious than the 2018 draft plans, on key dimensions such as greenhouse gas ***emissions*** reduction or renewables ***targets***. This is in line with the Commission’s June 2019 recommendations on the draft plans.70 At municipality level, air quality drives behaviours towards energy transition and decarbonisation as the benefits are felt quickly. EU finances several bottom up initiatives covering circular economy and air pollution.26First, the assessment shows that Member States are accelerating their energy and climate transition driven by the EU wide objective of climate neutrality. Greenhouse gas ***emissions*** reductions surpass the current EU ***target*** of -40% by 2030 compared to 1990 levels. Under existing and planned measures they would decrease by 41% in the current EU ***target*** scope, excluding the LULUCF sink. The energy mix is projected to change even faster than expected by many only recently. The plans indicate that almost all Member States are phasing out from coal or have set a phase-out date. The use of coal is projected to decrease by 70% compared to 2015, with renewable electricity set to reach 60% of electricity produced by 2030.Second, the assessment shows that the share of renewable energy could reach under existing and planned measures a range of 33.1-33.7% by 2030 at Union level, going well beyond the current 2030 ***target*** of at least 32% share of renewable energy. Further investment and reforms in renewable energies identified in NECPs, have the potential to push this share further up.Third, with regard to energy efficiency, an ambition gap for 2030 remains. Albeit reduced compared to that of the draft plans, the gap still stands at 2.8 percentage points for primary energy consumption and 3.1 percentage points for final energy consumption, compared to the ***target*** to increase energy efficiency by at least 32.5% by 2030. While there is a growing attention to the issue, as shown by the final plans, and measures already planned at the European level, there are still significant efforts to be made to close the gap. In this context, the Commission will take action, in particular through the Renovation Wave initiative and the review and possible revision of the Energy Efficiency Directive, and guidance for the Energy Efficiency First Principle.Furthermore, plans dot not always detail with sufficient precision actions and measures in important dimensions such as identifying investment needs, mobilising funding, research and innovation and competitiveness, regional cooperation, ***land*** use ***land*** use change and forestry, just transition and energy poverty. Lastly, Member States need to step up efforts to phase out fossil fuel subsidies. Recommendations from the Commission in these respects where not fully taken into account.The shortcomings and remaining gaps emerging from this EU wide assessment will have to be addressed through a collective effort both by Member States and at EU-level. Member States will have to implement their NECPs, taking into account the new financing opportunities under the MFF and the Recovery and Resilience Facility. Investments should primarily be centred on renovating buildings, sustainable mobility, decarbonising industry and ***agriculture***, renewable energies, including renewable hydrogen, and associated technologies and solutions for energy system integration. Enhanced attention should also go to climate adaptation and carbon sinks. Mature projects should be frontloaded as much as possible. The Recovery and Resilience Facility should be used in conjunction with other existing funds, notably InvestEU to crowd in private financing and scale up public financing.In the context of the fifth report of the State of the Energy Union to be adopted in October, the Commission will publish staff working documents for each Member State containing individual assessments of each final NECP and of the way these addressed the related 2019 Commission recommendations. They will also provide some guidance for the implementation27of the plans, and on actions that will help exploit the full potential of the plans in the context of a green recovery.The Commission will assist Member States in implementing the plans through bilateral and regional engagement, the exchange of best practices, as well as through the different tools at its disposal, such as the Structural Reform Support Programme and its proposed successor the Technical Support Instrument, which offer tailor-made technical support to Member States to improve the capacity to design, develop and implement reforms, the InvestEU and the instruments proposed under Next Generation EU. Furthermore, the Commission will promote technical exchanges with Member States on the implementation of the NECPs, making the link with national recovery and resilience plans.Action at national level will be reinforced and complemented by further policy measures at EU level, to close the remaining gap and increase the ambition level, as set out in the parallel Communication on stepping up Europe’s 2030 climate ambition. The full implementation of the Clean Energy Package, including a rapid adoption of any outstanding measures, provides a solid foundation for this work.Finally, this first exercise shows that a well-designed governance framework matters for delivering a common effort at European level. Building on the existing framework centred around the NECPs, this will nonetheless require adaptations to evolving needs and policy priorities under the Green Deal and the recovery and resilience plans. In its review by mid-2021 of the energy and climate legislation to reflect the increased greenhouse gas ***emissions*** reduction ambition for 2030, the Commission will also review the Governance Regulation and ensure that it remains fit for purpose.The NECPs are not a one off exercise, but an iterative process. The annual reporting of greenhouse gas ***emissions*** inventories and projections, as well as the national bi-annual implementation reports, will be important tools for monitoring progress. Based on these elements Member States will update and revise their NECPs in 2023 (drafts) and 2024 (final)71. This will provide the opportunity to build on lessons learned from the first years of implementation and adapt plans to the changed climate and energy ***targets*** and economic circumstances, reflecting the agenda for green investment developed at national level in the context of the Recovery and Resilience Plans.71 For these updates, Member States should use, whenever available and as soon as they become available, European statistics

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**End of Document**



[***INTRODUCTION OF BILLS AND JOINT RESOLUTIONS; Congressional Record Vol. 167, No. 56 (Senate - March 25, 2021)***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:629F-5T01-JDG9-Y25W-00000-00&context=1516831)

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**Length:** 5603 words

**Body**

Washington: The Library of Congress, The Government of USA has issued the following house proceeding:

The following bills and joint resolutions were introduced, read the first and second times by unanimous consent, and referred as indicated: By Mr. MARKEY: S. 965. A bill to establish a voluntary program to identify and promote internet-connected products that meet industry- leading cybersecurity and data security standards, guidelines, best practices, methodologies, procedures, and processes, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. MARKEY (for himself, Mr. Blumenthal, Mr. Booker, Mr. Cardin, Mr. Durbin, Mrs. Feinstein, Mrs. Gillibrand, Mr. Heinrich, Ms. Hirono, Mr. King, Ms. Klobuchar, Mr. Leahy, Mr. Merkley, Mr. Murphy, Ms. Rosen, Mr. Sanders, Ms. Smith, Ms. Stabenow, Mr. Van Hollen, Ms. Warren, and Mr. Wyden): S. 966. A bill to require the Administrator of the National Oceanic and Atmospheric Administration to establish a Climate Change Education Program, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. BLUNT (for himself, Ms. Hirono, Ms. Collins, Ms. Klobuchar, Ms. Murkowski, and Ms. Duckworth): S. 967. A bill to provide for the automatic acquisition of United States citizenship for certain internationally adopted individuals, and for other purposes; to the Committee on the Judiciary. By Mr. COTTON: S. 968. A bill to prohibit the United States Armed Forces from promoting anti-American and racist theories; to the Committee on Armed Services. By Mr. PAUL: S. 969. A bill to establish Federal Regulatory Review Commissions, and for other purposes; to the Committee on Homeland Security and Governmental Affairs. By Mr. PAUL: S. 970. A bill to reduce the backlog of foreign nationals seeking employment-based visas, and for other purposes; to the Committee on the Judiciary. By Mr. MARKEY (for himself, Mr. Sasse, Mr. Blunt, Mr. Schatz, Ms. Collins, and Mr. Bennet): S. 971. A bill to amend the Public Health Service Act to authorize a program on children and the media within the National Institute of Health to study the health and developmental effects of technology on infants, children, and adolescents; to the Committee on Health, Education, Labor, and Pensions. By Mr. MARKEY (for himself and Ms. Warren): S. 972. A bill to reauthorize the Essex National Heritage Area, and for other purposes; to the Committee on Energy and Natural Resources. By Ms. LUMMIS (for herself, Mr. Barrasso, Mr. Crapo, Mr. Daines, and Mr. Risch): S. 973. A bill to direct the Secretary of the Interior to reissue a final rule relating to ***removing*** the Greater Yellowstone Ecosystem population of grizzly bears from the Federal list of endangered and threatened wildlife, and for other purposes; to the Committee on Environment and Public Works. By Mr. MENENDEZ (for himself, Mr. Markey, Mr. Durbin, Mr. Blumenthal, Mr. Murphy, Mr. Booker, Mr. Reed, and Mrs. Gillibrand): S. 974. A bill to repeal certain impediments to the administration of firearms laws; to the Committee on the Judiciary. By Mr. CARPER (for himself, Mr. Burr, Ms. Cortez Masto, and Ms. Stabenow): S. 975. A bill to amend the Internal Revenue Code of 1986 to extend and modify the credit for alternative fuel vehicle refueling property; to the Committee on Finance. By Mr. TESTER (for himself and Mr. Boozman): S. 976. A bill to amend title 38, United States Code, to improve and to expand eligibility for dependency and indemnity compensation paid to certain survivors of certain veterans, and for other purposes; to the Committee on Veterans' Affairs. By Mr. GRASSLEY (for himself, Ms. Klobuchar, Mr. Lee, and Mr. Leahy): S. 977. A bill to amend the Sherman Act to make oil- producing and exporting cartels illegal; to the Committee on the Judiciary. By Ms. SMITH (for herself, Mr. Hoeven, Ms. Sinema, Mr. Boozman, Mrs. Capito, Mr. Schatz, Mr. Cornyn, Mr. Kelly, Mr. Cramer, Ms. Hirono, Mr. Daines, Ms. Klobuchar, Ms. Ernst, Mr. Tester, Mr. Inhofe, Mr. Peters, Mr. Moran, Mr. Rounds, Mr. Scott of South Carolina, Mr. Tillis, Mr. Marshall, and Ms. Baldwin): S. 978. A bill to provide for the adjustment or modification by the Secretary of ***Agriculture*** of loans for critical rural utility service providers, and for other purposes; to the Committee on ***Agriculture***, Nutrition, and Forestry. By Mr. WYDEN (for himself, Ms. Klobuchar, Mr. Markey, Mr. Durbin, Mr. Warnock, Mr. Booker, Mrs. Gillibrand, Mr. Menendez, Ms. Baldwin, Mr. Van Hollen, Ms. Duckworth, Mrs. Feinstein, Mr. Merkley, Mr. Sanders, Mr. Blumenthal, and Mrs. Murray): S. 979. A bill to amend the Consolidated Appropriations Act, 2021 to authorize additional funds for the Emergency Broadband Connectivity Fund, to provide grants to States and Tribal Entities to strengthen the National Lifeline Eligibility Verifier, to provide for Federal coordination between the National Lifeline Eligibility Verifier and the National Accuracy Clearinghouse, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. HAGERTY: S. 980. A bill to restrict funds to local educational agencies that have obligated previously appropriated funds and reopen schools for in-person learning; to the Committee on Health, Education, Labor, and Pensions. By Mrs. MURRAY (for herself, Ms. Cantwell, Mr. Wyden, Mr. Merkley, and Ms. Murkowski): S. 981. A bill to amend the Federal Assets Sale and Transfer Act of 2016 to ensure that federally recognized Indian Tribes are consulted before the sale or transfer of certain Federal civilian real properties, and for other purposes; to the Committee on Environment and Public Works. By Mr. MARKEY (for himself, Mr. Van Hollen, Mr. Sanders, and Mr. Merkley): S. 982. A bill to extend the life of the Minuteman III and redirect savings from the development of the new ground-based strategic deterrent program toward the development of a universal coronavirus vaccine, and for other purposes; to the Committee on Armed Services. By Mr. WHITEHOUSE (for himself and Mr. Brown): S. 983. A bill to amend the Patient Protection and Affordable Care Act to establish a public health insurance option, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Mr. MERKLEY (for himself, Mr. Booker, Mr. Durbin, Mr. Markey, Mr. Wyden, Mr. Blumenthal, Mr. Leahy, Mrs. Gillibrand, Ms. Warren, Mr. Sanders, and Mrs. Feinstein): S. 984. A bill to amend the Solid Waste Disposal Act to reduce the production and use of certain single-use plastic products and packaging, to improve the responsibility of producers in the design, collection, reuse, recycling, and disposal of their consumer products and packaging, to prevent pollution from consumer products and packaging from entering into animal and human food chains and waterways, and for other purposes; to the Committee on Finance. By Mr. CARPER (for himself, Mr. Whitehouse, and Mr. Heinrich): S. 985. A bill to amend the Internal Revenue Code of 1986 to provide direct payments of the renewable electricity production credit, the energy credit, and the carbon oxide sequestration credit; to the Committee on Finance. By Ms. SMITH (for herself, Mrs. Capito, Mr. Whitehouse, Mr. Cramer, Mr. Schatz, Mr. Hoeven, Mr. Manchin, Mr. Barrasso, Mr. Coons, Mr. Grassley, Mr. Lujan, Ms. Ernst, Mr. Durbin, and Ms. Klobuchar): S. 986. A bill to amend the Internal Revenue Code of 1986 to provide for a 5-year extension of the carbon oxide sequestration credit, and for other purposes; to the Committee on Finance. By Mr. PORTMAN (for himself, Mr. Whitehouse, Ms. Klobuchar, Mrs. Shaheen, Ms. Cantwell, and Mrs. Capito): S. 987. A bill to provide support with respect to the prevention of, treatment for, and recovery from, substance use disorder; to the Committee on Health, Education, Labor, and Pensions. By Mr. SCHATZ (for himself, Ms. Cantwell, Mr. Durbin, Ms. Duckworth, Ms. Hirono, Mr. Wyden, Mrs. Murray, and Ms. Klobuchar): S. 988. A bill to provide competitive grants for the promotion of Japanese American confinement education as a means to understand the importance of democratic principles, use and abuse of power, and to raise awareness about the importance of cultural tolerance toward Japanese Americans, and for other purposes; to the Committee on Energy and Natural Resources. By Mr. SCHATZ (for himself and Ms. Smith): S. 989. A bill to establish a Native American language resource center in furtherance of the policy set forth in the Native American Languages Act; to the Committee on Indian Affairs. By Mr. HEINRICH: S. 990. A bill to reauthorize the Northern Rio Grande National Heritage Area; to the Committee on Energy and Natural Resources. By Mr. SANDERS: S. 991. A bill to amend the Internal Revenue Code of 1986 to modify the treatment of foreign corporations, and for other purposes; to the Committee on Finance. By Mr. BOOKER (for himself, Mr. Durbin, Ms. Klobuchar, Mrs. Feinstein, Mr. Blumenthal, Mr. Brown, and Ms. Hirono): [[Page S1814]] S. 992. A bill to amend title IV of the Higher Education Act of 1965 to require institutions of higher education that participate in programs under such title to distribute voter registration forms to students enrolled at the institution, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Mr. RUBIO (for himself, Ms. Ernst, and Mr. Kennedy): S. 993. A bill to prohibit certain business concerns from receiving assistance from the Small Business Administration, and for other purposes; to the Committee on Small Business and Entrepreneurship. By Mr. SANDERS (for himself, Mrs. Gillibrand, Mr. Whitehouse, Mr. Van Hollen, and Mr. Reed): S. 994. A bill to amend the Internal Revenue Code of 1986 to reinstate estate and generation-skipping taxes, and for other purposes; to the Committee on Finance. By Ms. BALDWIN: S. 995. A bill to amend the Stop Student Debt Relief Scams Act of 2019 to make technical corrections; to the Committee on Health, Education, Labor, and Pensions. By Mr. WICKER (for himself, Ms. Sinema, and Mr. Scott of South Carolina): S. 996. A bill to award grants to certain intuitions of higher education to educate and train students to participate in the telecommunications workforce; to the Committee on Commerce, Science, and Transportation. By Ms. KLOBUCHAR (for herself, Mr. Wicker, Mr. Coons, and Mr. Portman): S. 997. A bill to establish the Office of Manufacturing and Industrial Innovation Policy and strategic national manufacturing policy for the United States, to provide manufacturing and industrial perspective and advice to the President, to provide for a comprehensive survey and cross administration management of efforts to ensure global leadership in manufacturing critical to the long-term economic health and national security of the United States, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. COONS (for himself, Mr. Wicker, Mr. Durbin, Mr. Grassley, Mr. Van Hollen, Mr. Boozman, Mr. Blumenthal, Ms. Ernst, Mr. Wyden, and Mr. Lankford): S. 998. A bill to provide grants to States that do not suspend, revoke, or refuse to renew a driver's license of a person or refuse to renew a registration of a motor vehicle for failure to pay a civil or criminal fine or fee, and for other purposes; to the Committee on the Judiciary. By Mr. WARNER (for himself, Mrs. Blackburn, Mr. Cornyn, Mr. Warnock, and Mr. Kaine): S. 999. A bill to amend the title XVIII of the Social Security Act to preserve access to rural health care by ensuring fairness in Medicare hospital payments; to the Committee on Finance. By Mr. KAINE (for himself and Mr. Warner): S. 1000. A bill to designate additions to the Rough Mountain Wilderness and the Rich Hole Wilderness of the George Washington National ***Forest***, and for other purposes; to the Committee on ***Agriculture***, Nutrition, and Forestry. By Mr. LANKFORD (for himself, Mr. Johnson, Mr. Braun, Mr. Barrasso, and Mr. Hagerty): S. 1001. A bill to establish a commission to review certain regulatory obstacles to preparedness for, response to, and recovery from the COVID-19 pandemic and other pandemics, and for other purposes; to the Committee on Homeland Security and Governmental Affairs. By Mr. CASEY (for himself, Ms. Baldwin, and Ms. Stabenow): S. 1002. A bill to prohibit false or misleading advertising for health insurance coverage, require warnings and reporting with respect to noncomprehensive health plans, encourage enrollment in health plans, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Mr. MURPHY (for himself, Mr. Blumenthal, Mr. Markey, and Ms. Warren): S. 1003. A bill to establish a grant program to provide assistance to States to prevent and repair damage to structures due to pyrrhotite; to the Committee on Banking, Housing, and Urban Affairs. By Ms. CORTEZ MASTO (for herself, Mr. Romney, and Ms. Rosen): S. 1004. A bill to extend the authorization of the Mormon Pioneer National Heritage Area, to designate the Great Basin National Heritage Route in the State of Nevada as the ``Great Basin National Heritage Area'', to designate the Great Basin Heritage Route Partnership as the ``Great Basin Heritage Area Partnership'', to extend the authorization of the Great Basin National Heritage Area, and for other purposes; to the Committee on Energy and Natural Resources. By Mr. PAUL: S. 1005. A bill to amend the ***Agricultural*** Marketing Act of 1946 to modify the definition of hemp, and for other purposes; to the Committee on ***Agriculture***, Nutrition, and Forestry. By Mr. JOHNSON (for himself, Mrs. Blackburn, Mr. Braun, Mr. Cassidy, Mr. Cotton, Ms. Ernst, Mr. Lankford, and Mr. McConnell): S. 1006. A bill to amend the Controlled Substances Act to list fentanyl-related substances as schedule I controlled substances; to the Committee on the Judiciary. By Mr. TUBERVILLE (for himself, Mr. Cruz, Mr. Barrasso, Mr. Cramer, Mr. Lee, and Mr. Braun): S. 1007. A bill to require that certain aliens receive written notice of ***removal*** proceedings before being granted parole or released from detention and to enumerate the possible consequences for failing to attend such proceedings; to the Committee on the Judiciary. By Mr. LEE (for himself, Mr. Risch, and Mr. Crapo): S. 1008. A bill to require the Secretary of the Interior to develop a modeling tool, conduct a study, and issue reports relating to the tax equivalent amount of payments under the payment in lieu of taxes program; to the Committee on Energy and Natural Resources. By Mrs. SHAHEEN (for herself, Mr. Moran, Ms. Hassan, and Mr. Rounds): S. 1009. A bill to amend the Homeland Security Act of 2002 regarding the procurement of certain items related to national security interests for Department of Homeland Security frontline operational components, and for other purposes; to the Committee on Homeland Security and Governmental Affairs. By Mrs. SHAHEEN (for herself and Ms. Hassan): S. 1010. A bill to provide funding for programs and activities under the SUPPORT for Patients and Communities Act; to the Committee on Health, Education, Labor, and Pensions. By Mr. CRUZ (for himself, Mr. Inhofe, Mrs. Capito, Mr. Kennedy, and Mr. Cramer): S. 1011. A bill to amend the Natural Gas Act to provide for expanded natural gas exports; to the Committee on Energy and Natural Resources. By Mr. CRUZ (for himself, Mr. Kennedy, and Mr. Cramer): S. 1012. A bill to prohibit the Secretary of Transportation from prohibiting the transportation of liquefied natural gas by rail, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. DURBIN (for himself, Mr. Lee, Mr. Leahy, Mr. Whitehouse, Mr. Wyden, Mr. Blumenthal, Ms. Baldwin, Mr. Booker, Ms. Warren, Mr. Sanders, Mr. King, Mr. Kaine, and Mr. Wicker): S. 1013. A bill to focus limited Federal resources on the most serious offenders; to the Committee on the Judiciary. By Mr. DURBIN (for himself and Mr. Grassley): S. 1014. A bill to reform sentencing laws and correctional institutions, and for other purposes; to the Committee on the Judiciary. By Mr. HEINRICH: S. 1015. A bill to require the Federal Energy Regulatory Commission to initiate a rulemaking to reform the interregional transmission planning process, and for other purposes; to the Committee on Energy and Natural Resources. By Mr. HEINRICH: S. 1016. A bill to amend the Internal Revenue Code of 1986 to establish a tax credit for installation of regionally significant electric power transmission lines; to the Committee on Finance. By Mr. HEINRICH: S. 1017. A bill to amend the Internal Revenue Code of 1986 to establish a tax credit for the production of hydrogen using electricity produced from renewable energy resources; to the Committee on Finance. By Ms. KLOBUCHAR (for herself and Mr. Braun): S. 1018. A bill to amend the Public Health Service Act to authorize grants for acquiring equipment and supplies capable of performing same-day clinical laboratory testing in a point-of-care setting, and to assist laboratories in meeting the cost of acquiring high-throughput equipment, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Ms. KLOBUCHAR (for herself and Ms. Duckworth): S. 1019. A bill to amend the Federal Food, Drug, and Cosmetic Act to limit the presence of toxic elements in, and otherwise regulate, infant and toddler food, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Ms. DUCKWORTH (for herself, Mr. Schatz, Mr. Markey, Mr. Blumenthal, Mr. Merkley, Mrs. Feinstein, Ms. Cortez Masto, Mr. Whitehouse, Mr. Coons, Ms. Cantwell, Mr. Brown, Mr. Reed, Mr. Booker, Mr. Menendez, Mr. Wyden, Mr. Durbin, Ms. Smith, Mr. Sanders, Mrs. Gillibrand, Ms. Baldwin, Ms. Hirono, Ms. Warren, Mrs. Murray, Mr. Van Hollen, Ms. Klobuchar, Ms. Rosen, Mr. Padilla, Mr. Warnock, and Mr. Leahy): S. 1020. A bill to ensure due process protections of individuals in the United States against unlawful detention based solely on a protected characteristic; to the Committee on the Judiciary. By Ms. DUCKWORTH (for herself, Mrs. Murray, Ms. Hirono, Ms. Cortez Masto, Mrs. Shaheen, Ms. Klobuchar, Mr. Blumenthal, Mr. Brown, Ms. Warren, Mrs. Gillibrand, Mr. Whitehouse, Ms. Rosen, Mrs. Feinstein, Mr. Merkley, Ms. Hassan, Mr. Bennet, Mr. Markey, [[Page S1815]] Ms. Smith, Mr. Murphy, Mr. Booker, Mr. Van Hollen, Mr. Sanders, Mr. Wyden, Mr. Padilla, and Mr. Lujan): S. 1021. A bill to ensure affordable abortion coverage and care for every person, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Mr. DURBIN (for himself, Mr. Boozman, Mr. Inhofe, Mr. Booker, and Mr. Cardin): S. 1022. A bill to create jobs in the United States by increasing United States exports to Africa by at least 200 percent in real dollar value within 10 years, and for other purposes; to the Committee on Banking, Housing, and Urban Affairs. By Mr. DURBIN (for himself and Mr. Booker): S. 1023. A bill to provide tax credits to low- to moderate- income individuals for certain computer and education costs, to direct the Federal Communications Commission to modify the requirements for the Lifeline program to provide increased support, and for other purposes; to the Committee on Finance. By Mr. DURBIN (for himself, Mr. Cornyn, Mr. Leahy, Mr. Young, Mr. Coons, and Ms. Collins): S. 1024. A bill to enhance our Nation's nurse and physician workforce during the COVID-19 crisis by recapturing unused immigrant visas; to the Committee on the Judiciary. By Mrs. MURRAY (for herself, Mr. Manchin, Mr. Lujan, and Mr. Heinrich): S. 1025. A bill to establish a presumption of occupational disease for certain employees at the Department of Energy, to refine the definition of compensable illnesses, to establish a research program, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Ms. KLOBUCHAR (for herself and Ms. Collins): S. 1026. A bill to assist States in, and pay for the Federal share of the cost of, defraying the cost of pre- apprenticeships or related instruction associated with qualified apprenticeship programs, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Mr. BLUMENTHAL (for himself, Mr. Murphy, Mr. Markey, and Ms. Warren): S. 1027. A bill to amend the Internal Revenue Code of 1986 to repeal the temporary limitation on personal casualty losses, and for other purposes; to the Committee on Finance. By Mr. BLUMENTHAL (for himself, Mr. Murphy, Mr. Markey, and Ms. Warren): S. 1028. A bill to establish a grant program to provide assistance to prevent and repair damage to structures due to pyrrhotite; to the Committee on Homeland Security and Governmental Affairs. By Mr. CRUZ: S. 1029. A bill to require the imposition of sanctions with respect to forced abortions by the Government of the People's Republic of China; to the Committee on Foreign Relations. By Mr. BLUNT (for himself and Mr. Van Hollen): S. 1030. A bill to prohibit the use of Federal funds to install permanent fencing around the United States Capitol, any of the Capitol Buildings, or any portion of the Capitol Grounds; to the Committee on Rules and Administration. By Mr. WARNOCK: S. 1031. A bill to require the Comptroller General of the United States to conduct a study on disparities associated with race and ethnicity with respect to certain benefits administered by the Secretary of Veterans Affairs, and for other purposes; to the Committee on Veterans' Affairs. By Mr. WARNOCK (for himself, Ms. Klobuchar, Mrs. Gillibrand, Mr. Booker, Mr. Markey, Ms. Warren, Ms. Hirono, Mr. Sanders, Mr. Blumenthal, Mr. Durbin, Ms. Smith, Mr. Coons, Ms. Duckworth, Mrs. Murray, Mr. Kaine, Ms. Stabenow, Mrs. Feinstein, Mr. Casey, Mr. Padilla, Mr. Wyden, Mr. Bennet, Mr. Brown, and Mr. Ossoff): S. 1032. A bill direct the Joint Committee of Congress on the Library to obtain a statue of Shirley Chisholm for placement in the United States Capitol; to the Committee on Rules and Administration. By Mr. PETERS (for himself and Mr. Grassley): S. 1033. A bill to amend title IV of the Social Security Act to allow the Secretary of Health and Human Services to award competitive grants to enhance collaboration between State child welfare and juvenile justice systems; to the Committee on Finance. By Mr. COONS (for himself, Mr. Moran, Mr. King, Mr. Carper, Ms. Ernst, Ms. Collins, Mr. Warner, Mr. Braun, Ms. Stabenow, Mr. Crapo, and Mr. Bennet): S. 1034. A bill to amend the Internal Revenue Code of 1986 to extend the publicly traded partnership ownership structure to energy power generation projects and transportation fuels, and for other purposes; to the Committee on Finance. By Mr. PETERS (for himself and Mr. Young): S. 1035. A bill to require the Secretary of Labor to take initiatives to measure the impact of automation on the workforce in order to inform workforce development strategies, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Ms. HASSAN (for herself and Mrs. Capito): S. 1036. A bill to direct the Federal Communications Commission to promulgate regulations that establish a national standard for determining whether mobile and broadband services available in rural areas are reasonably comparable to those services provided in urban areas; to the Committee on Commerce, Science, and Transportation. By Mr. PETERS (for himself, Mr. Young, and Mr. Rubio): S. 1037. A bill to provide for the establishment of a section of the website of the Department of Commerce that shall serve as the primary hub for information relating to Federal manufacturing programs, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Ms. HASSAN (for herself, Ms. Collins, Mr. Blumenthal, Mr. Casey, Mr. King, Mr. Leahy, Mr. Carper, Mr. Kaine, Mr. Murphy, Mr. Coons, Mr. Warner, and Mrs. Shaheen): S. 1038. A bill to establish the Office of Regional Greenhouse Gas Reduction Programs within the Environmental Protection Agency, and for other purposes; to the Committee on Environment and Public Works. By Mr. MENENDEZ: S. 1039. A bill to amend title 38, United States Code, to improve compensation for disabilities occurring in Persian Gulf War veterans, and for other purposes; to the Committee on Veterans' Affairs. By Mr. MENENDEZ (for himself, Mr. Cramer, Mr. Booker, Mr. Daines, Mr. Coons, Mr. Rubio, Ms. Klobuchar, Mr. Tillis, and Ms. Sinema): S. 1040. A bill to amend title 38, United States Code, to expand eligibility for hospital care, medical services, and nursing home care from the Department of Veterans Affairs to include veterans of World War II; to the Committee on Veterans' Affairs. By Mr. MENENDEZ (for himself, Mr. Rubio, Mr. Kaine, Mr. Durbin, Mr. Cardin, and Mr. Murphy): S. 1041. A bill to advance the strategic alignment of United States diplomatic tools toward the realization of free, fair, and transparent elections in Nicaragua and to reaffirm the commitment of the United States to protect the fundamental freedoms and human rights of the people of Nicaragua, and for other purposes; to the Committee on Foreign Relations. By Mr. WARNOCK (for himself, Mr. Padilla, Mr. Booker, Mr. Van Hollen, and Mr. Menendez): S. 1042. A bill to prevent maternal mortality and serve maternal morbidity among Black pregnant and postpartum individuals and other underserved populations, to provide training in respectful maternity care, to reduce and prevent bias, racism, and discrimination in maternity care settings, and for other purposes; to the Committee on Health, Education, Labor, and Pensions. By Mrs. SHAHEEN (for herself and Mrs. Capito): S. 1043. A bill to require the Secretary of ***Agriculture*** to establish a ***forest*** incentives program to keep ***forests*** intact and sequester carbon on private ***forest*** ***land*** of the United States, and for other purposes; to the Committee on ***Agriculture***, Nutrition, and Forestry. By Mr. PETERS (for himself and Mr. Rubio): S. 1044. A bill to establish the National Manufacturing Advisory Council within the Department of Commerce, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. KENNEDY: S. 1045. A bill to amend the Immigration and Nationality Act to facilitate the ***removal*** of aliens identified in the terrorist screening database, and for other purposes; to the Committee on the Judiciary. By Mr. CORNYN (for himself, Mr. Whitehouse, Mr. Tillis, Ms. Klobuchar, Mrs. Feinstein, Mr. Cassidy, Ms. Hassan, Mr. Lankford, and Mr. Scott of South Carolina): S. 1046. A bill to amend the Omnibus Crime Control and Safe Streets Act of 1968 to reauthorize the residential substance use disorder treatment program, and for other purposes; to the Committee on the Judiciary. By Mr. MARSHALL (for himself, Mr. Hickenlooper, and Ms. Ernst): S. 1047. A bill to amend the Small Business Act to allow certain ranchers and farmers categorized as partnerships to use an alternative calculation for a maximum loan amount under the paycheck protection program, and for other purposes; to the Committee on Small Business and Entrepreneurship. By Mr. RUBIO: S. 1048. A bill to require disclosure by Federal contractors of contracts with Chinese entities, and for other purposes; to the Committee on Homeland Security and Governmental Affairs. By Ms. ERNST: S. 1049. A bill to amend the Public Works and Economic Development Act of 1965 to make projects that directly or indirectly increase the accessibility of child care eligible for certain grants, and for other purposes; to the Committee on Environment and Public Works. By Mr. COTTON (for himself, Mr. Boozman, Mrs. Hyde- Smith, and Mr. Tuberville): S. 1050. A bill to enact as law certain regulations relating to the taking of double-crested cormorants; to the Committee on Environment and Public Works. [[Page S1816]] By Mr. KENNEDY: S. 1051. A bill to amend the Immigration and Nationality Act to clarify the contempt authority of immigration judges, and for other purposes; to the Committee on the Judiciary. By Mr. LEE: S. 1052. A bill to improve the poverty measurement methodology used by the Bureau of the Census to more accurately measure poverty in the United States; to the Committee on Homeland Security and Governmental Affairs. By Mr. HOEVEN (for himself, Mr. Bennet, Mr. Daines, Ms. Smith, Mr. Rounds, Mr. Crapo, Ms. Ernst, Mr. Braun, Mr. Marshall, and Mr. Risch): S. 1053. A bill to require the Secretary of Transportation to establish a working group to study regulatory and legislative improvements for the livestock, insect, and ***agricultural*** commodities transport industries, and for other purposes; to the Committee on Commerce, Science, and Transportation. By Mr. RUBIO (for himself and Mr. Merkley): S. 1054. A bill to support United States policy toward Taiwan; to the Committee on Foreign Relations. By Mr. KENNEDY: S. 1055. A bill to amend the Immigration and Nationality Act to provide that any alien who has been convicted of a felony or two misdemeanors, is deportable, and for other purposes; to the Committee on the Judiciary. By Mr. KENNEDY: S. 1056. A bill to amend the Immigration and Nationality Act with respect to aliens associated with criminal gangs, and for other purposes; to the Committee on the Judiciary. By Mr. COONS (for himself, Mr. Heinrich, and Mr. Lujan): S. 1057. A bill to direct the Secretary of the Interior and the Secretary of ***Agriculture*** to establish a Civilian Climate Corps, and for other purposes; to the Committee on Health, Education, Labor, and Pensions . By Mr. THUNE (for himself, Mrs. Shaheen, and Mrs. Fischer): S. 1058. A bill to amend the Small Business Investment Act of 1958 to provide opportunities to rural business investment companies, and for other purposes; to the Committee on Small Business and Entrepreneurship. By Mr. RUBIO (for himself and Mr. Risch): S. 1059. A bill to establish a small business and domestic production recovery investment facility, and for other purposes; to the Committee on Small Business and Entrepreneurship. By Mr. RUBIO (for himself and Mr. Hawley): S. 1060. A bill to safeguard certain technology and intellectual property in the United States from export to or influence by the People's Republic of China and to protect United States industry from unfair competition by the People's Republic of China, and for other purposes; to the Committee on Finance. By Mr. PORTMAN (for himself, Mr. Booker, Mr. Cardin, Mr. Young, Ms. Rosen, Mr. Risch, Mr. Coons, Ms. Collins, Mr. Durbin, Mr. Grassley, Mrs. Feinstein, Mr. Sasse, Mr. Warnock, Mr. Boozman, Ms. Klobuchar, Mr. Tillis, Mr. Kaine, and Mr. Hawley): S. 1061. A bill to encourage the normalization of relations with Israel, and for other purposes; to the Committee on Foreign Relations. By Mr. SCOTT of Florida (for himself, Mr. Rubio, Mrs. Blackburn, Mr. Kennedy, Mr. Cotton, Mrs. Capito, Mr. Hawley, and Mr. Barrasso): S. 1062. A bill to prohibit the procurement of solar panels manufactured or assembled in the People's Republic of China; to the Committee on Homeland Security and Governmental Affairs. By Mrs. MURRAY (for herself, Mr. Van Hollen, Ms. Baldwin, Mr. Wyden, Mr. Merkley, Mr. Blumenthal, Ms. Klobuchar, Mrs. Gillibrand, Mrs. Shaheen, Mr. Booker, Ms. Rosen, and Mr. Peters): S. 1063. A bill to provide women with increased access to preventive and life-saving cancer screening; to the Committee on Health, Education, Labor, and Pensions. By Mr. MENENDEZ (for himself, Mr. Rubio, Mr. Kaine, Mr. Durbin, Mr. Cardin, and Mr. Murphy): S. 1064. A bill to advance the strategic alignment of United States diplomatic tools toward the realization of free, fair, and transparent elections in Nicaragua and to reaffirm the commitment of the United States to protect the fundamental freedoms and human rights of the people of Nicaragua, and for other purposes; to the Committee on Foreign Relations. By Mrs. MURRAY (for herself and Mr. Manchin): S. 1065. A bill to increase collaboration between offices within the Department of Energy to develop and deploy technology to assist the mission of the Office of Environmental Management; to the Committee on Energy and Natural Resources. By Mr. HEINRICH (for himself, Mr. King, Mr. Markey, Mr. Van Hollen, Mr. Whitehouse, Mr. Durbin, Mr. Lujan, Mr. Leahy, Ms. Smith, Ms. Klobuchar, Mr. Schumer, Mr. Murphy, Mr. Schatz, Mrs. Feinstein, Ms. Baldwin, Mr. Casey, Mr. Sanders, Mr. Padilla, Mr. Menendez, Ms. Stabenow, Mr. Reed, and Mr. Wyden): S.J Res. 14. A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the rule submitted by the Environmental Protection Agency relating to ``Oil and Natural Gas Sector: ***Emission*** Standards for New, Reconstructed, and Modified Sources Review''; to the Committee on Environment and Public Works . By Mr. VAN HOLLEN (for himself, Mr. Brown, Mr. Reed, Ms. Warren, Ms. Cortez Masto, Ms. Smith, and Mrs. Feinstein): S.J Res. 15. A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the rule submitted by the Office of the Comptroller of Currency relating to ``National Banks and Federal Savings Associations as Lenders''; to the Committee on Banking, Housing, and Urban Affairs. By Mr. BROWN: S.J Res. 16. A joint resolution providing for congressional disapproval under chapter 8 of title 5, United States Code, of the rule submitted by the Securities and Exchange Commission relating to ``Procedural Requirements and Resubmission Thresholds Under Exchange Act Rule 14a-8''; to the Committee on Banking, Housing, and Urban Affairs.

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[***Extraordinary human energy consumption and resultant geological impacts beginning around 1950 CE initiated the proposed Anthropocene Epoch***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:671W-P2K1-JCWX-C0HP-00000-00&context=1516831)

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**Body**

Introduction

A stratigraphic case has been made for a planetary-scale Anthropocene time interval at epoch rank, one that would end the Holocene Epoch at ~1950 CE. Conceptually, the transition reflects a change from human drivers of environmental change having gradually increasing significance and mostly regionally expressed, to becoming overwhelming and global in extent. But what quantifiable metrics enable direct comparison between the Anthropocene and the preceding Holocene? As a unit of the international Geological Time Scale, the Quaternary Period, formally partitions into Pleistocene (2.58 My to 11.7 ky) and Holocene (11.7 ky to present) epochs. The Holocene, which follows the end of the last cold episode with the rapid northward movement of the oceanic polar front, is formally subdivided by the International Commission on Stratigraphy (ICS) into three ages:, Greenlandian (11.7 to 8.2 ky), Northgrippian (8.2 to 4.3 ky), and Meghalayan (4.3 to 0 ky). Here, we trace the human footprint through each Holocene age, with focus on two historical and informal intervals: Pre-Industrial (1670–1850 CE) and Industrial (1850–1950 CE), within the Meghalayan Age.

The Anthropocene as a potential epoch, is first compared to these earlier Holocene ages, using the human population and its energy consumption and economic productivity, and then assessed by evaluating how human action has disturbed the landscape, altered river discharge (water, particulate and dissolved constituents), and has shifted climate, biogeochemical cycles, biodiversity, and other parts of the Earth System. These changes have already resulted in a sharp distinction in the stratigraphic record between the Holocene and Anthropocene,,. This study formulates a consistent quantitative approach evaluating key Earth-surface parameters and their human drivers to validate the contention that the Anthropocene is an epoch-level planetary interval in Earth’s history, comparable to or exceeding in planetary impact the Holocene Epoch, and greatly exceeding component Holocene ages.

The Anthropocene Epoch is used here as a geological time unit for potential inclusion in the Geological Time Scale. A proposal to formalize the Anthropocene for this purpose is currently being developed by the Anthropocene Working Group (AWG), which includes many authors of this paper, and will require a defining Global Boundary Stratotype Section and Point (GSSP) to be selected and approved, consistent with ICS standard practice.

A Holocene history of the human footprint

The Greenlandian Age (11.7 to 8.2 ky) constitutes the first 3464-y of the Holocene, driven by Milankovitch warming of ~+0.5 °C, during which the Inter-Tropical Convergence Zone shifted northward and Northern Hemisphere ice sheets ablated. Atmospheric CO2 and CH4 concentrations continued a trend of rapid rise initiated in the latest Pleistocene and peaking at ~10 ky. Coastal human populations retreated inland from initial settlements, especially on deltas, as global mean sea level rose ~48.5 m, at a rate of ~15 mm/y between 11.4 ky and 8.2 ky. Human population was sparse and grew from ~4 M to 8 M (Fig. ), at a rate of 0.01%/y (Table , Supplementary-Table ). Regional extinctions of large terrestrial mammals (e.g., ground sloths in North and South America) correlate with the arrival of humans. Humans lived as foragers, fishers, or hunters, but in a few locations began to cultivate domesticated food crops. Energy sources were wood-burning and human muscle, and more rarely, animal muscle, with an estimated per capita energy consumption of 6.2 GJ/y, ranging from 5.8 to 6.5 GJ/y (Fig. , Table ). The human population during the Greenlandian consumed 0.12 zetajoules of energy (with 1 ZJ = 1021 J). Global productivity is used here as a measure of output per unit of input, such as labor, capital or any other resource calculated for the global economy (GDP per capita per unit time), and if meaningful at all for the Greenlandian, was very low (Fig. , Table ).

Correlation of global human population, energy consumption and productivity during the Holocene and Anthropocene epochs.

a Global human population (millions), b global energy consumption (EJ/y), and c global productivity ($/y/capita), across the Holocene and proposed Anthropocene epochs (in this paper starting in 1950 CE). All three parameters are highly correlated (Spearman’s rank coefficient = 1.00). Larger circle = 1850 CE; large square = 1950 CE. Data references are listed in .

Average values of key human and environmental drivers for each studied time interval.

| **Geological Unit** | **Greenlandian Age** | **Northgrippian Age** | **Meghalayan Age** | **Pre-industrial Interval (informal)** | **Industrial interval (informal)** | **Anthropocene (proposed Epoch)** |
| --- | --- | --- | --- | --- | --- | --- |
| Time Interval (y before 2020 CE) | 11,720?8256 | 8256?4270 | 4270?70 | 350?170 | 170?70 | 70?present |
| Interval span (y) | 3464 | 3986 | 4200 | 180 | 100 | 70 |
| Global climate change (°C) | ~ +0.5 | ~ 0.0 | ~ ?0.5 | ~ 0.0 | ~ +0.2 | ~ +0.9 |
| Sea Level Rise (mm/y) | 15 | 3.6 | 0.3 | 0.15 | 0.75 | 2.4 |
| Population growth rate (%/y) | 0.01 | 0.03 | 0.2 | 0.4 | 0.8 | 1.6 |
| Primary energy source | Wood & human muscle | Wood & increasingly animal muscle | Wood, muscle, coal in cities | Wood, muscle, whale oil, coal, streams | Coal, oil, hydroelectric | Coal, oil, gas, nuclear, renewables |
| Per capita energy consumption (GJ/y) | 6.2 | 7.1 | 8.3 | 18.4 | 27.2 | 61 |
| Total interval energy (ZJ) | 0.12 | 0.34 | 14.2 | 2.9 | 4.9 | 22 |
| Generalized human narrative | Primitive Agrarian Societies | Organized Agrarian Societies | Advanced Agrarian Societies | Empires, Nations, City States | Nations & Empires | UN |
| GDP (Int?l $/Capita/y) | 96 | 109 | 144 | 170 | 679 | 5400 |

Human and environmental drivers across the IUGS/ICS-approved Holocene ages, along with values for two informal intervals occurring in the last 280 years of the ~11,700-y Holocene history, and the proposed Anthropocene Epoch starting in this paper at 1950 CE. All values shown are interval averages.

During the Northgrippian Age (8.2 to 4.3 ky), global mean sea level rose another ~14.5 m, mostly in the first 1500-y, as the great Northern Hemisphere ice sheets largely had disappeared by 7000-y ago,. The Age-averaged rate of global mean sea-level rise was ~3.6 mm/y (Table ). Global climate was relatively stable at a temperature plateau until 5.48 ky, when the planet cooled ~−0.2 °C, but with regional exceptions. The trend in atmospheric CO2 and CH4 concentrations changed from slightly falling to slightly rising, at ~8 ky and ~5 ky respectively. Although some have argued that this increase reflected deforestation in response to expanding ***agriculture***, in particular rice cultivation in the case of methane, others suggest that the rise reflects the gradual adjustment of ocean chemistry towards an equilibrium state following deglaciation. Some humans, still a minority at the end of the Northgrippian Age, organized into structured agrarian societies. Once sea level stabilized, the human population grew to 27 M (0.03%/y), as urban centers and ports developed (Fig. , Table ) and the earliest state-level societies originated (Mesopotamia at 3700 BCE, Egypt at 3300 BCE, Peru 3000 BCE, Indus Valley at 2500 BCE, Mesoamerica 1900 BCE, and Yellow River 1700 BCE,). Energy sources included wood burning, human and animal muscle, with the per capita energy consumption at 7.1 GJ/y, ranging from 6.5 to 7.8 GJ/y (Fig. , Table ). Humans expended 0.34 ZJ across the Northgrippian Age, a 332% increase from the Greenlandian, reflecting an increased human population. Human productivity remained low (Fig. , Table ). The anthropogenic footprint included regional soil erosion from deforestation, a proliferation of pastureland, and some mining,. Extinction of large terrestrial mammals correlates with climate change, though some extinctions have been linked to human actions.

The Meghalayan Age, as represented here, is the recent ~4.2-ky interval (to ~1950 CE), when global mean sea level rose 1.0 to 1.5 m, or ~0.3 mm/y, as the global climate cooled ~−0.5 °C, in what is referred to as Neoglaciation. Insolation decreased, and there were slight rises in atmospheric CO2 and CH4 concentrations. Human populations increased by an average 0.2%/y, reaching a population of 2500 M by 1950 CE (Fig. , Table ). Apparently related to sea-level stabilization, biological productivity on the coastal margin increased dramatically and likely initiated the further movement to large empire level organization in human society facilitating greater demand for goods, increased trade and complex urbanization,,. Large-scale water diversion schemes were built, and extensive farming practices increased,. Coal became a common energy supply in the 19th century. Per capita energy consumption averaged 8.3 GJ/y, ranging from 7.8 to 40 GJ/y, with humans expending 14.2 ZJ across the Meghalayan Age, a 24-fold increase over the Northgrippian Age (Fig. , Table ). Per capita GDP averaged $144/y (Fig. , Table ). Humans transferred plant and animal species beyond their native ranges, exemplified by the spread of chickens, maize and Pacific rats. Human impacts produced extensive regional losses and widespread extinctions of ***land*** vertebrates, including the ancestors of domesticated cattle in Eurasia and flightless birds in the Pacific. Introductions and extinctions left a distinctive archeological and fossil signal–.

Below we discuss two informal intervals, the Pre-industrial and the Industrial, that capture the end of the Meghalayan.

Pre-Industrial interval (1670–1850 CE)

A 180 y-long interval when Holocene sea-level rise was at its slowest ~0.15 mm/y, with no discernible trend during the 18th century, and a slight fall from 1800 to 1850 CE, when Alpine glaciers were at their maximum Meghalayan extent in response to extensive volcanism. Earth had no discernible climate trend ~0.0 °C during this interval, with cooling pulses varying regionally. Human population expanded from ~600 M to 1247 M, a growth rate of 0.4%/y (Fig. ). The per-capita energy consumption was 18.4 GJ/y, ranging from 13.5 to 22 GJ/y (Fig. , Table ), with humans expending 2.9 ZJ or 20% of the human energy consumption during the 4,200-y Meghalayan Age (Table ). Novel energy sources included whale oil and stream energy; for example, there were >65,000 water-powered mills in the U.S.A. prior to 1840 CE,. Human-enabled species introductions expanded, and transfers happened rapidly, exemplified by the spread of accidentally introduced aquatic mollusks in Europe. This informal interval represents the fundamental transformation from pre-industrial to full industrial energy use. Prior to 1670 CE, expenditures in England used to obtain basic energy resources (human food, fodder for animals, and wood fuel) amounted to 50–70% of GDP. By 1850 CE, with the growing use of coal, less than 30% of GDP was allocated to obtaining energy, and <10% after 1950 CE, as fossil fuels dominated energy use. Global per capita GDP increased by 1750 CE to $178/y in 1990 international dollars (Table , Fig. ).

Relationships between human population (millions) and key economic indicators.

Relationships between human population (millions) and key economic indicators: a rate of population growth (%/y), b energy consumption per capita (E in GJ/y/capita), c per capita productivity (P as GDP in 1990 international dollars, $/y/capita), and dP/E ratio, each across Holocene and Anthropocene epochs. Purple circle = 1850 CE; blue square = 1950 CE. A marked change in GDP per capita after 1850 CE reflects the global spread of industrialization and technology. The rate of change in population sharply increases around 1950 CE. The P/E ratio fell for most of the Holocene, until 1850 CE, when human society became more productive per unit energy use. Data references are listed in .

Industrial interval (1850–1950 CE)

This 100-y interval captures the change in human–nature interactions. Atmospheric CO2 increased from the spread of industrial activity and drove a planetary warming by ~+0.2 °C (~ + 0.6 W/m2), on an otherwise essentially flat Milankovitch insolation signal,. Solar variability had very little effect, with the number of sunspots rising in 1950 CE to levels slightly lower than that in the 1860s and the 1780s,, in contrast to the pre-industrial Maunder Minimum from 1645 to 1715 CE. Thus, natural variability contributed little to warming, (<0.2 W/m2) during this interval, where the main natural changes were brief intervals of cooling related to large volcanic eruptions that ejected reflective material into the stratosphere (e.g. Krakatoa in 1883 CE),. Sea-level rise accelerated to ~0.5 mm/y in the late 1800s, and to ~2.2 mm/y by 1940 CE, before beginning a temporary deceleration. This pattern is consistent with the natural fluctuations in the warmth of the North Atlantic in responses to changes in the Atlantic Meridional Ocean Circulation that induces regional and slight global warming as it accelerates, reversing as it decelerates.

Human population grew at 0.8%/y, from 1250 M to 2500 M (Figs. a, , Table ). Energy consumption per capita averaged 27.2 GJ/y, ranging from 22 to 40 GJ/y (Fig. ), accounting for 4.9 ZJ or 35% of the energy consumption across just 2.4% of the 4200-y Meghalayan Age (Table ). In addition to the growing use of coal, new energy sources included hydroelectric power, oil and natural gas, more than offsetting declines in whale oil and stream power (driven by gravity). Many large rivers were engineered, with levees, dams and water diversion schemes. Some lake and marine ecosystems started to turn hypoxic. Biodiversity loss increased and introduced species, such as the giant African snail and naval shipworm,, spread through terrestrial and aquatic environments,,. Dispersals were facilitated by increasing global trade. Per capita GDP had increased by 1900 CE to $679/y in 1990 international dollars (Table , Fig. ), underwriting new global transportation systems and power sources.

Although the European industrial interval began in the 1700s, we use 1850 CE as the start of the interval, given the remarkable change in both global energy use and global productivity (Fig. ). For most of the Holocene Epoch, human productivity (GDP per capita: see SOM Historical GDP Consumption Data) increased linearly with a growing population (Fig. ). From 1850 CE onwards, human productivity accelerated (Fig. ), which explains why that time period was originally suggested as the start of the Anthropocene,. For most of the Holocene, the ratio of human productivity to energy use decreased (Fig. ). After 1850 CE, human society became more productive per unit of energy use (Fig. ). During the 11.7 ky of the Holocene Epoch, including the Industrial interval, the global human population consumed 14.6 ZJ of energy of which 35% was consumed in the final 100 years.

An Anthropocene history of the human footprint

Proposed Anthropocene Epoch from 1950 CE:, Driven by the accelerated burning of hydrocarbon fuels, atmospheric temperatures increased by 0.9 °C in the last 70 years (and by 1.1 °C from 1900 to 2018 CE), with much of the rise post-dating 1970 CE, during an interval of limited sunspot influence and a flat Milankovitch signal. Sunspot numbers rose slightly from their 1950 CE levels to peak levels in 1980 CE and 1990 CE that are more or less similar to those reached in the 1780s and the 1860s, and then began declining even as warming continues (Box ).

Atmospheric CO2 levels reached 415 ppm in 2019, higher than at any time in the past 3 million years. Planetary response to this atmospheric warming includes:

Sea-ice volume shrinkage: 300 ± 100 km3/y loss (~275 Gt/y) in the Arctic Ocean since 1980 CE. Antarctic sea ice extent in October 2019 CE was less than for any previous October since satellite observations of sea-ice began in 1978 CE.

Glacial-ice mass loss: from 113 ± 125 Gt/y during 1992–1996 CE to 665 ± 48 Gt/y during 2012–2016 CE, with ~5.6 Tt (=1012 tonnes) of ***land*** ice loss on Greenland and ~5.0 Tt from Antarctica since 1980 CE.

Sea-level rise acceleration: from 1.53 mm/y (0.96 to 2.11 mm/y) during 1901–1990 CE, to 2.06 mm/y (1.76 to 2.36 mm/y) during 1971–2015 CE, and to 3.07 mm/y (2.70 to 3.7 mm/y) during 1993–2015 CE–.

Acidification of the global ocean: through the absorption of atmospheric CO2 with open-ocean surface pH declining by a range of 0.017–0.027 pH units per decade since the late 1980s–, threatening the survival of particularly soluble organisms, such as aragonitic pteropods. Increasing acidity may raise the calcium carbonate compensation depth (CCD) in the deep ocean, causing the demise of carbonate-shelled deep-water benthic organisms.

Since 1950 CE, the human population has rapidly increased, with societal and medical advances extending lifespans. Industrial-scale ***agriculture***, with its global distribution system, presently feeds a global population of 7800 M that grows at an average rate of 1.63%/y, presently 71 M/y. In absolute numbers, human migration within and between continents has reached its historical zenith during the Anthropocene, as many coastal cities have transformed into megacities (>10 M) in just decades (Table ).

Selection of key global environmental parameter values spanning the Holocene-Anthropocene transition.

| **Environmental Parameter** | **1900 CE** | **1950 CE** | **2000 CE** | **2015 CE** |
| --- | --- | --- | --- | --- |
| Human Population (millions) | 1643 | 2499 | 6076 | 7349 |
| ?No. of megacities (>10 M) | 0 | 2 | 39 | 45 |
| Human Energy Consumption (EJ/y) | 41 | 100 | 377 | 514 |
| ?Fossil Fuel Consumption (TWh) | 5973 | 20,139 | 94,462 | 132,891 |
| ?CO2 ***emissions*** (Gt/y) | 2 | 5.8 | 25 | 35 |
| ?Atmospheric CO2 (ppm) | 296 | 311 | 369 | 404 |
| ?Atmospheric N2O (ppb) | 280 | 289 | 316 | 328.5 |
| ?Atmospheric CH4 (ppb) | 890 | 1162 | 1774 | 1835 |
| ?Sea level (mm) | ?152 | ?87 | 0.0 | 49 |
| ?***Land***-Ocean Temperature Index | ?0.19 | ?0.08 | 0.39 | 0.83 |
| GDP (billions 1990 Intl $/y) | 1116 | 4656 | 38,267 | 73,902 |
| ?Number of motor vehicles (M) | 0.01 | 8 | 450 | 1200 |
| ?Number of 15 m+ Dams (thousands) | 1.6 | 7 | 47 | 50 |
| ?Global Freshwater use (km3) | 671 | 1230 | 3790 | 4000 |
| ?Global Shrimp Farming (Mt/y) | 0 | 0.01 | 1.0 | 3.5 |
| ?Plastic Production (Mt/y) | 0 | 2 | 213 | 381 |
| ?Cement Production (Mt/y) | 5 | 130 | 1600 | 4180 |
| ?Ammonia (NH3) production (Mt/y) | 0 | 2 | 126 | 175 |
| ?Aluminum Production (Mt/y) | 0 | 2 | 24 | 58 |
| ?Copper Production (Mt/y) | 0.5 | 2.4 | 13 | 19 |
| ?Mineral Species (thousands) | 5.3 | 8.3 | 85 | 170 |
| ?Iron & Steel Production (Mt/y) | 35 | 134 | 573 | 1160 |
| ?Sulfur Production (Mt/y) | 1 | 11 | 59 | 69 |
| ?Salt Production (Mt/y) | 12 | 48 | 195 | 271 |
| ?Gypsum Production (Mt/y) | 1 | 23 | 108 | 260 |
| ?Helium Production (kt/y) | 0.0 | 0.4 | 20 | 26 |

Global environmental parameter values for 1900 CE, 1950 CE, 2000 CE and 2015 CE. Almost all parameters see their largest increases after 1950 CE, with many parameters at or near zero near 1900 CE. Data references are listed within the .

1950 CE also marks an important upturn in the global spread of technological knowledge occurring when societies became more economically interdependent (the Great Acceleration,). Between 1650 and 1750 CE, the annual citations of scholarly references grew at ~0.15%/y, increasing by an order-of-magnitude to ~1.5%/y during 1750–1927 CE. After 1927 CE for all subjects, and after 1947 CE for the natural sciences, citation rates have jumped to ~8%/y following compulsory education and widespread literacy.

Global per capita GDP has risen rapidly in the Anthropocene, to a current figure of $12,500/y (Fig. , Table ). This inflation-adjusted global productivity is an order-of-magnitude greater than during the Industrial interval just 70 years earlier (Tables , , Fig. ). Since 1950 CE, energy consumption by humanity has averaged 61 GJ/y per capita (range 40 to 75 GJ/y; Fig. , Table ), enabled by a diversified portfolio of energy sources (coal, oil, gas, nuclear, and renewables). Fossil fuels power more than 80% of the economy. In total, 60% of all human-produced energy has been consumed since 1950 CE, at 22 ZJ, more than in the entire previous Holocene (~14.6 ZJ: Table ). Since 1871 CE, the Earth’s oceans have stored ~436 ZJ of solar energy trapped through the increases in anthropogenic greenhouse gases, and from warming-induced increases in water vapor, a reinforcing feedback. This is more energy by an order-of-magnitude than associated with direct human production and consumption (at 23.3 ZJ since 1871 CE). Approximately half of the Anthropocene sea-level rise stems directly from this steric effect on ocean volume, with the remainder largely derived from the melt of terrestrial snow and ice. Since about 1950 CE, the global ocean has progressively warmed both at the surface and increasingly to depths exceeding 2000 m. Heat is transferred vertically by storms and eddies, and by the sinking of surface water made dense by cooling, especially in the Labrador and Norwegian-Greenland seas in the Atlantic and in the Southern Ocean around Antarctica.

Many anthropogenic impacts post-1950 CE are planetary, with greater than regional significance, and scale up with the population of humans and their energy consumption and economic productivity. Below we offer 16 examples relevant to, and in support of, this Anthropocene Epoch thesis:

The magnitude of the anthropogenic N cycle is roughly equivalent to the global natural N cycle,. However, such a simplified numerical comparison underestimates the ecological consequences of such a perturbation which includes impacts on climate change, water and air quality, ozone depletion, and biodiversity loss–. Globally, reactive nitrogen (Nr) increased by ~50%, between 1600 and 1990 CE, with atmospheric ***emissions*** of Nr increasing by 250%, and Nr deposition into marine and terrestrial ecosystems increasing by more than 200%, (Table ). More than half of human population is alive today because of the production and use of Nr in fertilizers and half the nitrogen in our bodies now comes from artificial production. Rates of use of Nr in the U.S.A. have increased from 0.22 g N m−2 y−1, in 1940 CE, to 9.04 g N m−2 y−1, in 2015 CE. One of many consequences of fertilizer overuse, along with contributions from increased livestock, human sewage and hydrocarbon combustion, is the spread of hypoxia in coastal waters as ‘dead-zones’ inimical to marine life: world coastal zones now receive ~100 Mt/y of anthropogenic-sourced Nr. Because industrially derived nitrogen is depleted in 15N, its atmospheric deposition offers a strong and coherent far-field signal in the N isotope ratios of both lake sediments and ice cores, with the main inflection at ~1950 CE,.

River systems have been largely replumbed during the Anthropocene, with the construction of dams, reservoirs and diversions, with channel-bed mining and levee hardening, and with discharge focusing,,. Only 23% of rivers longer than 1000 km flow uninterrupted to the coastal ocean, and only 10.5% of large rivers in Europe and 18.7% in North America can be considered as free-flowing rivers. Large dams (>15 m in elevation) are the main cause of fluvial sediment being sequestered upstream, leading to a global decline of 18% in sediment delivery to the coastal ocean compared with pre-human times,. Of the 58,519 large dams registered in 2017 CE, 1.4% were built before 1850 CE, having a combined reservoir capacity of 6.1 km3; 10% were built during 1850–1950 CE, with a total reservoir capacity of 685 km3. 95.7% of the world’s total reservoir capacity was emplaced after 1950 CE, increasingly in Asia (Fig. , Table ). Total reservoir capacity of these large dams today exceeds 15,000 km3; together they trap >3100 Gt of sediment, equivalent to a 5 m-thick deposit covering all of California or Spain. During the Industrial interval, four rivers (Colorado, Nile, Indus, and Yellow) transported 1.5 Gt/y of sediment to the coastal ocean; today they deliver <0.2 Gt/y. Similarly, smaller dams have greatly reduced discharges to the coastal ocean, a consequence of upstream demands by human consumption and reservoir evaporation.

Global relationships between population, productivity, and energy, the forces behind changes in the environment, and key environmental indicators.

Example relationships between the global population (millions), global productivity, and global energy, the forces behind changes in the global environment, and key environmental indicators: a global reservoir capacity of large dams (km3), b mixed atmospheric CO2 (ppm), c global plastic production (Mt/y), d global cement production (Mt/y), e world copper production (Mt/y), and (f) world ammonia production (Mt/y) (see Supplementary-Table  for data, and Table  for other examples). 1850 CE (round) and 1950 CE (square) data points are highlighted. For data references see . Correlation coefficients are provided for both dependent linear relationships (R2) and Spearman’s Rank (ρs).

In 1904 CE, the U.S.A. had 225 km of paved highways outside of city streets. Today 4.3 M km of U.S.A. roads are covered in asphalt or concrete; another 2.2 M km of roadway remain unpaved. Since each road-km requires ~1250 metric tons of sand, and ~1875 metric tons of gravel, the U.S.A. highway system has consumed ~20.6 Gt of sand and gravel. By comparison the Great Wall of China contains only 0.4 Gt of stone. The 64 M km of global roads and highways have consumed ~200 Gt of sand and gravel to support the traffic of 1 billion motor vehicles (Table ).

Industrial-scale mining has changed the global landscape; for example, the >500,000 abandoned mines and quarries in the U.S.A. alone, or the ***removal*** of mountain tops in West Virginia to access the coal underneath along with the concomitant dumping of spoils in nearby river valleys. Natural processes (ice, wind, water) transport 26 Gt/y of global sediment, a much smaller value than from modern mining activity. Estimates of global annual coal production (including underground, surface, hard and brown coals) and associated wastes totaled 74 Gt/y (35 km3); other mining and mineral extraction, including overburden and waste ***removal*** accounted for another 27 Gt/y (13 km3), as recorded in 2015 CE. Coal mining in the U.S.A. increased from 0.9 Gt/y in 1905 CE to 8.5 Gt/y during 2010–15 CE. Bitumen (tar) sand-mining in Canada entered commercial production in 1967 CE; in 2012 CE, 1.5 Gt of bituminous sand were processed. In 1970 CE, 944 Mt of sand and gravel were mined within the U.S.A., compared with 0.5 Mt in 1902 CE. The Global Aggregate Information Network, representing 70% of global aggregate production (~50 Gt/y), operates 500,000 quarries and pits worldwide, employing 4 M people. There is now concern that the increasing demand for sand for building megacities is outstripping supply. Offshore dredging for aggregates destroys marine habitats, as does bottom trawling for fish and shellfish, affecting marine biodiversity.

Since industrialization, human mining activities have impacted the global mobilization of naturally occurring elements, particularly the cycles of the chalcophile elements (e.g., As, Cd, Cu- Fig. , Hg, Ni, Pb, Sb, Zn) associated with the smelting and refining of base metal ores, coal combustion and cement production,. In recent decades, platinum group elements that are required for advanced materials and technologies have been profoundly affected–. Increased extraction rates of ores (Table ) have caused a transfer of metals from the lithosphere to these metal-in-use products and thence to wastes. While negligible amounts of the industrial metals were extracted and put into use before 1900 CE, use of metals substantially increased after the 1950s causing disturbances in natural biogeochemical cycles. Perturbations of Pb, Hg, Se and Sn geochemical cycles now reach a global scale, with increasing perturbations for other metals.

Industrial-scale ***agriculture*** accounts for 50% of terrestrial soil loss,, leaving nearby rivers with increased sediment and nutrient loads–. ***Forest*** clearing for the creation of ***agricultural*** ***lands*** has long increased soil erosion rates,, but contemporary rates of soil loss from cropland exceed the natural rates of erosion 30-fold. Cropland represents ~11% of the global ***land*** area, but accounts for ~50% of soil erosion; soil erosion rates from ***forests*** are 77 times lower. From 2001 to 2012 CE, when 2.3 Mkm2 of ***forest*** was lost, only 4% of this loss was converted to cropland, but was responsible for more than half of the increase in soil erosion. Remaining soils are then progressively compacted by large ***agricultural*** machines and have their organic content gradually reduced, requiring replacement with artificial fertilizers (Fig. ). Soils have also become increasingly dry in response to atmospheric warming. The industrial ***agricultural*** system consumes ~10 units of energy for each unit of food energy produced,.

Many thousands of anthropogenic contaminants including persistent organic pollutants (e.g. organochlorine pesticides, brominated flame retardants) and pharmaceutical compounds have been deliberately or accidentally released into the environment. Following the discovery of its insecticidal properties in 1939 CE, the total usage of DDT during 1950–1993 CE was ~2.6 Mt; 5-y ***emissions*** of DDT to the atmosphere from 1970 to 1975 CE were ~750 kt. General use of pesticides in ***agriculture*** now reaches ~4 Mt/y. Compounds such as DDT are highly persistent in the environment despite a 1970s ban in many countries and have left a clear signal in the sedimentary record. Pesticides are widely released as legacy pollutants from melting glaciers. Compounds such as PCBs find their way via the atmosphere to Arctic ***lands*** where they contaminate the wildlife (e.g. seals) used as food by indigenous peoples. Atmospheric ***emissions*** of the refrigerant chlorofluorocarbon CFC-12 (dichlorodifluoromethane, CF2Cl2) was zero in 1930 CE, rising to >460 kt in 1987 CE. CFC releases have caused the Antarctic Ozone Hole, and their use is now banned under the Montreal Protocol. The combustion of coal, and historical gold and silver mining, has increased atmospheric mercury concentrations by ~450% over pre-industrial levels. Global anthropogenic ***emissions*** of black carbon during 2000–2010 CE were ~6.6 to 7.2 Mt/y, compared with 0.6 Mt/y in 1875 CE; the result has been a major increase in carbonaceous fly-ash in natural archives across the world since the 1950s.

Coastal engineering has globally added thousands of km of groins, jetties, seawalls, breakwaters and harbors to control the movement of coastal sediment, leading either to coastal erosion or to siltation,. Lacking the delivery of silt from the interior, along with the rise of coastal aquaculture and coastal megacities (Table ), river deltas are subsiding at rates of tens to hundreds of mm/y–. Many coastlines now retreat at highly variable rates of tens to hundreds of m/y, except where substantial seawalls are emplaced, as in the Netherlands. The global extent of wetlands today is ~10 Mkm2. Best estimates suggest that 54–57% of the total area of natural wetlands has already been lost, with the rate of loss accelerating during the 20th and 21st centuries. In many tropical areas, natural and protective mangrove swamps have been replaced with shrimp and fish farms, further exposing coastlines to erosion. Consequences of this wetland loss include the oxidation of extensive reserves of organic matter into CO2, reduced water retention and storage, more groundwater infiltration by saltwater, and loss of wildlife habitat and biodiversity.

Plastic production has increased from ~2 Mt/y in the 1950s, to 359 Mt/y in 2018 CE–, including 526 B/y of plastic beverage bottles and 3000 B/y of plastic cigarette filters (Fig. , Table ). Plastic debris now enters into the ocean at rates between 4.8 and 12.7 Mt/y, and microplastics are increasingly being transported by aeolian vectors, permitting true global distribution, even to Arctic snowfields, forming a near-ubiquitous and unambiguous marker of Anthropocene strata.

Human-mediated mineral species and synthetic mineral-like compounds now exceed 180,000 in number, with most species created since 1950 CE, (Table ). Earth’s geological processes over the last 4.5 By have only supported the formation of 5,300 naturally occurring mineral species, including those mediated by biological processes,.

Concrete production in modern times began in 1824 CE, with the patenting of the Portland Cement recipe. Production remained minor until 1950 CE when 0.13 Gt/y of cement produced ~1 Gt/y of concrete. Today, global cement and concrete production are 4 Gt/y and 27 Gt/y, respectively (Fig. , Table ), incorporating novel geochemical and mineralogical compositions, such as organic polymer fibers, silica fume, fly ash, nanotubes and nanospherules of silica, iron, graphene and titanium oxide. Cement production requires the heating of CaCO3 to release CO2, leaving lime in the form of calcium oxide (CaO) or hydroxide.

As the planet heats up, water vapor evaporated from the oceans, lakes, reservoirs and soils has become the dominant greenhouse gas accounting for ∼50% of the greenhouse effect, followed by clouds (∼25%), CO2 (∼20%), then CH4 and N2O. Atmospheric carbon dioxide is, however, the main driver of planetary warming. In 1750 CE, humans produced 0.009 Gt/y of atmospheric CO2, increasing to 0.2 Gt/y by 1850 CE, 5.3 Gt/y by 1950 CE, then accelerating to 36.1 Gt/y by 2017 CE (Fig. , Table ). ***Emission*** sources include combustion of coal, oil, and gas, and cement production. Similarly, atmospheric methane globally increased from 719 ppb in 1750 CE, to 1162 ppb in 1950 CE, and 1850 ppb in 2017 CE; atmospheric nitrous oxide concentration shows a similarly increasing trend (Table ).

In 1950 CE, 1% of the high seas (non-territorial open ocean) were fished, with 0% of fishery species considered exploited, overexploited or collapsed, as defined by the UN’s Food and ***Agriculture*** Organization. By 2006 CE, 63% of the high seas were fished and 87% of fish species were considered exploited, overexploited, or had collapsed, with overall marine fish declines of 38%. Certain baleen whale populations have declined by 80–90%.

Humans, together with their livestock including domesticated poultry, have a cumulative biomass of ~0.165 Gt C, 4-fold greater than the wild mammal and bird biomass (~0.04 Gt C) ~100 ky ago. Fully 96% of today’s mammalian biomass is represented by humans and their domesticated animals; the biomass of poultry birds amounts to 70% of all living birds. Wild bird and mammal totals today have a much-reduced biomass ~0.009 Gt C. For comparison, the total biomass of modern human-cultivated crops is ≈10 Gt C. It is estimated that Earth’s current total vegetation biomass is half of potential biomass stocks prior to human perturbation, mainly through ***forest*** loss,.

Anthropogenic ***emissions*** of sulfur-containing gases exceed natural fluxes by 2 to 3 times. Presently there is a peak in atmosphere ***emissions*** of SO2 (~100 Mt/y), although ***emissions*** are expected to decline. ***Emissions*** of SO2 from nickel smelting in Sudbury, Ontario, reached their zenith in the 1960s (2.5 Mt/y), but technological innovations have since lowered these by ~95%. Phosphorus mobilization by human activities currently exceeds the natural global cycle by a factor of 3. Like N, P is commonly growth-limiting for biota with profound ecological consequences,, with both nutrients contributing to surface water eutrophication.

The annual rate of species invasions has greatly increased since the late-20th century. Species inventories of ecosystems record rapid or substantial changes in many seas, rivers, estuaries and terrestrial settings,, often leaving a biostratigraphical signature of change,. Many invasive species signal highly human-disturbed ecosystems.

The most widespread and globally synchronous human signal is the fallout from nuclear weapons testing commencing in 1945. Liberation of radioactivity to the atmosphere via thermonuclear explosions from more than 500 tests between 1952 and 1980 CE, have left a clear signature of anthropogenic radionuclides on or near the surface of the entire planet. Approximately 300 kg of 137Cs and 120 kg of 90Sr were released in those atmospheric explosions, along with 2900 kg of 239Pu, corresponding to about 6.5 PBq of radioactivity. 239Pu occurs naturally in the Earth’s crust but its pre-1950 CE concentration is extremely low, ~0.05 mBq/kg in typical soils. Due to its long persistence (half-life 24,110 y), this naturally rare radionuclide will be detectable for ~100 ky into the future.

Human population has exceeded historical natural limits, with 1) the development of new energy sources, 2) technological developments in aid of productivity, education and health, and 3) an unchallenged position on top of food webs. Humans remain Earth’s only species to employ technology so as to change the sources, uses, and distribution of energy forms, including the release of geologically trapped energy (i.e. coal, petroleum, uranium). In total, humans have altered nature at the planetary scale, given modern levels of human-contributed aerosols and gases,, the global distribution of radionuclides, organic pollutants and mercury,,,, and ecosystem disturbances of terrestrial, and marine environments. Approximately 17,000 monitored populations of 4005 vertebrate species have suffered a 60% decline between 1970 and 2014 CE, and ~1 million species face extinction, many within decades. Humans’ extensive ‘technosphere’, now reaches ~30 Tt, including waste products from non-renewable resources.

Such vast alterations to Earth’s natural atmospheric, hydrologic, pedologic, biologic, biogeochemical and sedimentary systems not only have changed the Earth System considerably– but have also created innumerable globally detectable and preservable signals. These changes are now being used to justify a new geochronologic epoch, the Anthropocene,.

Box 1 Slight oscillations within Earth’s climate system do not disrupt underlying climate trends

Superimposed on the rises in both temperature and sea level are slight fluctuations caused by natural oscillations within the climate system. Warm El Niño events in the Pacific cause short-term spikes in global warming, with larger events responsible for brief global warmings of 0.2 °C above the underlying trend, while La Niña cold events, produce short-term global cooling. Longer term (circa 2 decade-long) events in the Pacific (Pacific Decadal Oscillation) and Atlantic (Atlantic Multidecadal Oscillation) also cause even smaller rises and falls in global temperature and sea level. These oscillations help explain why global temperatures in the 1940s rose slightly above the overall trend of rising temperature and sea level fell slightly below the trend in the 1950s and 1960s, rose again in the 1980s, flattened slightly in the 2000s, and continued rising after 2013 CE. These events do not disrupt the underlying trend.

A thought experiment in measuring human impact

Humans, like all living organisms, inject a biological force into their environment. Individualized, this human force should collectively scale up with a growing population. With that logic and other things held constant, one billion humans would offer 1000 times the environment force of one million people. Early humans with their limited numbers (Fig. ), had a recognizable but minimal impact on the planet’s terrestrial and marine environments through most of the Holocene (Table ). Population grew slowly (Table , Supplementary-Table ), and energy use remained low (Figs. b, ) even with the advances of tool-based hunting, use of fire, employment of animals in ***agriculture*** or travel, and the development of settlements. Earth’s surface environment also has some ability to repair itself, such that 1000 humans across 1000 y would likely have a smaller lasting environmental impact than one million humans in just one year. The time-averaged human population in the Holocene is 97 M, compared with the Anthropocene’s population of 4940 M (Supplementary-Table ). Using a constant per capita energy consumption of say 1 GJ/y, human-derived energy use during the Holocene (to 1950 CE) would be 1.13 ZJ (97.2 M × 11,630 y × 1 GJ/y), and just 0.35 ZJ in the Anthropocene, a longer Holocene duration being more important than a larger Anthropocene population. However, per capita energy consumption increased by an order-of-magnitude across 11,700 years (Table , Fig. ). As a consequence, humans have already consumed more energy in the short space of the Anthropocene than in the entire Holocene (21.7 ZJ versus 14.6 ZJ).

Humans became a geological force over the last 300 y, particularly after the start of the global industrial revolution in 1850 CE when excess energy (fossil fuel) became widely available. There are strong relationships amongst three parameters: global population, global energy use, and global productivity (Table , Figs.  and ). Increases in human productivity support larger populations that consume higher levels of energy and materials that in turn support increases in productivity. The harnessing of fossil fuels has allowed humans to apply this excess in available energy beyond simple food production and survival. As a result, the growth rate in human population increased rapidly, peaking during the mid-20th century (Fig. ), as did the associated rates of energy consumption and productivity (Figs.  and , Tables  and ). The result has been the mid-20th century ‘Great Acceleration’ when humanity began to dominate many of the planetary cycles as outlined above. Like the intertwining of global human population, energy consumption and productivity, major environmental tracers also appear tightly coupled to each other and to these three human forces (Table , Figs.  and ). It should be of no surprise then that the global reservoir capacity of large dams, or atmospheric CO2, each track closely with global energy use (Fig. , Table ), or that global plastic or cement production closely follows economic productivity (Fig. , Table ), or that the global production of ammonia (NH3) and copper correlate highly with global human population (Fig. , Table ), as with many other human environmental signals outlined in Table : shrimp farming, production of gypsum, salt, iron, steel, sulfur, helium, aluminum, mineral species, atmospheric gases (CO2, N2O, CH4), terrestrial freshwater budgets, surface temperatures, and sea levels. These major environmental parameters have been strongly altered by the mid-20th century (and beyond, Table ).

Statistical relationships between human population, productivity, and energy, and key environmental indicators.

Correlation-matrix displayed as cross plots for examples of Late Holocene and Anthropocene environmental factors, including ensemble estimates of global human population (millions), global human energy consumption (EJ/y), global GDP (billions, 1990 Int’l $/y), global reservoir capacity (km3; year-end), global number of large dams (year-end), global plastic production (year-end), global cement production (year-end), mixed atmospheric CO2 (mid-year). The value in the lower right corner of each plot identifies the Spearman’s rank-order correlation coefficients. Data references are listed within .

The environmental parameters discussed above should be understood as the societal forcings that lead to stratigraphic markers that will characterize the Anthropocene, such as horizons identified by extinctions or invasive species, radioisotopes, elevated natural and novel chemical compounds, etc. In and of themselves, the societal metrics that we have identified here may not define the Anthropocene, but they can lead to the markers that do and, if present trends continue, will.

Proposed Anthropocene versus Holocene epochs

The Holocene Epoch, the most recent of the Quaternary interglacials, was a time of warm, relatively stable (±0.5 °C) climate that fluctuated in response to variations in Earth’s natural systems (e.g., Milankovitch): ice sheet volume decreased, and sea levels rose at an Epoch-averaged rate of 5.54 mm/y, larger than for the proposed Anthropocene Epoch (although if warming continues modern rates will quickly rise). The proposed Anthropocene Epoch sees many other key Earth-surface parameters change in response to human action (Table ). Parameters with 200% to 300% variances or larger, compared to the Holocene Epoch, include atmospheric and ocean temperatures, atmospheric CO2, CH4, and N2O levels, global reactive nitrogen, environmental mercury and many other metals, phosphorus release,, sediment transport, terrestrial soil loss, and terrestrial and marine biomass losses. Parameters with order-of-magnitude increases, compared to the Holocene Epoch, include anthropogenic CO2 ***emission*** rates, human-produced energy, upstream sequestration of sediment, number of “mineral” species, concrete production, rates of species extinction, declines in river runoff, and increased coastal hypoxia. There are also phenomenological changes without precedent in the Holocene, including a warmer and more acidic global ocean, global dispersal of new materials (plastics, ceramics, aluminum metal, radioisotopes, persistent organic pollutants, pharmaceutical compounds, fly-ash particles), and modern alterations to the biodiversity of marine and terrestrial ecosystems, with a globally distributed invasive species component and a greatly raised rate of species extinction. Even Earth’s crustal process, such as earthquakes, can now have an anthropogenic imprint.

The Anthropocene Working Group (AWG) has voted to affirm a) the Anthropocene be treated as a formal chronostratigraphic unit defined by a GSSP, and b) the primary guide for the base of the Anthropocene be one of the stratigraphic signals around the mid-twentieth century of the Common Era,,. Geological records characterizing the base of the Anthropocene are being assembled, and in due course the Group’s recommendations will require approval by the International Commission on Stratigraphy. The narrative and quantitative data presented here strongly underpin the trajectory of the Earth System away from a Holocene state of the system, substantially and globally, around the mid-20th century, circa 1950 CE. Establishing the proposed new epoch would formalize the use of the term Anthropocene, which already has been used widely in research describing changes induced by human actions and recorded in geological archives.

**Acknowledgements**

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**Notes**

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[***RDPE Annual Implementation Report for 2017 Citizens’ Summary***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60FV-NTJ1-F0YC-N1P0-00000-00&context=1516831)

Impact News Service

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**Length:** 2942 words

**Body**

London: UK Government has issued the following news release:

1. What is the Rural Development Programme 2014-2020?

The Common ***Agricultural*** Policy (or CAP) is the ***agricultural*** policy of the European Union. The CAP implements a system of ***agricultural*** subsidies and other programmes, of which the Rural Development Programme is one.

CAP is split into two Pillars; Pillar 1 is used to support farmers’ incomes and Pillar 2 provides support for the development of rural areas.

Pillar 1 n England includes the Basic Payment Scheme (BPS) and market control measures 1: It is entirely financed by the European ***Agricultural*** Guarantee Fund (EAGF).

Pillar 2 in England takes the form of the 2014-20 Rural Development Programme for England (RDPE) and is co-financed by the European ***Agricultural*** Fund for Rural Development (EAFRD). The UK Government matches funding provided by the European Union (EU) and this fund also has additional EU money added to it raised through a transfer of funds from Pillar 1.

Under the EU Rural Development Regulation that governs the RDPE there are six priorities for spending:

* Priority 1: Fostering knowledge transfer and innovation in ***agriculture***, forestry and rural areas.

1. Priority 2: Enhancing farm viability and competitiveness of all types of ***agriculture*** in all regions and promoting innovative farm technologies and sustainable management of ***forest***.
2. Priority 3: Promoting food chain organisation, including processing and marketing of ***agricultural*** products, animal welfare and risk management in ***agriculture***.
3. Priority 4: Restoring, preserving and enhancing ecosystems related to ***agriculture*** and forestry.
4. Priority 5: Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in ***agriculture***, food and forestry sectors.
5. Priority 6 – promoting social inclusion, poverty reductions and economic development in rural areas.

The UK Government developed the 2014-20 RDPE from a selection of the measures set out in the EU Rural Development Regulation. The RDPE 2014-2020 Programme Document provides detail on the choice and combination of Measures and justification of spend in England based on detailed analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT) and needs assessment, and a public consultation on the implementation of CAP in England.

The Commission approved the programme on 13 February 2015 under Decision C (2015) 855. Since the RDPE commenced in 2014, the UK voted to leave the European Union in June 2016. The UK is currently negotiating its exit of the European Union. An implementation period was agreed in March 2018, which means that the UK will continue to participate in all EU programmes until the end of 2020. Additionally, the UK government has stated that any funding secured through EU programmes

2. Implementation of the 2014-20 RDPE, its priorities and how much it will be worth?

The 2014-20 RDPE has three main priorities. These are to:

* Improve the natural environment: this includes helping to ensure that by 2021 the natural environment is improved as set out in the Natural Environment White Paper (NEWP), published in 2011;

1. Increase the productivity and efficiency of farming and forestry businesses, in order to improve their competitiveness and reduce the reliance of farmers and ***land*** managers on subsidies; and
2. Promote strong rural economic growth, by helping rural businesses get off the ground and existing businesses to develop, investing in broadband and rural tourism.

The 2014-20 RDPE contains plans to invest at least £3.5bn from 2014 to 2020. Over £3bn is for the environment. Nearly £500m helps grow farming, food and the rural economy.

The programme was set up to protect the natural environment on 2.5m hectares of farmed ***land***, create around 6,750 jobs and fund planting of 14,000 ha of trees.

The 2014-20 RDPE does this through the following:

* Countryside Stewardship – funds farmers and foresters, generally over 5 years, to manage ***land*** in ways that benefit the environment, and give grants for items such as woodland creation, restoring hedges and improving water quality. The scheme supports farmers and foresters to make the improvements needed in their local area.

1. Countryside Productivity – aims to encourage farmers, foresters and other ***land*** managers to increase their productivity and competitiveness. A mixture of capital grants, co-operation, advice and training will be offered.
2. Growth Programme – helps get new rural businesses off the ground and existing businesses to develop new products and facilities, investing in broadband, business development, food processing and rural tourism. Local Enterprise Partnerships (LEPs) and local partners help us decide how to spend funds in their area.
3. LEADER – gives local communities the responsibility and resources to identify local needs and fund projects to meet them. Local LEADER groups decide how to spend funds in their area. At least 70% of this will go directly on job creation and growth.

Additionally, on-going commitments continue from the 2007-13 RDPE Programme period for the Environmental Stewardship (ES); and the English Woodland Grant Schemes (EWGS), which are now both closed for new applications.

In late 2015, a further scheme, the Farming Recovery Fund, was launched to support farmers affected by the flooding as a result of Storms Desmond and Eva. This scheme is now closed for new applications.

In May 2016 the Cumbria Access Fund (CCAF) opened. The CCAF is a geographically ***targeted*** fund to help repair and improve Cumbria’s rights of way following damage by Storm Desmond in December 2015. This scheme is now closed for new applications.

3. How is progress measured?

Each of the activities in the 2014-20 RDPE has a budget and ***targets*** for what is forecast to be delivered. The AIR reports progress against each of the ***targets***. This monitoring helps Defra to make sure it spends the money in a way which delivers the best outcomes for England, as detailed in the RDPE programme document.

4. What progress has been made implementing the 2014-20 RDPE?

Progress against each scheme up to 31 December 2017 is as follows:

4.1 1. Countryside Stewardship (CS) and legacy Environmental Stewardship (ES) – total planned expenditure of around £3bn

By 31 December 2017 cumulative total public expenditure under the 2014-20 RDPE for Countryside Stewardship was circa £46.5m

In addition around £1.1bn was paid to farmers and foresters who are already in environmental schemes from the previous programme.

A breakdown of progress under the CS and legacy schemes is provided below:

a. CS - Woodland Grant Scheme The Woodland Grant Scheme offers capital grants to support the planning and protection of trees for the creation of woodland for biodiversity and water objectives. During 2017, 128 agreements had been offered which equates to 973.26 hectares under agreement and with 1,452,471 trees.

b. CS - Facilitation Fund The facilitation fund aims to support greater co-operation amongst farmers, foresters and other ***land*** managers to improve the natural environment at a landscape level. The scheme supports 98 groups across 430,000 hectares delivering improvements for wildlife, water management, landscape and the historic environment. The scheme is now closed and cumulative total public expenditure under this fund was £851,908 by the end of December 2017.

c. CS - Higher and Mid-Tier agreements Higher Tier agreements are available to ***land*** managers of the most environmentally important sites and woodlands. Mid-Tier agreements aim to address widespread environmental issues; such as reducing diffuse water pollution or improving the farmed environment for farmland birds and pollinators. To follow the application window which opened in March 2016 and closed in September 2016, there was subsequently 2,916 accepted offers for Mid-Tier applications; and 596 accepted offers for Higher Tier agreements.

d. CS - Catchment Sensitive Farming Catchment Sensitive Farming (CSF) aims is to reduce diffuse pollution from ***agriculture*** by giving free training and advice to farmers in priority areas in England. CSF does not have separate applications, but it is included in CS Mid-Tier applications. Cumulative total public expenditure on CSF by the end of December was £19,917,477.

e. CS - Hedgerows and Boundaries Grant The Hedgerows and Boundaries Grant aims to support hedgerow and stone wall improvements and restoration. The scheme was launched on 1 February 2017 and 973 applications were approved during 2017. The maximum value of grant available was £5k and the average value of offered agreements during 2017 was £4,270. Cumulative total public expenditure on the grant by the end of December was £1,064,780.

f. CS - Woodland Management Plans Woodland Management Plans are capital grants to produce a 10 year woodland management plan that complies with the UK Forestry Standard. It is open for applications all year round. During 2017, 312 agreements were signed and this equates to 12,714 hectares under agreement.

g. CS - Tree Health Tree Health Grants are capital grants to support the ***removal*** of specific infected trees and shrubs and the restoration after a tree health issue through the planting and protection of trees. It is open for applications all year round. During 2017,there were 78 agreements signed.

h. CS - Farm Advisory Service The Farm Advisory Service (FAS) delivers advice to farmers through a helpline and through farmer events on topics that are chosen for their relevance by season or region; or because they are issues where farmers have many queries or need advice on compliance. From March to December 2017 the helpline dealt with 1088 calls and 777 e-mails, and FAS delivered advice at 22 farmer events.

i. Legacy schemes Legacy schemes from the previous RDPE programme comprise ongoing agri-environment and forestry commitments under Environmental Stewardship and English Woodland Grant Schemes, and contribute to delivering Priority 4: Restoring, preserving and enhancing ecosystems related to ***agriculture*** and forestry ***targets***. During this programme period around £1.1bn has been paid to farmers and foresters who are already in environmental schemes from the previous programme.

4.2 2. Countryside Productivity (CP) – total planned expenditure £141m

Countryside Productivity scheme (CP) was launched in 2015 and aims to support ***targeted*** investments which encourage best practice and innovation in the farming industry.

It consists of 3 sub schemes: capital grants (large and small); support for farmer groups or farmer/researcher partnerships to test innovative farming practices (European Innovation Partnership-Agri) and the provision of advice to help tackle disease:

a. CP - Capital Grants Around £5m of grants for innovative equipment of infrastructure were made available in 2015 in priority policy areas, such as energy saving, water efficiency, reservoirs, animal health and slurry management. Small capital grants were available for between £2,500-£35,000 and large capital grants for projects over £35,000.

Applications for both small and large grants were significantly oversubscribed, with applications for more than £25m. Most spend for smaller capital projects took place in 2016 and larger capital projects in 2016 and through to 2017.

CP Large grants launched in July 2017 with £20m funding for Improving Forestry Productivity and Water Resource Management. This was followed in October 2017 with a further £40m to support Improving Farm Productivity, which supported the investment in equipment that encouraged better use of nutrients and Adding Value to Agri Food, which supported the purchase of items to improve the processing of primary ***agricultural*** products. There has been 24 Expressions of interest worth around £25m for the Adding Value to Agri-Food scheme.

b. CP - European Innovation Partnership The European Innovation Partnership for ***Agricultural*** Productivity and Sustainability (EIP-Agri) is a £5m grant scheme. It aims to support sustainable and productive ***agriculture*** by bridging the gap between ***agricultural*** researchers and practitioners. The EIP provides support for the establishment and running of Operational Groups. These groups undertake projects that tackle problems affecting productivity or sustainability that have been identified by farmers or producers. Applicants can apply for between £5,000 and £150,000 to operate a project for up to 3 years.

Applications to EIP-Agri closed in September 2017 and a total of £1.2m in grant support has been offered to 12 farmer led Operational Groups. A broad range of projects have been funded and include ways to reduce pesticide usage; improving soil biology and improving animal health through selective breeding.

c. CP- Advice and Training A £1.6m bovine TB Advisory Service, aimed at maximising farm biosecurity and minimising the risks associated with cattle movements was launched on October 2017 and will run until 2020. The project is still in its early stages and will report on completion.

A separate project costing approximately £5m for tackling Bovine Viral Diarrhoea has been procured for launch in spring 2018.

Cumulative total public expenditure for the Countryside Productivity scheme as at the end of December 2017 was £5,076,000.

4.3 3. Growth Programme – total planned expenditure £207m

The Growth Programme scheme forms part of a £6 billion package of support along with the European Regional Development Fund and European Social Fund. Local Enterprise Partnerships (LEP’s) help to decide how to spend funds in their area.

The Growth Programme delivers spend under Priority 6 – promoting social inclusion, poverty reduction and economic development in rural areas. It is being delivered in 37 Local Enterprise Partnerships (LEP) areas across the country.

The RDPE Growth Programme aims to create jobs and support economic growth in the rural economy. The scheme makes support available through a series of offers. The first round of offers, which ran for between 3 and 18 months, opened in March 2015. A second round of offers to support tourism infrastructure, business development and food processing, opened in January 2017. These close for applications in May 2018, as does a separate offer to increase the provision of superfast broadband in rural areas which opened in October 2017.

During 2017, a total of 145 successful applications were made for the Growth Programme committing £18.7m of funding.

Cumulative total public expenditure for the Growth Programme scheme as at the end of December 2017 was £4,809,767.

4.4 4. LEADER – total planned expenditure £138m

LEADER funding supports jobs and growth in rural areas, mainly through small grants. Funding includes help for farming and forestry businesses as well as other types of business and communities in rural areas. LEADER Local Action Groups (LAGs) deliver the funding to meet locally identified priorities.

LEADER has supported 807 projects in 2017, covering a wide range of businesses focusing on small and medium enterprises, farm productivity and tourism.

Cumulative total public expenditure for the LEADER scheme as at the end of December 2017 was £25.3m

4.5 5. Farming Recovery Fund – total planned expenditure £8.1m

The Farming Recovery Fund initially opened for applications for flood-affected farmers in Cumbria, Northumberland and parts of Lancashire in December 2015.

The fund was subsequently extended to allow eligible farmers impacted by Storm Desmond and Eva in Durham, further parts of Lancashire, Yorkshire and Greater Manchester to be able to apply. It provided grant support of up to £20,000 and was open for application from 18 December 2015 until 1 April 2016.

The fund helped affected farmers restore ***agricultural*** production potential damaged by the storms and take action to make their ***land*** more resilient to future flooding.

A total of 990 applications have been approved, totalling £8.8m in funding.

4.6 6. Cumbria Countryside Access Fund – total planned expenditure £3.5m

The Cumbria Countryside Access Fund (CCAF) opened on 16 May 2016 and closed on 13 June 2016.

The CCAF is a geographically ***targeted*** fund of £4m to help repair and improve Cumbria’s rights of way following damage by Storm Desmond in December 2015.

The fund has helped reinstate and improve public rights of way across the Lake District and rural Cumbria and reopen connections between rural towns and villages by:

* Repairing damaged or missing bridges,

1. Reinstating paths with seriously eroded surfaces and associated landscape damage
2. Replacing gates/styles etc. on damaged paths

The project helped make sure tourists knew the Lake District remained open and accessible following the floods. It also improved the visitor experience.

4.7 Overview of Programme spend to date

Programme spend to date has been broadly on track for year 4 of the RDPE. Schemes under Priorities 3 and 4 have almost reached their expenditure milestones for 2018; and schemes under Priority 6 are expected to meet their expenditure milestone in 2018. Priority 1 does not have an associated performance milestone.

Spend under the CP scheme was 90% below the 2018 expenditure milestone for Priority 2; and 65% below for Priority 5 by the end of 2017. Whether these expenditure milestones will be met depends on the level of uptake of schemes that have application windows closing in 2018.

4.8 Overall evaluation of the programme to date

An Enhanced Annual Implementation Report (EAIR) evaluation of the RDPE programme was completed in 2017, and provided a review of process and impact and evaluated achievements from the start of the Programme to the end of 2016.

The next EAIR is due in 2019 and will evaluate Programme achievements to the end of 2018.

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**End of Document**



[***Rewilding policy futures: Maori whakapapa and the ecology of the subject***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:6BNK-7DJ1-DY41-72RG-00000-00&context=1516831)

Policy Futures in Education

April 2021

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**Body**

**ABSTRACT**

The world is changing, but political and educational institutions appears to be stuck in the 19th century. Modern policy and education are both premised on an Enlightenment assumption of the human, rational, individual subject. Increasingly, elements of these philosophical premises are being interrogated. The critique emerges from the environmental interest in collapsing the dualism between subject and object, and reintegrating the human with/in our ecological context. Indigenous philosophy is important for rethinking the integration of the dualism between humanity and ecology. Maori philosophy is a vital counterpoint to the anthropomorphic position of modern policy and education. Taking Maori concepts to inform contemporary philosophy generates a substantive shift in world view that does not lose sight of the solipsist, phenomenological parameters of human sense making, but enables us to make deeper ethical decisions, and transform the basis of education and policy.

**FULL TEXT**

The world is changing, but political and educational institutions appear to be stuck in the 19th century. Modern policy and education are both premised on an Enlightenment assumption of the human, rational, individual subject. Increasingly, elements of these philosophical premises are being interrogated. The critique emerges from the environmental interest in collapsing the dualism between subject and object, and reintegrating the human with/in our ecological context. Indigenous philosophy is important for rethinking the integration of the dualism between humanity and ecology. Maori philosophy is a vital counterpoint to the anthropomorphic position of modern policy and education. Taking Maori concepts to inform contemporary philosophy generates a substantive shift in world view that does not lose sight of the solipsist, phenomenological parameters of human sense making, but enables us to make deeper ethical decisions, and transform the basis of education and policy.

The rational individual is an ‘empty’ cypher for subjectivity. The prevailing view of neoliberal rational individual is that it stands for ‘negative’ freedom (Hayek, 1960: 18; Nozick, 1974). Each individual pursues their maximal well-being with ‘the absence of a particular obstacle – coercion by other men’ (Hayek, 1960: 18, in Quiroz, 2018). Negative freedom was mostly a justification of elite entitlement, both by negating the claim of any group identity or ‘people’ (Quiroz, 2018: 1–3) and by negating the claims of equal rights, or equal opportunity. ‘Requiring that the situation of the less well-off be improved via the principle of the equality of opportunity, for example, involves restricting individual liberty in order to improve the situations of others’ (Hayek, 1960, 1976; Nozick, 1974, in Quiroz, 2018: 6). The justification of the rational individual is laid out in terms of maximizing profit, and restricting the intervention of other men, especially the ‘people’ who are represented by the bureaucracy of the state. But rational individualism has had other, more profound political dimensions, because by making ‘interest groups’ illegitimate, in contrast to the rational individual, all claims to identity, whether ethnic, indigenous, class, gender or sexuality, are also deemed irrelevant to the political enterprise. For decades, especially in the 1990s and 2000s, feminism, for example, was remarkably silent, as women tried to position themselves as rational individuals on an equal playing field, and accepted that they negotiated their wages and conditions on their own, rather than within a politicized group identity. The rational individual has no character or history; no gender, culture or class (cf. Benson, 2020). According to Rational Choice and Public Choice theory, the rational individual simply ascertains universal truth via deductive logic of cause and effect, and is then in a position to make optimal, self-interested decisions based on maximizing utility. As with Newtonian maths and physics, the logic of rational deduction is not bound by time, and the focus on a subjective mind rather than a historical body makes the theory a-historical with claims of universality. Classical and neoliberal economic policy assume a hierarchy of universal rationality, known as humanism, which sits in a privileged relation to both truth and power, regardless of the cultural, historical or environmental context.

Contemporary modern educational policy relies on humanist philosophical and economic assumptions. Curriculum and pedagogy have, for the most part, been based on the rational individual. Educationalists such as Dewey (1916) had a broader, more integrated approach to the holistic well-being of students and environment. But Dewey’s influence has largely given way to a reductionist rationalism and correctitude, commonly iterated by neoliberal policy and ‘student-centred learning’. The aim of neoliberal education is to fill the ‘empty vessel’ with information (Locke, 1960). Comprehension and retention are tested continuously, to benchmark each individual student against unit standards which demonstrate their value as human capital in the workforce.

In contrast to this universal rationalist cypher, many educators are very aware of culture. The counterpoint to the universal rationalist subject is the historical, gendered, culturally specific body. Rather than an empty vessel, students and teachers bring their prior knowledge to the classroom. I grew up in Aotearoa/New Zealand in the 1970s and 1980s, as the Maori resurgence in politics and culture flowered. I am Pakeha, of Settler stock, of Irish descent, sixth generation on Dad’s side, and recent immigrants on Mum’s. The Catholic versus Protestant history of the Troubles is very present in my family, and perhaps that is why, for several generations, we shunned formal religion. Part of the problem of Irish religion is that Christianity was used as a colonial tool, and it rode over older Celtic modes of understanding Mother Earth, and the multiple gods that occupy streams, ***forests***, mountains, lochs, ocean and sky. But glimpses of ancient heroes and even more ancient place names remain in the Irish and Scottish landscape. Living in New Zealand, however, I grew up more aware of Maori mythology than I was of Bible stories, and, as my interest deepened, Maori philosophy has become integral to my understanding of our world. It resonates with my limited knowledge of Ancient Celtic religion, but is more familiar and accessible because it is home. The cultural familiarity does not mean belonging, and my political, embodied reality has been a Pakeha one. My interest is generative, and relies on the generous, complex, innovative and confident bedrock of Maoridom, that is open enough to enable people such as myself to generate new ideas that refer to Maori philosophy, in a modern and multicultural context.

‘Cultural appropriation’ is something all Pakeha (Settlers) have to be sensitive about, and unauthorized use of *taonga* (treasures), such as Maori designs on fashion clothing for private profit, remain a problem. My family lived through a troubling colonial period which saw a radical transition, from the living, evolving and inclusive culture of *tangata whenua* (people of the ***land***) and *manuhiri* (visitors) to the colonial oppression of Maori tribes who had their ***land*** stolen by those Settler visitors (O’Malley et al., 2010). Despite the Waitangi settlements (which were only a token gesture compared to the level of ***land*** theft), the ***land*** and resources are still largely alienated from Maori, which continues to create hardship for *tangata whenua*. The consequent poverty forced many Maori into a vulnerable position in the new nation state.

When I was a child, a cultural resurgence began, where Maori claimed a stronger political voice, and ***land*** reparations began through the Waitangi tribunal (O’Malley et al., 2010). This ongoing process has further transitioned Maori culture from the ring-fencing of ‘Maori-ness’ in opposition to colonial and capitalist oppression, to the emergence of Maori epistemology as an important contributor to contemporary policy, politics and economics, as a vital component of our future adaptation to and mitigation of climate change and environmental destruction.

Colonialism has historically had enormous consequences in nearly all parts of the world. The problem now has escalated even further, and climate change is threatening the biodiversity of species, including humanity, nearly everywhere on the planet. People in all sorts of cultures are trying to come to terms with new technologies, population pressure, 30 years of neoliberalized politics, and the increasing consequences of climate change: loss of fresh water, drought, storms, floods, ***forest*** wild-fires, destruction of soil ecology, ocean acidification and sea-level rise. In New Zealand, and further influencing legislation elsewhere, inclusive political ecology, policy and law necessarily engage with Maori philosophy where everything is connected in a genealogical taxonomy of relationship called *whakapapa*. Maori politics is one of the strongest forces for protecting and reinventing legal and policy norms. Maori philosophy embraces the river, the ***forest***, the mountain, the foreshore and the waters as ‘persons’. Recently, this understanding has been introduced to New Zealand law, with rights akin to ‘human’ rights attributed to the Te Urewera mountains and the Wanganui River (Tuhoe and the Te Urewera Act, 2014; the Wanganui River, Te Awa Tupua Bill, 2017; closely followed by India, for the River Ganges which was recognized as a person by the Uttarakhand High Court in 2017). Similar legislation is emerging in a number of other countries, including Ecuador and Peru.

In this article I want to explore how the ethos of *whakapapa*, and its deep respect for the wild, that informs this legislation has wide implications for contemporary policy and understanding of the world. I look at Heidegger, and Maori thought, and examine the shift from the individual rational utility maximizer as the basis of policy, economics and education (Dale, 1997; Devine, 2004; Fitzsimons, 1995; Marshall, 1996, 1997; Peters and Marshall, 1996; Peters et al., 1993). The fundamental sciences no longer support the outdated positivism at the core of neoliberal (and liberal) politics and educational pedagogy and policy. Indigenous philosophy has long critiqued the individualist assumptions and hierarchy of rationality and Eurocentricism embedded in neo/liberal education and policy. The philosophical shifts involved shape important aspects of generative posthumanism that forecloses a narrow rationality of cause and effect, as an ordering of order, and opens up a paradigm of complex interactivity that is irreducible to mechanistic ordering.

The rational individual is justified by Cartesian philosophy and Newtonian physics. Both separates out the individual rational subjective knower from the object that is known. Heidegger’s compelling critique of the Enlightenment as an all-encompassing horizon of thought helps to explain why the rational individual and the epistemology of objectivity has shaped our policy, economic system and education so completely. Contemporary physics, feminist embodiment, and Maori philosophy and taxonomy are all deconstructing the positivist assumptions of Enlightenment individual rationality, and reshaping the epistemology, inter-relationship and processes of change in the world. Ultimately, these challenges to Enlightenment epistemology will have consequences for our understanding of subjectivity, pedagogy and educational policy. This ecology of knowledges will broaden education once again, from its neoliberal rationale of producing human resource capacity. Feminist critique and the concept of *whakapapa* could drive an ecologically integrated education policy, where the curriculum explores issues such as climate change in all its discipline areas.

**The threat of the wild**

One could ask, if rational observation were the only requirement of humanist, Newtonian physics, why has the ‘wildness’ of ***forests*** and Indigenous people been so ferociously subdued by colonial and later, modern forces? The observer position is far from value neutral. Multiple feminist philosophers have critiqued the dualism of subject from object, for the hierarchy implicit in the dualism (Braidotti, 2013; Grosz, 1994; Merchant, 1980; Plumwood, 2002).

The Maori concept of *whakapapa* draws all elements of creation – from plants and trees to animals, the river, the ocean, mountains and so forth – into a network of familial relations. ‘Equality’ is not really the map here, but rather the interconnection and interdependence of kin relations extends between all aspects of ecology, knitting people together with all the other elements of the wild, in a careful taxonomy of relations.

The neoliberal American thinker Francis Fukuyama wrote a telling couple of pages that illuminate this question of the ferocious subjugation of the wild, in his trumpet to the triumph of capitalism, *The End of History* (Fukuyama, 1992). Fukuyama clearly identifies the consequences of abandoning the hierarchical separation of the ‘rational’ human from other species: The extension of the principle of equality to apply not just to human beings but to non-human creation as well may today sound bizarre, but it is implied in our current impasse in thinking through the question: What is man? If we truly believe that he is not capable of moral choice or the autonomous use of reason, if he can be understood entirely in terms of the sub-human, then it is not only possible but inevitable that rights will gradually be extended to animals and other natural beings as well as men. The liberal concept of an equal and universal humanity with a specifically human dignity will be attacked both from above and below: by those who assert that certain group identities are more important than the quality of being human, and by those who believe that being human constitutes nothing distinctive against the nonhuman. The intellectual impasse in which modern relativism has left us does not permit us to answer either of these attacks definitively, and therefore does not permit defence of liberal rights traditionally understood. (1992: 298)Fukuyama is right to understand bioegalitarianism as a true threat to liberal capitalism. But the existential threat of climate change shows us how capitalism as we know it is already redundant. The 11,000 scientists who issued the warning last year say urgent measures need to be taken: Excessive extraction of materials and overexploitation of ecosystems, driven by economic growth, must be quickly curtailed to maintain long-term sustainability of the biosphere. We need a carbon-free economy that explicitly addresses human dependence on the biosphere and policies that guide economic decisions accordingly. Our goals need to shift from GDP growth and the pursuit of affluence toward sustaining ecosystems and improving human well-being by prioritizing basic needs and reducing inequality. (Ripple et al., 2020)Philosophically, the industrial modern system is still embedded in the separation of subjectivity from natural objects, even if this position has been very well critiqued for generations (Grosz, 1994; Heidegger, 1973; Irwin, 2008a; Merchant, 1980; Plumwood, 2002). The problem is that philosophy, economics and political economy have not generated ideas compelling enough to replace the Enlightenment alienation from nature, and modernity’s concurrent model of exponential growth. Now, with 7.8 billion people on the planet, the possibility of returning to isolated, localized productivity of subsistence economies is unlikely, if not impossible. Nevertheless, a sensitivity to local *and planetary* ecological health is necessary for modern societies to survive and for *transition* from the philosophical, cultural and organizational impasse of the Anthropocene. So how do we achieve this? Educational policy with planetary ecology at its centre will have a profoundly different texture and quality from the prevailing neoliberal norms. Neoliberalism prioritizes human capital and profit rather than creativity and social, cultural, economic and ecological health. The conceptual basis of *whakapapa* helps education reconceptualize its policy programme, pedagogy and curriculum, and open up the potential for a transitional future.

Right now, contemporary normative politics is in a bind. According to the Intergovernmental Panel on Science’s Global assessment report on biodiversity and ecosystem services (IPS, 2019), the planet is in the midst of the sixth major species extinction, unequalled since the dinosaurs at the end of the Eocene. Unprecedented polar ice melt, and the record breaking high temperatures on ***land*** and in the ocean notwithstanding (Masson-Delmotte et al., 2018), governments seem unable to extract us from business-as-usual. In a good example of the wild, the unexpected, the unplanned, the COVID-19 pandemic incidentally reduced ***emissions*** by 17% globally in the first three months of 2020, as people were restricted from flying and long-distance travel (Le Quéré et al., 2020). In contrast, decades of environmental lobbying failed to substantively reduce ***emissions*** (bar one year, 2018). Most high-profile green lobbyists, like Nicholas Stern and Al Gore, have been silent on the continued political commitment to increasing consumer growth and, with it, climate ***emissions***. The increase in renewable energy has *added* to generic energy use, enabling the economy to grow further, rather than *replacing* fossil fuel sources (Hickel, 2016). The premise that the natural world is an ‘externality’ to economic procedure has remained substantially unshaken – and is a direct result of the ordering of subject and object, and of cause and effect, bound up in Cartesian and Newtonian scientific Enlightenment. ‘Sustainability’ attempted to bridge this gap (Brundtland, 1987) but co-opted the environmental factors into the overarching economic paradigm, losing its opportunity for genuine eco-social synthesis (Irwin, 2008b). Politics in the Enlightenment, whether liberal, neoliberal, socialist or communist, has been unable to escape the reductive ordering of order which drives our understanding of everything in the wild as a resource to be potentially consumed (Heidegger, 1977).

Heidegger argues that this technological horizon of thought encapsulates modern thinking in the consumerist ethos, which is a deterministic mode of social, ecological, political and personal organization that is extremely difficult to exceed. Most politicians and many people have swallowed the bitter pill and believe there are no alternatives. What is at stake here is laying out a new mode of understanding our world; a new horizon of thought in the wildness of planetary ecology. One that intimately binds humanity with the other populations, species, oceans, atmosphere and strata of the planet. One that constitutes a new political economy based on ecological health in our most immediate productive relationships *and* at a planetary scale. Educational policy with planetary ecology and bioegalitarian symbiosis at its centre will have a profoundly different curriculum, pedagogy and policies. The texture and quality of eco-social education will differ from the prevailing neoliberal norms in education. Neoliberal education, like earlier authoritarian regimes, is ruled by the consumer paradigm. It understands students as empty of cultural or gender specificity; only as individuals, who need to be taught information and rationality to become adult. Neoliberalism is all about the negative freedom of being able to own private property without the interference of the ‘people’ or the state. John Locke’s private property ownership underpins Hayek (1960) and Novick (1974), just as Locke’s description of students being a blank slate, or tabula rasa, underpins neoliberal education. As a tabula rasa, students can be ‘filled’ with information and correct methods until the student fulfils the standards of their examination criteria, and adds to their value as a human resource; whereas an ecologically integrated, ‘wild’ education would need to be more holistic, less universal and more culturally, ecologically and location specific (Crex Crex Collective, 2018). Education would be more aware of local and planetary limits, concerned with the impacts of pollution and resource extraction, and modes of living well, while treading softly on the earth.

**Escaping the horizon of thought**

The technological horizon of thought reduces all aspects of the known world to potential resources, waiting – often as unmined raw materials – for the demands of consumerism. Heidegger’s crucial critique of modernity is that older ways of knowing the earth, the sky, the gods and mere mortals are foreclosed by the rational ‘ordering of order’ into the paradigm of consumerism: Everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Whatever is ordered about in this way has its own standing. We call it the standing-reserve (Bestand). (Heidegger, 1977:17)Heidegger argues that the technological *Gestell*, or horizon of thought that is informed by the phenomenology of modern technology, discloses some aspects of things and at the same time conceals other aspects to a forgotten world. The *Gestell* makes it very difficult for us to speak about older concepts of understanding. The technological horizon of thought highlights rationality, causality and the global economic paradigm to such a huge extent that other modes of knowing struggle to emerge. Pollution, extinction and climate change remained largely unobserved and unacknowledged for a very long time. Consumerism defines the pace of production. It permeates the neoliberal policy paradigm, that perceives each individual as a rational utility maximizer. Individuals maximize financial decisions in their own self-interest. This normative paradigm is based on Cartesian rationality, that separated the rational mind from the natural object. Descartes was sceptical of the subject’s own body, as an ‘object’ to be disregarded in favour of the logic of universal laws (1980, cf. Irwin, 2008a).

Psychological behaviourism, especially Skinner’s behaviourism of the 1930s–1960s, was informed by Cartesian rationality but took it to the next level, where behaviour can be manipulated through operant conditioning and language (Skinner, 1938, 1969). Theoretically, behaviourism makes it possible for policy makers to predict economic decisions and shape aggregated rational behaviour. As a horizon of thought, behaviourism enframes the economic normalisation of rational decision making. Skinner’s behavioural psychology adheres to the technological horizon of thought, producing rational individuals in much the same way as Locke’s tabula rasa have been informed to enhance their capacity as future human resources. Behaviouralism informed education for a long time and, while it is now out of fashion in pedagogy, it remains embedded in educational policy assumptions. Aggregated behaviouralism is the paradigm underpinning market rationality. For neoliberalism, negative freedom positions the market as the highest form of politics, but that is not without influence. Behaviourism can be seen in education, artificial intelligence (AI), advertising and the political ‘nudge’.

Heidegger regards ‘failure’ as one of the ways to get a surprise glance, a deeper view, of the usually taken-for-granted work of resources and technology on the horizon of thought. Heidegger’s discussion is limited to the failure of a tool, but, in late modernity, it is the failure of global capitalism to recognize the ravaging devastation of climate change, and obscure it as an externality to economic productivity that is increasingly becoming obvious.

Consumerism has been dictating the pace of production and ‘resource’ use regardless of the earth’s carrying capacity. For 200 years, the ***forests***, ocean and soil have acted as a carbon sink for the 2.3 trillion tonnes (Oxford Global Warming Index, 2020) of CO2 ***emissions*** we expel as pollution, a byproduct and externality of exponential economic growth. Increasingly, the air is full of the smoke from ***forest*** fires; the ocean is too hot, too acidic and choked with plastic garbage, and the soil is depleted from monoculture, pesticides, fertilizer and erosion (Shiva, 2015). As the IPCC has continually told us, we all know that business-as-usual has to come to an end (Masson-Delmotte et al., 2018).

Under neoliberalism, the environment was externalized from the analysis of costs and benefits (Irwin, 2014). The environment absorbed the pollution, the ecosystem damage, the toxic run-off from mines, ***agriculture***, refrigeration and transport, and the soil loss and water pollution from large-scale, long-term deforestation and industrial monoculture. For 200 years the environment bore all these costs, and the overall effect was largely absorbed by the planetary commons.

The majority of people are so ‘alienated’ from the impact of industrial production on environmental systems that they failed to notice early warning signs – erosion and soil run-off; deforestation; water pollution; birds and animals becoming rare or extinct; the enormous impact of roadkill; the loss of moths and butterflies, and then of beetles and other insects. The plague on bees of varroa mites, and the impact of Bayer-Monsanto’s neonicotinoid pesticides (IPS, 2019). All are obvious, if you are not committed to the consumer ethos as a totalizing mode of understanding. But even farmers and fishermen (let alone urban dwellers) fail to observe the warning signs of the wild, when their thought processes are completely enframed by consumer demand.

The anthropocentric stance is central to the problem of corrupting and polluting our communal ecosystem, and thus alienation from nature destroys the well-being of other species together with our own. Creating an ethics of *human* equity remains within the Enlightenment dualisms that bifurcate culture from nature, men from women, Enlightened from Indigenous, rationality from emotions, mind from body.

From forgotten externality, nature has forced itself back into public awareness. No matter how manipulative Rupert Murdoch’s news empire is, or the denialist fake news sites funded by oil and coal corporations, ignoring the planetary impacts of fossil fuel ***emissions*** is no longer possible. Over 11,000 people in the scientific community hit the news by issuing a Last Warning in 2019, giving 11 years to radically reduce to zero or negative ***emissions***, or face near-certain mass extinction (Ripple et al., 2020). The earth systems in many cases are worse than the worst-case scenarios put forward by the IPCC: ‘The climate crisis is closely linked to excessive consumption of the wealthy lifestyle. The most affluent countries are mainly responsible for the historical GHG ***emissions*** and generally have the greatest per capita ***emissions***’ (Ripple et al., 2020).

Heidegger’s critique of the technological horizon of thought, and its ordering of order of all things as standing reserve, waiting to meet consumer demand, has been almost impossible to escape. One of the major failures of capitalism is climate change, which makes other aspects of the planetary environment more visible. The failure makes it possible to question the foundations of Enlightenment thought. The aim is to discover how rational individualism and its policy consequences are complicated by contemporary, post-Enlightenment philosophy and science.

**Early roots of Enlightenment dualism**

The initial entangled ‘location’ of Enlightenment thinking informed the subsequent colonization of the world with a certain mindset and violence. For posthuman feminist Rosi Braidotti, the alienation of the Enlightenment is rooted in colonial, slave-holding imperialism. She describes how the ‘lofty European ideals of Enlightenment-based rational progress and emancipation rest on the world-historical phenomena of colonialism, imperialist conquest, and trade and slaves, women, animals, and earth resources’ (Braidotti, 2009: 527). It could only occur by the dualist separation of ‘rational masculinity’ from natural, ‘feminized’ objects. The dualism that separated humanity’s emancipation from the pace of the seasons and the constraints of nature are best announced by Descartes in 1641 in the Second Meditation, on the prioritization of subjectivity and the nature of the rational mind: I suppose therefore that all things I see are illusions; I believe that nothing has ever existed of everything my lying memory tells me. I think I have no senses. I believe that body, shape, extension, motion, location are functions. What is there then that can be taken as true? Perhaps only this one thing, that nothing at all is certain. (1980: 7)Descartes argues for the elevation of the mind over the body, rational deductive logic over bodily sensations, dreams and intuitions. Descartes’ scepticism about the evidence of his own body and its senses redoubles and legitimizes rational deduction as the *only* reliable form of producing knowledge. It also places all ‘objects’ at a ***remove*** from the thinking subject. The process of rational deduction completely relies on the close association of cause and effect. As science developed its positivist outlook, this reliance on universal rationality has also assumed universal replicability in cause and effect. After Heidegger’s concept of the *Gestell*, this Cartesian emphasis on subjective rationality and its reliance on cause and effect can be understood as the ‘ordering of order’.

Dualisms were famously analysed by feminists like Carolyn Merchant (1980) and Val Plumwood (2002), and show how Descartes’ hyper-separation of rationality from the phenomenon of the body produces a cascade of other dualisms: mind over body, rationality over emotion, individual subject over natural object, culture over nature. Unpacking the dualist separation of the objective knowing rational individual from other objects, including one’s own body, has gone through several important milestones. A particularly hermeneutic and historical version of phenomenology has importantly reinstated the role of the senses, in relationship to materials, into the analysis of cognition (Heidegger, 1962; Kisiel, 2002).

In his early work *Being and Time* (first published in 1927), Heidegger (1962) shows how things are ‘ready to hand’ in a largely unconscious, but world-making way. Everyday items such as chairs, tables, forks, lights and so on shape the way we understand our surroundings, and ourselves. Things ‘world’ us. He goes further with the concept of the *Gestell*, or technological horizon of thought, and shows us how a culture’s technologies shape the way people think and, thus, shape the way people and the environment interact (Heidegger, 1977). Modern technology based on the dense energy and power of fossil fuels is vastly different from the prevailing technologies in historical Indigenous society. Indigenous societies have sophisticated technological innovations that shape their understanding of the world but these are based on the wind, ocean and sun, not the energy density of fossil fuels, and are more attuned to the needs of other species and the natural environment. The pace might have changed, but the ethos of interactivity with the wild remains.

**Duality and the ordering of order**

Enlightenment education introduces students to the rational framework of knowledge, and the assumptions that empirical rationality can expose all modes of cause and effect. This taxonomy of essential reality that is available to rational contemplation has created tremendous opportunity to master nature with an embedded antagonism to the ‘savage’, the ‘wild’ and ‘nature’. Max Weber, for example, has this to say about essential reality: The increasing intellectualisation and rationalisation … indicate an increased and general knowledge of the conditions under which one lives. It means … the knowledge or belief that if one but wished one could learn it at any time. Hence, it means that principally there are no mysterious incalculable forces that come into play, but rather that one can, in principle, master all things by calculation. This means that the world is disenchanted. One need no longer have recourse to magical means in order to master or implore the spirits, as did the savage, for whom such mysterious powers existed. Technical means and calculations perform the service. (1948: 138, quoted in Zinn, 2016: 3).Famously, technical calculations have provided the information needed by industrialism to expand. Combined with classical economics, industrial production has taken over as the normative model for creating the goods that service modern consumer society. Consumer society makes use of enormous energy to automate cause and effect. Modernity replaces labour with machinery. Natural materials are examined for their use value in production. Mining from one place is assembled at another place, and sold somewhere else altogether. Where productivity was once local, it is now global. Where environmental impact was once immediate, it is now planetary.

The ordering of order is understood as ‘optimistic’ by Weber M 1948 [1919], Feenberg (2002), Zinn (2016) and others, with an assumption that technological innovation can solve anything. In contrast, a pessimistic view of technology focuses on the ignored externalities of pollution, resource exhaustion, the ozone hole, and climate change, which seems endemic to fossil fuel based technology. It is no longer possible to ‘forget’ or ‘deny’ that climate change is happening, nor that it is induced by human activity (IPBES, 2019). There is a prevailing sense of hopelessness about limiting greenhouse gas ***emissions***, which have steadily climbed since the beginning of the Industrial Revolution. It can feel as if toxic waste, plastic pollution, deforestation and climate change are entrenched, and there is nothing we can do about it (Hansen et al., 2016). Modernity is so committed to global industrial consumerism that it appears there is no alternative.

The two elements go together; rational control on the one hand is inadvertently resulting in climatic upheaval and catastrophe on the other. During the Enlightenment we situated ourselves as Masters of the Universe, taking over the role from the gods (Nietzsche, 1982). But our simplistic notion of linear progress, of mechanistic cause and effect, only resulted in short-term mastery. The longer-term impacts are calamitous. The wild has resurrected itself in unprecedented upheaval, reasserting the unknown, the unknowable, the unpredictable, as feedbacks exacerbate the impact of anthropocentric pollution. The ‘mysterious powers of the Savage’ are emerging, despite Weber’s confidence in rationality and certainty. The essential paradigm of rationality, and its objective taxonomy of simplistic, linear cause and effect, have to be re-appraised as questionable. The antidote is to rediscover the wild; to loosen our grip on control, and to allow ourselves a place within nature instead of over and above, in a position of superiority and alienation.

The failures of Enlightenment modernity and capitalism are becoming clear. But less clear are the concepts to replace Enlightenment fundamentals. To unpack this further, it is worth deepening the understanding of *whakapapa* and its epistemology, which is the Maori ‘scientific’ taxonomy of genera. Unlike the alienation of Enlightenment thinking, Indigenous philosophy tends to emphasize ecological integration and bioegalitarianism.

**Indigenous philosophy; Maori whakapapa and whenua**

Indigenous modes of technology, ownership, ecology and knowledge production are based on the inter-relationship of all things. The concept of *whakapapa* is fundamental to the Maori world view. *Whakapapa* is usually understood as genealogy. It is the categorization of all species and all geological events in a fully articulated set of familial relationships. *Whakapapa*, it could be argued, is an alternative framing to the technological *Gestell* analysed by Heidegger. Te Haumoana White describes *whakapapa* as strata (personal communication, 2019). *Whakapapa* could be understood as a kind of evolutionary theory, similar to the claves of contemporary biology. It is a geology of morals (Deleuze and Guattari, 1999). Indigenous communities are embedded in their landscapes as a form of historical social psychology that engages biology, geology, genealogy, culture and memory in a palimpsest of narrative that goes back 30 generations or more and reaches forward a comparable time span.

The concept of *whakapapa* is usually interpreted as genealogy, and the emphasis is on ancestors – usually human. This can easily become a positioning of the individual vis-à-vis their illustrious precursors, as a kind of political identity politics. Cherryl Wairea i te Rangi Smith argues for a much more encompassing conception of *whakapapa*: ‘Nowadays *whakapapa* is becoming more reconstructed as a means of identity whereas it actually maps out the nature of existence’ (2000: 46).

That bigger conceptual apparatus of Maori *whakapapa* is as a genealogical taxonomy that carefully elucidates the species and genera, and situates humanity in close kindred with the geology, the ocean, the ***forest***, the birds, each type and variation of tree, of lizard, bat, insect, rock formation, star, galaxy. Humanity is linked by blood, by birth, by the nurturing placenta of the ***land*** and the flow of water. *Whakapapa* is a philosophical taxonomy, akin to Aristotle’s categories of species and genera in the *Metaphysics*, but without the hierarchy of rationality*. Whakapapa* also delineates the interconnectedness of all beings. *Whakapapa* can mean to layer (in a physical sense) (Mika, 2014: 53). Carl Mika breaks open the conceptual basis; ‘to become (“whaka”) earth (“papa”)/be embraced towards Papa (mother earth); to cause to become (“whaka”) earth (“papa”)’ (Mika, 2014: 53). Mika engages the dynamic evolving of becoming, in this phrase. *Whakapapa* is not merely a description of a static field of genera, but a changing, impacting, motive environment, where the self is also in transition.

Genealogy, strata and the becoming-earth aspect of *whakapapa* resonate with another important term, *whenua*. *Whenua* means both ‘placenta’ and ‘***land***’. They are not segregable. *Whenua* is the reciprocal nurturing of people and ***land***. *Whenua* literally means placenta and umbilical cord and it is associated with the woman’s pregnant body; at the same time, it is the word for the earth. *Papatuanuku* is the earth goddess, and her husband is *Ranginui*, the sky god. So the earth is always understood as female, fecund, ripe, nurturing, abundant.

In Maori, knowledge, language and thinking are not reduced to mere logical rationality. The way of language is immanent with the embodiment of entrails, placenta and ***land***. *Te Reo*, or language, resonates with the earthy guts of things. Thinking is misrepresented as an internal function of the mind only. Maori go beyond the enunciation emerging between each separate individual human to the shared discourse of the rivers, the ***forest***, the ocean, the air as personages. Delamere evokes language, *Te Reo*, thus: In the grander scheme of things, traditional Te Reo are the voices of nature; the jolt of an earthquake, the song of a bird, the rustling of leaves, the rumbling of thunder before a storm, the piercing bolt of lightning in the night sky, the rushing waves of a tsunami, the cry of a whale, the fresh smell of rain on the earth. (Delamere, n.d., quoted in Mika, 2014: 49) Far from the alienated rational thinking of the individual Enlightenment subject, Maori thinking, *whakaaro*, is firmly embodied: by the stomach and by ***land***: In a Maori sense, both body and the thing being focused on are results of an activity that is not explicable through the common, economical verb ‘to think.’ Smith (2000) asserts that whakaaro means ‘*to cast attention to*’, which he places as an ‘activity of the stomach and the entrails.’ He continues ‘the stomach is associated with the *ira tangata* aspect or earthly component of that which forms the basis of action.’ It is not, however, ‘the actual process of rational thought’ (58) but a concerned inclination towards the world that *whakaaro* heralds. (Mika, 2014: 52)Thought is far more than logic (though not devoid of logic). Embodied, emotional cognizance is steeped in context, relationality, awareness and an orientation that gathers together with the ***land***, and emerges from it, as the foundation of thought. *Whenua* is ***land*** and people, as a collective noun. Hyper-separation of ***land*** from the people, or objects from rational subjectivity, is not possible within the orientation of the Maori language. Takirirangi Smith explains: ‘*Tangata whenua* truth is not an objectified, definitive truth but a recognition of relationships and interconnectedness which defines the uniqueness of things and individuals’ (2000: 59). Mika quotes Pohatu to explain how the language emerges (*take*) from the collection of thinking and people: ‘Kai to reo ōna ake whakaaro e puputia ai ngā take pū Māori’ (Pohatu, n.d.: 2, quoted in Mika, 2014: 52). When man thinks, one is collected and is guided along the path between those entities, for “papa,” as the precursor of humanity, also brings with it ‘rangi,’ or sky. One is hence attuned (another meaning of ‘rangi’) towards the movement of ‘vaulting path of the sun, the course of the changing moon, the wandering glitter of the stars, the years seasons and their changes, the light and dusk of day, the gloom and glow of night, the clemency and inclemency of the weather’ (Heidegger, 1971: 149). Thinking is an immediate acknowledgement of that attunement even when the sky is not thought of, or when it is absent. As a derivative of ‘Papatuanuku,’ or ‘rock foundation beyond expanse’ (Marsden, 2003: 22), earth’s spreading out through rock and water is deeply concerned with the sky. (Mika, 2014: 55)The wild is brought along with us. It is in nature and it is part of our culture. It is our bodies. The wild is irrefutable. Heidegger’s concept of the technological horizon of thought showed how the wild was obscured and forgotten – repressed – by the ordering of order. The repression of wilderness was created by alienating nature as an object, and this included our own bodies, which were subsumed by Enlightenment rationality. *Whakapapa* brings the wild back into view, and this will enable society to transition beyond the exploitation of modernity, towards a more integrated, quite possibly high tech, planetary culture.

**Bioegalitarianism versus the end of Nature**

What would happen if we took up the invitation, issued from the feminist critique of solipsist dualism, and from Indigenous philosophy – to embrace connectivity, respect and eco-egalitarian rights? These political strategies are bringing pressure to bear on the current order of alienation. In Ecuador, the Cochabamba Declaration lays out the Rights of Water (2000). In New Zealand, Maori have fought for the Rights of Personhood for the Urewera Mountains (2014) and the Wanganui River (2017). The concept is spreading, and in India the River Ganges is partially protected in the same way (2017). The political impacts could be immense. If deforestation threatens the water quality of the Wanganui river, court action can now be taken. Or if foreign multinationals try to exploit fresh water there – the river can fight back. Contrast that situation with the draining of the water table amidst the 20-year drought in Australia by thirsty coal miners and bottled water corporations.

When we understand the whole as an inter-related, entangled field, then industrial operations cannot separate and disclaim the environmental impact as an alienated, forgotten ‘externality’. The philosophy underpinning economics has to change. Education and policy will orientate around ecological symbiosis instead of the hierarchized misunderstanding of Darwin’s ‘survival of the fittest’. Instead of prioritizing rationality at the expense of the Other, education will become more radically bioegalitarian, encompassing the animal kingdom, the insects, the microbes, the geological strata, the atmosphere; the entire *whakapapa* of genealogical relations. Rosi Braidotti puts it this way: This materialist approach has important ethical implications. In terms of the human/animal interaction, the familiar ego saturation of the past is replaced by a deep bioegalitarianism, a recognition that we humans and animals are in this together. The bond between us is a vital connection based on sharing this territory or environment on terms that are no longer hierarchical or self-evident. They are fast evolving and need to be renegotiated accordingly. (2009: 528) Understanding the deep-seated change that bioegalitarian ethics introduces shows us why the colonial genocides were so harsh. At stake was permission to pollute, permission to exploit, to mine, to wreak untold damage – without reprisal. It was a philosophical narcissism, and economic and policy entitlement. The philosophy of rational individualism and the myth of objectivity permeated education, and it enabled the industrial complex to unfold, successfully unchecked. Now, climate change and pollution have gone so far that the planet is in a mass extinction event (Hansen et al. 2016; IPBES, 2019).

The impact of pollution on future generations was ‘discounted’ by economists, on the grounds that monetary inflation would be able to pay for redress in the future more cost-effectively than now (Hickel, 2018). But climate change is now and the costs of ignoring it are now (Irfan, 2019). Children in schools all over the world are following Greta Thunberg’s example, and striking against climate change. They are demanding a future, rather than untold hardship. Because they are young and have nothing invested in private property or the status quo, their voices for change are clear, and vibrant.

Climate change has demonstrated, as nothing else has, just how toxic those forgotten economic ‘externalities’ really are. The future is in bioegalitarianism, where we teach children to live a symbiotic life with the wild, not a hierarchical life, over and against it.

The ordering of order is at the core of the colonial enterprise. This is the reason that colonial observers could not merely sit back and observe the new species and cultures that they came across. As the English massacre and rule of the Celts beginning in Ireland in the 1300s, indigenous integration with the environment got in the way of the colonial reconceptualization of nature as privately owned resource. Indigenous knowledge ensures a level of mutual respect and communal layering of knowledge, and resource use, that is not amenable to private ownership or the exploitation of people and nature as ‘resources’. Heidegger’s argument that the ordering of order enabled a reconfiguring of the *Gestell*, a technological alienation that produces all aspects of the world as consumer items waiting in standing reserve to meet demand, is vital to comprehend the relationship between colonialism, modernity and capitalism. Enlightenment philosophy and Newtonian science are key points of justification for the alienation, or ‘freedom’, of people from the constraints of nature.

The wild complexities of impacts and feedbacks are not strictly reducible to linear cause-and-effect relationships. The ramifications of bioegalitarianism are to take Indigenous and embodied thought seriously. From here, a new trajectory is set off. It will engage Lo-Tek (Watson, 2020) alongside Hi-Tek, but it will be orientated towards ecological diversity and respect, instead of the mining mentality of consumerism. We can hope to leave oil in the ground, as we generate energy, and other technologies with more efficiency, subtlety and less energy density. Biomimicry will inform our architecture and design, reducing the need for high-energy refrigeration or heating units. Indigenous design will influence everything from boat building to permaculture. We will not privilege ‘progress’ or ‘economic growth’ at the expense of culture and ecosystems. Instead, the wild will come along with us, integrated in the philosophical, economic and policy norms that underpin education, media, governance and trade. The beginnings of this approach are not yet visible in the prevailing neoliberal New Zealand curriculum, but can be seen in the Victorian schools’ curriculum, ‘Learning about sustainability’ (Victorian Curriculum F-10, n.d.). In this document, every aspect of the curriculum, from poetry to mathematics, engages with climate ecology. The standards at each level of schooling seem a little high to me, but the ethos and detail are exemplary.

A multitude of forms of economics and global trade have been around for thousands of years. The Silk Road is testament to the long-frequented trade routes of earlier civilizations. Technology itself has had sophisticated iterations, including clockwork (Greece, 206 BC) and an electric battery (Egypt), so it is not technology per se that is problematic (Irwin, 2018). We have a global population of 7.8 billion, still growing to a peak of some 10 or 11 billion by the end of the century, which makes relying on romantic local pastoralism impossible. The foreclosure of the future in the ordering of order is avoidable. It requires a reinvigoration of ancient ways of knowing, a re-emergence of respect for our ancestors, and our more-than-human kin. It is an engagement with contemporary physics, and an abandonment of the simplistic premises of Newtonian objectivity as reduced to cause and effect, as the underlying ‘progressive’ assumption of policy and economics. The ***forest*** fires in Australia and elsewhere around the globe have killed over 1.25 billion animals. Humanity is not the only species at risk of climate change. The pathway is increasingly clear. We are not merely rational individuals alienated from the ***land***. We are *whenua,* and we are part of the wild.

**Notes**

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[***Federal Energy Regulatory Commission Issues Letter providing the Scoping Document 2 for the North Hartland Hydroelectric and Clay Hill Road Line 66 Transmission Projects under P-2816 et al***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:60R9-2V51-JDG9-Y3GN-00000-00&context=1516831)

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**Length:** 7939 words

**Body**

Washington: Federal Energy Regulatory Commission Issues the followingFERC Correspondence With Government AgenciesScoping Document toENERGY PROJECTS, OFFICE OF

FEDERAL ENERGY REGULATORY COMMISSIONWASHINGTON, D.C 20426August 27, 2020OFFICE OF ENERGY PROJECTSProject No. 2816-050 – VermontNorth Hartland Hydroelectric ProjectNorth Hartland, LLCProject No. 12766-007– VermontClay Hill Road Line 66 Transmission ProjectGreen Mountain Power CorporationVIA FERC SERVICESubject: Scoping Document 2 for the North Hartland Hydroelectric and Clay HillRoad Line 66 Transmission ProjectsTo the Parties Addressed:The Federal Energy Regulatory Commission (Commission) is reviewing anapplication, filed on November 26, 2019, by North Hartland, LLC (North Hartland) torelicense the North Hartland Hydroelectric Project No. 2816 (North Hartland Project) andan application, filed on November 22, 2019, by Green Mountain Power Corporation(Green Mountain Power) to relicense the Clay Hill Road Line 66 Transmission ProjectNo. 12766 (Clay Hill Project). The North Hartland Project is located on theOttauquechee River in Windsor County, Vermont. The North Hartland Project occupies20.8 acres of federal ***land*** managed by the U.S Army Corps of Engineers (Corps). TheClay Hill Project is located in Windsor County, Vermont, and does not occupy anyfederal ***land***.Pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended,Commission staff intends to prepare an environmental assessment (EA), which will beused by the Commission to determine whether, and under what conditions, to issue newlicenses for the projects. To support and assist our environmental review, we haveconducted a public scoping process to ensure that all pertinent issues are identified andanalyzed, and that the EA is thorough and balanced.Our preliminary review of the environmental issues to be addressed in our EA wascontained in Scoping Document 1 (SD1), which was issued on May 29, 2020. We20200827-3042 FERC PDF (Unofficial) 08/27/2020Project Nos. 2816-050 and 12766-007 2requested comments on SD1 to hear the views of all interested entities on the scope ofissues to be included in the EA. We have revised SD1 based on the written comments wereceived throughout the scoping process.The enclosed Scoping Document 2 (SD2) supersedes SD1. Key changes fromSD1 to SD2 are identified in bold, italicized type. SD2 is issued for informational use byall interested entities; no response is required. If you have any questions about SD2, thescoping process, or how Commission staff will develop the EA for these projects, pleasecontact William Connelly at (202) 502-8587 or [*william.connelly@ferc.gov*](mailto:william.connelly@ferc.gov) Additionalinformation about the Commission’s licensing process and the North Hartland and ClayHill Projects may be obtained from our website at [*http://www.ferc.gov*](http://www.ferc.gov) Enclosure: Scoping Document 220200827-3042 FERC PDF (Unofficial) 08/27/2020SCOPING DOCUMENT 2NORTH HARTLAND PROJECT NO. 2816-050CLAY HILL ROAD LINE 66 TRANSMISSION PROJECT NO. 12766-007VERMONTFederal Energy Regulatory CommissionOffice of Energy ProjectsDivision of Hydropower LicensingWashington, D.C August 202020200827-3042 FERC PDF (Unofficial) 08/27/2020iiTABLE OF CONTENTS1.0 INTRODUCTION .................................................................................................... 42.0 SCOPING .................................................................................................................. 72.1 PURPOSES OF SCOPING ................................................................................. 72.2 COMMENTS ON SCOPING ............................................................................... 82.2.1 Issues Raised During Scoping ......................................................................... 83.0 PROPOSED ACTION AND ALTERNATIVES ................................................. 113.1 NO-ACTION ALTERNATIVE ....................................................................... 113.1.1 Existing Project Facilities .............................................................................. 123.1.2 Existing Project Operation ............................................................................. 133.2 APPLICANT’S PROPOSAL ........................................................................... 143.2.1 Proposed Project Operation and Environmental Measures ........................... 143.3 DAM SAFETY................................................................................................... 153.4 ALTERNATIVES TO THE PROPOSED ACTION ..................................... 153.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILEDSTUDY ................................................................................................................. 153.5.1 Project Decommissioning ............................................................................. 164.0 SCOPE OF CUMULATIVE EFFECTS AND SITE-SPECIFIC RESOURCEISSUES .................................................................................................................... 164.1 CUMULATIVE EFFECTS .............................................................................. 164.1.1 Resources that could be Cumulatively Affected ............................................. 174.1.2 Geographic Scope ........................................................................................... 174.1.3 Temporal Scope .............................................................................................. 184.2 RESOURCE ISSUES ........................................................................................ 184.2.1 Geology and Soils Resources ......................................................................... 184.2.2 Aquatic Resources .......................................................................................... 194.2.3 Terrestrial Resources ...................................................................................... 194.2.4 Threatened and Endangered Species ............................................................. 194.2.5 Recreation, ***Land*** Use, and Aesthetic Resources ........................................... 194.2.6 Cultural Resources ......................................................................................... 204.2.7 Developmental Resources .............................................................................. 205.0 EA PREPARATION SCHEDULE ....................................................................... 206.0 PROPOSED EA OUTLINE .................................................................................. 217.0 COMPREHENSIVE PLANS ................................................................................ 2220200827-3042 FERC PDF (Unofficial) 08/27/2020iii8.0 MAILING LIST ..................................................................................................... 24LIST OF FIGURESFigure 1. 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On November 26, 2019, North Hartland, LLC (North Hartland) filed anapplication for a new license for the North Hartland Hydroelectric Project (NorthHartland Project, or project).2 On November 22, 2019, Green Mountain PowerCorporation (Green Mountain Power) filed an application for a new license for the ClayHill Road Line 66 Transmission Project (Clay Hill Project, or project).3The North Hartland Project is located on the Ottauquechee River, in WindsorCounty, Vermont (Figure 1). The project has a total authorized capacity of 4.137megawatts (MW), including a 4-MW turbine and a 0.137-MW turbine. The averageannual energy production of the 4-MW turbine was 13,228 megawatt-hours (MWh) from2014 through 2018, and the average annual energy production of the 0.137-MW turbinewas 763 MWh from 2014 through 2016. The Clay Hill Project is located in WindsorCounty, Vermont (Figure 2). The project consists of a 2.3-mile-long transmission linethat serves as the primary transmission line for the North Hartland Project. A detaileddescription of each project is provided in section 3.0 (Proposed Action and Alternatives).1 16 U.S.C § 791(a)-825(r) (2012).2 The original license for the North Hartland Project was issued with an effectivedate of December 1, 1981, for a term of 40 years, and expires on November 30, 2021.Vermont Electric Cooperative, Inc., 17 FERC ¶ 62,307 (1981).3 The transmission line associated with the Clay Hill Project was originallyincluded in the license for the North Hartland Project. On May 15, 2007, thetransmission line was transferred to Central Vermont Public Service Corporation,redesignated as Project No. 12766, and issued a license with an effective date of May 1,2007, and an expiration date of November 30, 2021. North Hartland, LLC and CentralVermont Public Service Corporation, 119 FERC ¶ 62,130 (2007).20200827-3042 FERC PDF (Unofficial) 08/27/20205Figure 1. Location of the North Hartland Project and other FERC-licensed hydroelectricprojects in the Ottauquechee River Basin (Source: Staff).20200827-3042 FERC PDF (Unofficial) 08/27/20206Figure 2. Location of the Clay Hill Project (Source: Clay Hill Project LicenseApplication).The National Environmental Policy Act (NEPA) of 1969,4 the Commission’sregulations, and other applicable laws require that we independently evaluate theenvironmental effects of relicensing the North Hartland and Clay Hill Projects asproposed, and also consider reasonable alternatives to the proposed actions. At this time,we intend to prepare an environmental assessment (EA) that describes and evaluates theprobable effects, including an assessment of the site-specific and cumulative effects, if4 42 U.S.C §§ 4321-4370(f) (2012).20200827-3042 FERC PDF (Unofficial) 08/27/20207any, of the proposed actions and alternatives. Preparation of the EA will be supported bythis scoping process to ensure identification and analysis of all pertinent issues.Although our current intent is to prepare an EA, there is a possibility that anenvironmental impact statement (EIS) will be required. The scoping process will satisfythe NEPA scoping requirements, irrespective of whether the Commission issues an EA oran EIS.2.0 SCOPINGThis Scoping Document 2 (SD2) is intended to advise all participants as to theproposed scope of the EA. This document contains: (1) a description of the scopingprocess and schedule for the preparation of the EA; (2) a description of the proposedaction and alternatives; (3) a preliminary identification of environmental issues; (4) aproposed EA outline; and (5) a preliminary list of comprehensive plans that areapplicable to the project.2.1 PURPOSES OF SCOPINGScoping is the process used to identify issues, concerns, and opportunities forenhancement or mitigation associated with a proposed action. In general, scoping shouldbe conducted during the early planning stages of a project. The purposes of the scopingprocess are as follows: invite participation of federal, state, and local resource agencies; Indian tribes;non-governmental organizations (NGOs); and the public to identify significantenvironmental and socioeconomic issues related to the proposed project; determine the resource issues, depth of analysis, and significance of issues tobe addressed in the EA; identify how the project would or would not contribute to cumulative effects; identify reasonable alternatives to the proposed action that should be evaluatedin the EA; solicit from participants available information on the resources at issue; and determine whether there are resource areas and/or potential issues that do notrequire detailed analysis during review of the project.20200827-3042 FERC PDF (Unofficial) 08/27/202082.2 COMMENTS ON SCOPINGCommission staff issued Scoping Document 1 (SD1) on May 29, 2020, to enableresource agencies, Indian tribes, NGOs, and the public to effectively participate in andcontribute to the scoping process. In SD1, we requested clarification of the preliminaryissues concerning the North Hartland and Clay Hill Projects and identification of any newissues that need to be addressed in the EA. We revised SD1 following our review ofwritten comments filed during the scoping comment period, which ended June 28, 2020.This SD2 presents our current view of issues and alternatives to be considered in the EA.To facilitate review, key changes to resource issues from SD1 are identified in bold anditalicized type.Written comments were received from the following agencies and entities:Commenting Entity Filing DateVermont Agency of Natural Resources (Vermont ANR) June 29, 2020Vermont Division for Historic Preservation (Vermont DHP) June 29, 2020Connecticut River Conservancy (CRC) June 29, 2020All comments received are part of the Commission’s official record for theproject. Information in the official file is available for review on the Commission'swebsite at [*http://www.ferc.gov*](http://www.ferc.gov) using the 'eLibrary' link. At this time, the Commissionhas suspended access to the Commission’s Public Reference Room due to theproclamation declaring a National Emergency concerning the Novel Coronavirus Disease(COVID-19) issued by the President on March 13, 2020. For assistance, please contactFERC at [*FERCOnlineSupport@ferc.gov*](mailto:FERCOnlineSupport@ferc.gov), (866) 208-3676 (toll free), or (202) 502-8659(TTY).2.2.1 Issues Raised During ScopingThe issues raised by participants in the scoping process are summarized andaddressed below. Note that the primary purpose of SD2 is to identify issues to beanalyzed in the EA. The summaries below do not include every comment receivedduring the scoping process. We revised SD1 to address only those comments relateddirectly to the scope of environmental issues. We do not address comments that arerecommendations for license conditions, such as protection, mitigation, and enhancement(PM&E) measures, as these comments will be addressed in the EA or any license ordersthat are issued for these projects. We will request final terms, conditions,20200827-3042 FERC PDF (Unofficial) 08/27/20209recommendations, and comments when we issue our Ready for Environmental Analysisnotice. Finally, we do not address comments or recommendations that are administrativein nature, such as requests for changes to the mailing lists. Those items will be addressedseparately.Cumulative EffectsComment: Vermont ANR recommends that staff consider the cumulative effectsof project operation on resident fish species due to the presence of the North HartlandProject and other hydropower projects in the basin that could affect the ability for fish tomove during different times of the year and during different life stages.Response: As indicated below in section 3.1.1, the North Hartland Dam is ownedby the U.S Army Corps of Engineers’ (Corps) and is not part of the North HartlandProject. The Commission’s licensing authority does not extend to the Corps’ dam, but islimited to the construction, operation, and maintenance of the non-federal project worksdiscussed in section 3.1.1 However, resident fish species could be entrained in the NorthHartland Project’s turbines if they attempt to pass downstream of the project. Therefore,staff revised section 4.1.1, Resources that could be Cumulatively Affected, section4.1.2, Geographic Scope, and section 4.2.2, Aquatic Resources, to include residentfish species as a resource that could be cumulatively affected by the operation of theNorth Hartland Project in combination with the Corps’ North Hartland Dam and otherdams and activities in the Ottauquechee River Basin.Comment: Vermont ANR and CRC recommend extending the downstreamboundary of the geographic scope of the cumulative effects analysis for migratory fish toLong Island Sound, rather than the confluence of the Ottauquechee and ConnecticutRivers. Vermont ANR states that American eel and sea lamprey must migrate upstreampast several dams on the Connecticut River before reaching the Ottauquechee River andthe North Hartland Project.Response: Based on the potential effects of the North Hartland Project andother activities in the Ottauquechee and Connecticut River Basins on migratory fish,staff revised section 4.1.2, Geographic Scope, to include the Ottauquechee andConnecticut Rivers from the headwaters of the Ottauquechee River to the mouth of theConnecticut River in the Long Island Sound as the geographic scope for ourcumulative effects analysis of migratory fish species.20200827-3042 FERC PDF (Unofficial) 08/27/202010Aquatic ResourcesComment: Vermont ANR comments that fish impingement and entrainment werenot specifically identified as resource issues that would be addressed in the EA, but fishcould be entrained in the North Hartland Project’s turbines.Response: Section 4.2.2 of SD1 generally stated that the EA would include ananalysis of the effects of operation and maintenance of the North Hartland Project onfishery species. For clarity, staff revised section 4.2.2 to specifically state that the EAwill include an analysis of the effects of turbine entrainment and impingement onresident and migratory fish species.Comment: CRC comments that the EA should consider the cumulative effects ofproject operation on the federally endangered dwarf wedgemussel (Alasmidontaheterodon), which relies on host fish species to complete its development and dispersal toadditional habitat areas. CRC states that the dwarf wedgemussel is native to the entireConnecticut River watershed, and the Vermont and New Hampshire Wildlife ActionPlans indicate that dams and altered hydrology have impacted these and other threatenedfreshwater mussels.Response: Based on the potential effects of the North Hartland Project onaquatic habitat in the Ottauquechee River in combination with the effects of otheractivities in the Ottauquechee River Basin, staff revised section 4.1.1, Resources thatcould be Cumulatively Affected, section 4.2.2, Geographic Scope, and section 4.2.4,Threatened and Endangered Species, to include dwarf wedgemussel as a resourcethat could be cumulatively affected by the project.Recreation, ***Land*** Use, and Aesthetic ResourcesComment: CRC comments that the EA should consider the cumulative effects ofthe North Hartland Project on recreational use because the North Hartland Dam is one ofmany dams on the Ottauquechee River that impedes recreational use by paddlers andpeople tubing on the river. CRC states that the North Hartland Dam also serves as abarrier to the free movement of resident fish, thereby impacting angling.Response: The Corps’ North Hartland Dam is not part of the North HartlandProject, and there is no indication that the North Hartland Project would contribute to thecumulative effect of dams on recreational use, such as boating, tubing, or angling. InSD1, staff indicated in section 4.2.5, Recreation, ***Land*** Use, and Aesthetic Resources, that20200827-3042 FERC PDF (Unofficial) 08/27/202011we would address the effects of continued operation and maintenance of the NorthHartland Project on recreation resources. Therefore, no change to SD1 is needed.Cultural ResourcesComment: The Vermont DHP states that although the existing operation of theClay Hill Project’s transmission line would have no effect on any historic properties, anychange to project components, including pole replacements, would need to be evaluatedfor potential effects to historic properties that are listed in or eligible for inclusion in theNational Register of Historic Places.Response: In SD1, staff indicated in section 4.2.6, Cultural Resources, that wewould address the effects of operation and maintenance of the projects on historicproperties. Therefore, no change to SD1 is needed.Comprehensive Development PlansComment: Vermont ANR states that it recently filed updates to thecomprehensive plans for Vermont, including updates to plans listed in SD1, as well as anew plan that is likely relevant to the North Hartland Project.Response: Staff revised the list of comprehensive plans in section 7.0 to includethe updates to the comprehensive plans for Vermont.3.0 PROPOSED ACTION AND ALTERNATIVESIn accordance with NEPA, the environmental analysis will consider the followingalternatives, at a minimum: (1) the no-action alternative, (2) the applicant’s proposedaction, and (3) alternatives to the proposed action.3.1 NO-ACTION ALTERNATIVEUnder the no-action alternative, the North Hartland and Clay Hill Projects wouldcontinue to operate as required by the current project licenses (i.e , there would be nochange to the existing environment). No new environmental protection, mitigation, orenhancement (PM&E) measures would be implemented. The no action alternative isused to establish baseline environmental conditions for comparison with otheralternatives.20200827-3042 FERC PDF (Unofficial) 08/27/2020123.1.1 Existing Project FacilitiesNorth Hartland ProjectThe North Hartland Project utilizes water from an impoundment that is created bythe Corps’ North Hartland Dam. The Corps’ impoundment has a net storage capacity of645 acre feet between a reservoir elevation of 425 and 428 feet mean sea level (msl).The North Hartland Project consists of: (1) a steel-lined intake structure in theCorps’ North Hartland Dam that is equipped with trashracks with 2-inch clear barspacing; (2) a 470-foot-long, 12-foot-diameter steel penstock that provides flow to a 4.0-megawatt (MW) adjustable blade, vertical shaft turbine-generator unit located inside of a59-foot-long, 40-foot-wide concrete powerhouse; (3) a 12-foot-diameter bypass conduitthat branches off of the 12-foot-diameter penstock about 100 feet before the powerhouse,and that empties into a 60-foot-long concrete-lined channel through a bypass control gate;(4) a 30-inch-diameter steel penstock that branches off of the 12-foot-diameter bypassconduit about 50 feet upstream of the bypass control gate, and that provides flow to a0.1375-MW fixed geometry, horizontal pump turbine-generator unit located on a raisedplatform outside of the southern wall of the powerhouse; (5) a 400-foot-long, 50 to 150-foot-wide tailrace channel; (6) a transmission line that comprises an approximately 600-foot-long, 12.5-kilovolt (kV) underground segment, and a 4,000-foot-long, 12.5-kVoverhead segment that connect the generators to Green Mountain Power’s Clay HillProject; and (9) appurtenant facilities (Figure 3).20200827-3042 FERC PDF (Unofficial) 08/27/202013Figure 3. Aerial view of the North Hartland Project facilities (Source: North HartlandProject License Application)Clay Hill ProjectThe Clay Hill Project consists of: (1) 2.3-mile-long, 12.5-kV, three-phaseelectrical line mounted on top of Green Mountain Power’s regional distribution line (Line66) along Clay Hill Road in Windsor County, Vermont, from Pole 115 to 62x; and(2) appurtenant facilities.3.1.2 Existing Project OperationNorth Hartland ProjectThe North Hartland Dam is operated by the Corps for flood control purposes.North Hartland uses the Corps’ dam outlet and flow control gates as an intake for theproject’s penstock.20200827-3042 FERC PDF (Unofficial) 08/27/202014North Hartland manages the project to meet daily peak electrical system demandusing outflow from the Corps’ North Hartland Dam, pursuant to a 2012 Memorandum ofAgreement (MOA) between North Hartland and the Corps. North Hartland remotelyoperates the project using water level monitoring sensors that are installed at the penstockintake. The project has a minimum hydraulic capacity of 25 cfs and a maximumhydraulic capacity of 835 cfs. When generating, power is diverted from theimpoundment to the intake structure, penstocks, and turbines, where it is then dischargedto the project tailrace and the Ottauquechee River.Pursuant to the MOA, North Hartland can operate the Corps’ reservoir within a 3-foot band during the winter (between 425 and 428 feet msl) and a 1.5-foot band in thesummer (between 525 and 426.5 feet msl). The MOA requires that the reservoir level bereturned to 425.5 msl by 10 a.m each day. However, North Hartland has operated theproject in a modified run-of-river mode since late 2012, where outflow is approximatelyequal to inflow except when inflow is between 60 and 120 cfs, whereupon water is storedin the impoundment in accordance with the MOA due to turbine constraints.Article 40 of the current license requires North Hartland to release a continuousminimum flow of 23 cubic feet per second (cfs) from the North Hartland Dam from July1 through October 31, and 40 cfs from the dam during the remainder of the year, or theinflow to the reservoir, whichever is less, for the purpose of protecting and enhancingaquatic resources in the Ottauquechee River.The average annual production of the 4-MW turbine was approximately 13,228MWh from 2014 through 2018, and the average annual energy production of the 0.137-MW turbine was 763 MWh from 2014 through 2016.Clay Hill ProjectThe Clay Hill Project serves as a primary transmission line for the North HartlandProject, and carries electricity exclusively generated by the North Hartland Project.3.2 APPLICANT’S PROPOSAL3.2.1 Proposed Project Operation and Environmental MeasuresNorth Hartland ProjectNorth Hartland proposes to release the following minimum and maximum flows,20200827-3042 FERC PDF (Unofficial) 08/27/202015respectively, to the downstream reach: (1) 60 and 700 cfs from October 1 through March31; (2) 160 and 835 cfs from April 1 through April 30; (3) 160 and 550 cfs from May 1through May 31; (4) 140 and 450 cfs from June 1 through June 30; and (5) 60 and 300 cfsfrom July 1 through September 30.Clay Hill ProjectGreen Mountain Power is not proposing any environmental measures.3.3 DAM SAFETYDam safety constraints may exist and should be taken into consideration in thedevelopment of proposals and alternatives considered in the pending proceeding. Forexample, proposed modifications to the dam structure, such as fish passage facilities,could impact the integrity of the dam structure. As the proposal and alternatives aredeveloped, the applicant must evaluate the effects and ensure that the project would meetthe Commission’s dam safety criteria found in Part 12 of the Commission’s regulationsand the engineering guidelines ([*https://www.ferc.gov/industries-data/hydropower/damsafety-and-inspections/eng-guidelines).3.4*](https://www.ferc.gov/industries-data/hydropower/damsafety-and-inspections/eng-guidelines).3.4) ALTERNATIVES TO THE PROPOSED ACTIONCommission staff will consider and assess alternative recommendations foroperational or facility modifications, as well as PM&E measures identified by staff,agencies, Indian tribes, NGOs, and the public.3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILEDSTUDYAt present, we propose to eliminate the following alternative from detailed studyin the EA.20200827-3042 FERC PDF (Unofficial) 08/27/2020163.5.1 Project DecommissioningAs the Commission has previously held, decommissioning is not a reasonablealternative to relicensing in most cases.5 Decommissioning can be accomplished indifferent ways depending on the project, its environment, and the particular resourceneeds.6 For these reasons, the Commission does not speculate about possibledecommissioning measures at the time of relicensing, but rather waits until an applicantactually proposes to decommission a project, or a participant in a relicensing proceedingdemonstrates that there are serious resource concerns that cannot be addressed withappropriate license measures and that make decommissioning a reasonable alternative.7The applicants do not propose decommissioning, nor does the record to date demonstratethere are serious resource concerns that cannot be mitigated if the projects are relicensed;as such, there is no reason, at this time, to include decommissioning as a reasonablealternative to be evaluated and studied as part of staff’s NEPA analysis.4.0 SCOPE OF CUMULATIVE EFFECTS AND SITE-SPECIFICRESOURCE ISSUES4.1 CUMULATIVE EFFECTSAccording to the Council on Environmental Quality’s regulations forimplementing NEPA (40 C.F.R § 1508.7), a cumulative effect is the effect on the5 See, e.g , Eagle Crest Energy Co., 153 FERC ¶ 61,058, at P 67 (2015); PublicUtility District No. 1 of Pend Oreille County, 112 FERC ¶ 61,055, at P 82 (2005);Midwest Hydro, Inc., 111 FERC ¶ 61,327, at PP 35-38 (2005).6 In the unlikely event that the Commission denies relicensing a project or alicensee decides to surrender an existing project, the Commission must approve asurrender “upon such conditions with respect to the disposition of such works as may bedetermined by the Commission.” 18 C.F.R § 6.2 (2019). This can include simplyshutting down the power operations, ***removing*** all or parts of the project, or restoring thesite to its pre-project condition.7 See generally Project Decommissioning at Relicensing; Policy Statement, FERCStats. & Regs., Regulations Preambles (1991-1996), ¶ 31,011 (1994); see also City ofTacoma, Washington, 110 FERC ¶ 61,140 (2005) (finding that unless and until theCommission has a specific decommissioning proposal, any further environmentalanalysis of the effects of project decommissioning would be both premature andspeculative).20200827-3042 FERC PDF (Unofficial) 08/27/202017environment that results from the incremental impact of the action when added to otherpast, present, and reasonably foreseeable future actions, regardless of what agency(federal or non-federal) or person undertakes such other actions. Cumulative effects canresult from individually minor but collectively significant actions taking place over aperiod of time, including hydropower and other ***land*** and water development activities.4.1.1 Resources that could be Cumulatively AffectedBased on our review of the license applications and preliminary staff analysis, wehave identified migratory fish species (i.e , American eel and sea lamprey), resident fishspecies, dwarf wedgemussel, water quality (i.e , temperature and dissolved oxygen), andwater quantity as resources that could be cumulatively affected by the continuedoperation and maintenance of the North Hartland Project, in combination with otherhydroelectric projects, the Corps’ North Hartland Dam, and other past, present, andforeseeable future activities.4.1.2 Geographic ScopeThe geographic scope of analysis for cumulatively affected resources is defined bythe physical limits or boundaries of: (1) the proposed action’s effect on the resources,and (2) contributing effects from other dams within the river basin. Because theproposed actions would affect the resources differently, the geographic scope for eachresource may vary.We have identified the geographic scope for resident fish species, dwarfwedgemussel, water quality, and water quantity to include the Ottauquechee River Basinfrom its headwaters in Killington, Vermont, to the confluence with the ConnecticutRiver. We chose this geographic scope for resident fish species because resident fishmay access suitable habitat throughout the basin upstream of the project and mayattempt to pass downstream through the North Hartland Project’s turbines. Theoperation and maintenance of the North Hartland Project, in combination with theCorps’ North Hartland Dam, and other dams and activities in the Ottauquechee RiverBasin8 could have cumulative effects on resident fish species. We chose thisgeographic scope for dwarf wedgemussel because dwarf wedgemussel could use habitatin the Ottauquechee River Basin. The operation and maintenance of the NorthHartland Project, in combination with the Corps’ North Hartland Dam, and other8 U.S Army Corps of Engineers, National Inventory of Dams (March 2020),available at [*http://nid.usace.army.mil*](http://nid.usace.army.mil) 20200827-3042 FERC PDF (Unofficial) 08/27/202018dams and activities in the Ottauquechee River Basin could have cumulative effects ondwarf wedgemussel. We chose this geographic scope for water quality and waterquantity because the operation and maintenance of the North Hartland Project, incombination with the other dams and activities on the Ottauquechee River could affectwater quality and water quantity throughout the Ottauquechee River Basin.For migratory fish species, our geographic scope includes the Ottauquechee andConnecticut Rivers from the headwaters of the Ottauquechee River in Killington,Vermont, to the mouth of the Connecticut River in the Long Island Sound. We chosethis geographic scope because migratory fish species that could be affected by theNorth Hartland Project could use habitat in these two rivers and could be exposed to anumber of hydroelectric projects and flow diversions that could have a cumulativeeffect on the fisheries resources.4.1.3 Temporal ScopeThe temporal scope of our cumulative effects analysis in the EA will include adiscussion of past, present, and reasonably foreseeable future actions and their effects oneach resource that could be cumulatively affected. Based on the potential term of newlicenses for the projects, the temporal scope will look 30 to 50 years into the future,concentrating on the effect on the resources from reasonably foreseeable future actions.The historical discussion will, by necessity, be limited to the amount of availableinformation for each resource. The quality and quantity of information, however,diminishes as we analyze resources further away in time from the present.4.2 RESOURCE ISSUESIn this section, we present a preliminary list of environmental issues to beaddressed in the EA. We identified these issues, which are listed by resource area, byreviewing the license applications and the Commission’s records for the North Hartlandand Clay Hill Projects. This list is not intended to be exhaustive or final, but contains theissues raised to date that could have substantial effects. After the scoping process iscomplete, we will review the list and determine the appropriate level of analysis neededto address each issue in the EA. Those issues identified by an asterisk (\*) will beanalyzed for both cumulative and site-specific effects.4.2.1 Geology and Soils Resources None.20200827-3042 FERC PDF (Unofficial) 08/27/2020194.2.2 Aquatic Resources Effects of continued operation and maintenance of the North Hartland Projecton water quality in the Ottauquechee River.\* Effects of operation and maintenance of the North Hartland Project on waterquantity in the Ottauquechee River.\* Effects of operation and maintenance of the North Hartland Project, includingentrainment and impingement, on resident\* and migratory\* fish species andother aquatic organisms. Effects of operation and maintenance of the projects on aquatic habitat.4.2.3 Terrestrial Resources Effects of continued operation and maintenance of the projects on riparian,littoral, and wetland habitat and associated wildlife. Effects of continued operation and maintenance of the projects on wildlifehabitat and associated wildlife.4.2.4 Threatened and Endangered Species Effects of continued operation and maintenance of the projects on the federallythreatened northern long-eared bat. Effects of continued operation and maintenance of the North HartlandProject on the federally endangered dwarf wedgemussel.\*4.2.5 Recreation, ***Land*** Use, and Aesthetic Resources Effects of continued operation and maintenance of the North Hartland Projecton recreation in the project area. Effects of continued operation and maintenance of the North Hartland Projecton ***land*** use in the project area. Effects of continued operation and maintenance of the North Hartland Projecton aesthetic resources in the project area.20200827-3042 FERC PDF (Unofficial) 08/27/2020204.2.6 Cultural Resources Effects of continued operation and maintenance of the projects on historicresources, archeological resources, and traditional cultural properties that areincluded or may be eligible for inclusion in the National Register of HistoricPlaces. Effects of continued operation and maintenance of the projects on properties oftraditional religious and cultural importance to an Indian tribe.4.2.7 Developmental Resources Economics of the projects and the effects of any recommended environmentalmeasures on the projects’ economics.5.0 EA PREPARATION SCHEDULEAt this time, we anticipate preparing a single EA. The EA will be sent to allpersons and entities on the Commission’s service and mailing lists for the North HartlandProject and the Clay Hill Project. The EA will include our recommendations foroperating procedures, as well as PM&E measures that should be part of any licensesissued by the Commission. All recipients will then have 30 days to review the EA andfile written comments with the Commission. The major milestones, including those forpreparing the EA,9 are as follows:Major Milestone ***Target*** DateReady for Environmental Analysis Notice Issued August 2020Deadline for Filing Comments, Recommendations andAgency Terms and Conditions/Prescriptions October 2020EA Issued May 2021Comments on EA Due June 20219 This schedule assumes that a single EA would be prepared. If a draft and finalEA or EIS is prepared, the ***target*** dates for comments on the draft EA or EIS may need tobe revised.20200827-3042 FERC PDF (Unofficial) 08/27/2020216.0 PROPOSED EA OUTLINEThe preliminary outline for the EA for the North Hartland and Clay Hill Projects isas follows:TABLE OF CONTENTSLIST OF FIGURESLIST OF TABLESACRONYMS AND ABBREVIATIONS1.0 INTRODUCTION1.1 Application1.2 Purpose of Action and Need for Power1.3 Statutory and Regulatory Requirements1.3.1 Federal Power Act1.3.1.1 Section 18 Fishway Prescriptions1.3.1.2 Section 10(j) Recommendations1.3.2 Clean Water Act1.3.3 Endangered Species Act1.3.4 Coastal Zone Management Act1.3.5 National Historic Preservation Act1.4 Public Review and Comment1.4.1 Scoping1.4.2 Interventions1.4.3 Comments on the Application2.0 PROPOSED ACTION AND ALTERNATIVES2.1 No-action Alternative2.1.1 Existing Project Facilities2.1.2 Project Safety2.1.3 Existing Project Operation2.1.4 Existing Environmental Measures2.2 Applicant’s Proposal2.2.1 Proposed Project Facilities2.2.2 Proposed Project Operation2.2.3 Proposed Environmental Measures2.2.4 Modifications to Applicant’s Proposal—Mandatory Conditions2.3 Staff Alternative2.4 Staff Alternative with Mandatory Conditions2.5 Other Alternatives (as appropriate)2.6 Alternatives Considered but Eliminated from Detailed Study20200827-3042 FERC PDF (Unofficial) 08/27/2020222.6.1 Project Decommissioning.3.0 ENVIRONMENTAL ANALYSIS3.1 General Description of the River Basin3.2 Scope of Cumulative Effects Analysis3.2.1 Geographic Scope3.2.2 Temporal Scope3.3 Proposed Action and Action Alternatives3.3.1 Aquatic Resources3.3.2 Terrestrial Resources3.3.3 Threatened and Endangered Species3.3.4 Recreation, ***Land*** Use, and Aesthetic Resources3.3.5 Cultural Resources3.4 No-action Alternative4.0 DEVELOPMENTAL ANALYSIS4.1 Power and Economic Benefits of the Project4.2 Comparison of Alternatives4.3 Cost of Environmental Measures5.0 CONCLUSIONS AND RECOMMENDATIONS5.1 Comparison of Alternatives5.2 Comprehensive Development and Recommended Alternative5.3 Unavoidable Adverse Effects5.4 Recommendations of Fish and Wildlife Agencies5.5 Consistency with Comprehensive Plans6.0 FINDING OF NO SIGNIFICANT IMPACT (OR OF SIGNIFICANT IMPACT)7.0 LITERATURE CITED8.0 LIST OF PREPARERSAPPENDICES7.0 COMPREHENSIVE PLANSSection 10(a)(2) of the FPA, 16 U.S.C § 803(a)(2)(A), requires the Commissionto consider the extent to which a project is consistent with federal and statecomprehensive plans for improving, developing, or conserving a waterway or waterwaysaffected by a project. Staff has identified the plans listed below that may be relevant tothe projects. Agencies are requested to review this list and inform Commission staff ofany changes. If there are other comprehensive plans that should be considered for thislist that are not on file with the Commission, or if there are more recent versions of theplans already listed, they can be filed for consideration with the Commission according to18 C.F.R § 2.19 Please follow the instructions for filing a plan at[*http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf*](http://www.ferc.gov/industries/hydropower/gen-info/licensing/complan.pdf) 20200827-3042 FERC PDF (Unofficial) 08/27/202023The following is a list of comprehensive plans currently on file with theCommission that may be relevant to the North Hartland and Clay Hill Projects:Atlantic States Marine Fisheries Commission. 2000. Interstate Fishery Management Planfor American eel (Anguilla rostrata). (Report No. 36). April 2000.Atlantic States Marine Fisheries Commission. 2008. Amendment 2 to the InterstateFishery Management Plan for American eel. Arlington, Virginia. October2008.Atlantic States Marine Fisheries Commission. 2013. Amendment 3 to the InterstateFishery Management Plan for American eel. Arlington, Virginia. August 2013.Atlantic States Marine Fisheries Commission. 2014. Amendment 4 to the InterstateFishery Management Plan for American eel. Arlington, Virginia. October2014.Connecticut River Atlantic Salmon Commission. 2018. Connecticut River AnadromousSea Lamprey Management Plan. Sunderland, Massachusetts. June 29, 2018.Connecticut River Joint Commission. New Hampshire Department of EnvironmentalServices. 2013. Connecticut River Recreation Management Plan: Upper ValleyRegion. Concord, New Hampshire.***Forest*** Service. 1993. Green Mountain National ***Forest*** ***land*** and resource managementplan. Department of ***Agriculture***, Rutland, Vermont. December 1993.National Park Service. The Nationwide Rivers Inventory. Department of the Interior,Washington, D.C 1993.U.S Fish and Wildlife Service. n.d Fisheries USA: the recreational fisheries policy ofthe U.S Fish and Wildlife Service. Washington, D.C Vermont Agency of Environmental Conservation. 1986. Vermont Rivers Study.Waterbury, Vermont.Vermont Agency of Natural Resources. 1986. The waterfalls, cascades, and gorges ofVermont. Waterbury, Vermont. May 1986.20200827-3042 FERC PDF (Unofficial) 08/27/202024Vermont Agency of Natural Resources. 1988. Hydropower in Vermont: an assessment ofenvironmental problems and opportunities. Waterbury, Vermont. May 1988.Vermont Agency of Natural Resources. 1988. Wetlands component of the 1988 Vermontrecreation plan. Waterbury, Vermont. July 1988.Vermont Agency of Natural Resources. 2018. Black and Ottauquechee Rivers TacticalBasin Plan. Montpelier, Vermont. June 2018.Vermont Department of Fish and Wildlife. 2015. Vermont’s wildlife action plan.Montpelier, Vermont.Vermont Department of Fish and Wildlife. 2017. Statewide Management Plan forLargemouth and Smallmouth Bass. Montpelier, Vermont. August 2017.Vermont Department of Fish and Wildlife. 2018. The Vermont plan for brook, brown,and rainbow trout. Montpelier, Vermont. January 2018.Vermont Department of ***Forests***, Parks and Recreation. 2013. Vermont StateComprehensive Outdoor Recreation Plan (SCORP): 2014-2018. Montpelier,Vermont. August 2013.Vermont Natural Heritage Program. New Hampshire Natural Heritage Inventory. 1988.Natural shores of the Connecticut River: Windham County, Vermont, andCheshire County, New Hampshire. December 1988.8.0 MAILING LISTThe list below is the Commission’s official mailing list for the North Hartland and ClayHill Projects. If you want to receive future mailings for the projects from theCommission and are not included in the list below, please send your request by email [*toefiling@ferc.gov*](mailto:toefiling@ferc.gov), or by mail. Submissions sent via the U.S Postal Service must beaddressed to: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888First Street NE, Room 1A, Washington, DC 20426. Submissions sent via any othercarrier must be addressed to: Kimberly D. Bose, Secretary, Federal Energy RegulatoryCommission, 12225 Wilkins Avenue, Rockville, Maryland 20852. All written andemailed requests to be added to the Commission’s mailing list must clearly identify thefollowing on the first page: North Hartland Project No. 2816-050 and/or Clay HillRoad Line 66 Transmission Project No. 12766-007. You may use the same method ifrequesting ***removal*** from the mailing list below.20200827-3042 FERC PDF (Unofficial) 08/27/202025Register online at [*https://ferconline.ferc.gov/FERCOnline.aspx*](https://ferconline.ferc.gov/FERCOnline.aspx) to be notified viaemail of new filings and issuances related to these or other pending projects. Forassistance, please contact FERC Online Support at [*FERCOnlineSupport@ferc.gov*](mailto:FERCOnlineSupport@ferc.gov) or tollfree at 1-866-208-3676, or for TTY, (202) 502-8659.Official Mailing List for the North Hartland and Clay Hill ProjectsFred ParkerChairmanConnecticut River Valley FloodCommissionPO Box 511Greenfield, MA 01302-0511FranklinDavid ShermanOperations ManagerNorth Hartland, LLC2 Commercial St.Boscawen, NH 03303-1357C. Robert Manby, Esq.Welch, Graham, and ManbyPO Box 859White River Junction, VT 05001-0858John McCaffreyRegulatory CounselStinson, Leonard, Street LLP2451 Crystal Dr.Suite 1000Arlington, VA 22202Christopher BarronCommanderU.S Army Corps of EngineersNew England District Office696 Virginia Rd.Concord, MA 01742David A. CaldwellCommanderU.S Army Corps of Engineers26 Federal Plaza, Room 2109New York, NY 10278-0090Field ManagerU.S Bureau of ***Land*** Management626 E. Wisconsin Ave.Suite 200Milwaukee, WI 53202-4618Commanding OfficerU.S Coast GuardMSO Portland259 High St.South Portland, ME 04106CumberlandLarry A. BelluzzoU.S Department of Agriculture1400 Independence Ave. SWWashington, DC 20250-0002DirectorU.S Environmental Protection AgencyWater Quality Control Branch (WQB)5 Post Office Sq.Suite 100Boston, MA 02109-395620200827-3042 FERC PDF (Unofficial) 08/27/202026U.S Geological SurveyMassachusetts-Rhode Island Dist.,WRD10 Bearfoot Rd.Northborough, MA 01532-1528WorcesterHonorable Patrick J. LeahyU.S Senate437 Russell Senate Office BuildingWashington, DC 20510Steve RoyUSDA ***Forest*** ServiceGreen Mountain & Fingerlakes N.F 231 N. Main St.Rutland, VT 05701-2412RutlandU.S ***Forest*** Service71 White Mountain Dr.White Mountain National ForestCampton, NH 03223Attorney General109 State St.Montpelier, VT 05602-2700WashingtonCoordinatorDistrict Office CoordinatorVermont Department of Fish and Wildlife1000 Mineral St.Suite 302Springfield, VT 05156-3168Pete McHughStreamflow Protection FisheriesBiologistFish and Wildlife DepartmentVermont Agency of NaturalResourcesOne National Life Drive, Davis 2Montpelier, VT 05620-3702FERC ContactVermont Department of Public ServicePO Box 20Montpelier, VT 05620-0001WashingtonVermont Department of ***Forests***,Parks, and RecreationRecreation – Waterbury Complex10 South103 S. Main St.Waterbury, VT 05676-1531WashingtonGleb GlinkaGlinka & SchwiddePO Box 7Cabot, VT 05647-000720200827-3042 FERC PDF (Unofficial) 08/27/202027Nicole S. AllenSchiff Hardin, LLP1909 K St., NWSuite 600Washington, DC 20006Teta JungelsKleinschmidt Energy & Water ResourceConsultantsPO Box 650Pittsfield, ME 04967-065020200827-3042 FERC PDF (Unofficial) 08/27/2020Document Content(s)P-2816-050etc\_SD2.PDF ................................................1-2920200827-3042 FERC PDF (Unofficial) 08/27/2020

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[***Plenty more fish in the sea?***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61YX-6Y31-DY5K-Y0M2-00000-00&context=1516831)

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**Highlight:** As the world's appetite for seafood explodes, is there really a way to eat it sustainably, asks Graham Lawton

**Body**

THE fish counter at my local supermarket has a chalkboard displaying how many different species are on sale on any given day. It is usually in the 20s, though sometimes creeps above 30. As well as staples such as cod, salmon and mackerel, it often has trout, sea bass, monkfish, langoustines, tuna, scallops, squid, catfish and flatfish.

The chiller cabinet next door has more: jellied eels and cockles in jars, mussels from Ireland, crab from Indonesia, prawns from Ecuador. In the canned goods section I can also find oysters from South Korea, crab meat from Vietnam, anchovies from the Pacific Ocean, sardines from the north Atlantic Ocean and tuna from the Indian Ocean. The freezers have yet more.

This abundance makes my head swim. I don't eat mammal or bird meat, but I do eat seafood, and I want to consume it as ethically and sustainably as possible. But I worry about overfishing and the environmental impacts of salmon farms and shrimp ponds. Most of the products on offer bear a label certifying that they were caught or farmed sustainably, or at least "responsibly". What does that mean? Who checks? Is it even possible? In other words, can I eat fish with a clear conscience?

Seafood is big business. Every year [*we collectively eat more than 155 million tonnes*](http://www.fao.org/3/ca9229en/CA9229EN.pdf), about half of it wild-caught and half farmed. To put that in perspective, we eat about [*320 million tonnes of* ***land****-reared meat a year*](https://ourworldindata.org/meat-production). Yet consumption of fish is growing faster than that of meat – around 3.1 per cent a year versus 2.1 per cent. Since 1950, human [*population*](https://www.newscientist.com/article/mg24833080-800-the-population-debate-are-there-too-many-people-on-the-planet/) [*has grown by about 175 per cent*](https://www.pewresearch.org/global/2014/01/30/chapter-4-population-change-in-the-u-s-and-the-world-from-1950-to-2050). In that same time, the amount of fish we eat has increased by 750 per cent.

This demand is sustained by a fleet of 2.9 million motorised fishing vessels and a vast and growing fish farming industry. [*More than half of the world's oceans by surface area*](https://www.wwf.org.uk/sites/default/files/2020-09/LPR20_Full_report.pdf) are now fished. Despite living on ***land***, humans are a top marine predator.

During recent Brexit negotiations, fishing rights were a major sticking point, despite the fact that this represents a relatively small part of the economy, both in the European Union and the UK. But the importance of the issue underscores the way many feel about an inherent right to the bounty of the sea.

To learn about the impact of our appetite for fish, a good first port of call is a report published every two years by the United Nations' Food and ***Agriculture*** Organization (FAO). Called *The State of World Fisheries and Aquaculture* (SOFIA), it is a monumental undertaking. As soon as one edition is finished work starts on the next.

Sea half-empty

The picture that the latest report, published last year, paints of the world's wild marine fisheries [*is surprisingly positive*](http://www.fao.org/3/ca9229en/CA9229EN.pdf). Nearly two-thirds of commercial stocks are classed as sustainable. That [*means there are enough fish to deliver the "maximum sustainable yield*](http://www.fao.org/3/i9540en/i9540en.pdf)", which is the most fish that can be caught now and in the future without the stock becoming depleted. In other words, the annual catch is equal to the annual increase in biomass through growth and reproduction. The FAO monitors just under 500 fish stocks, which produce about 75 per cent of the global catch. Stocks are [*delineated both by geography and species*](http://www.fao.org/cwp-on-fishery-statistics/handbook/general-concepts/fishing-areas-for-statistical-purposes/en/), for example north-east Atlantic cod. By this reckoning, at least half – two-thirds of 75 per cent – of fish stocks are sustainable. Let's call this the "sea half-full" view.

Stocks of the top 10 most-caught marine species, which together account for a third of all the fish caught at sea, are more sustainable than the average. By mass, 78.7 per cent of seafood that ends up on the market comes from stocks the FAO deems sustainable.

This rather upbeat assessment, however, masks a messier situation beneath the waves. "Many countries do not have research ships to go to sea and monitor the stocks," says Manuel Barange, director of the FAO's Fisheries and Aquaculture Policy and Resources Division. Even when they do, the science is challenging. It requires an estimate of the total biomass of a species within a huge geographical area, and then an assessment of whether that is enough to support the maximum sustainable yield. The margin for error is so large that a stock is considered sustainable even if it is 20 per cent lower than needed for the maximum sustainable yield.

Even with this wiggle room, the FAO says that about a third of the fish stocks it monitors are overfished, and hence on the road to collapse if nothing is done to stop the plunder. In 1974, when the FAO first started counting, 90 per cent of stocks were sustainable. Today, just 65 per cent are. Even if the level of fishing stays the same, stocks will continue declining. This is the "sea half-empty" view. "We cannot allow this to continue," said Qu Dongyu, the director general of the FAO, at the launch of the latest SOFIA report.

The failure to stop or even slow the decline in fish stocks has happened in spite of three global commitments to do exactly that. The first was signed by all 193 member states of the FAO in 1995: the [*Code of Conduct for Responsible Fisheries*](http://www.fao.org/iuu-fishing/international-framework/code-of-conduct-for-responsible-fisheries/en/). Next came the Aichi Biodiversity ***Targets*** (2010) and then the Sustainable Development Goals (2015), which both pledged to end overfishing of wild stocks by 2020 and were adopted by the more than 190 member nations of the UN.

According to Barange, the Code of Conduct was a partial success. It slowed the rate at which stocks were slipping into the "overfished" column. From 1974 to 1995, 20 per cent of stocks flipped from sustainable to unsustainable. In the 25 years since, only another 5 per cent have become unsustainable. "We are flattening the curve," says Barange. "But not sufficiently."

The Sustainable Development Goals, however, have had no discernible impact. They are framed explicitly in terms of managing fish stocks: to end overfishing by 2020 and rebuild by 2030. The 2020 ***target*** was missed, and the 2030 one is out of reach. Recovery of an overfished stock takes two to three times the species' life span; an Atlantic cod, which is one of the most overfished species, can live for 25 years, for example. "We are making progress, but it is geographically uneven and not fast enough," says Barange.

Conflicting definitions

As for the [*Aichi* ***targets***](https://www.cbd.int/sp/targets/), forget it. [*The 20 goals were supposed to be met by the end of last year*](https://www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf), but, to a first approximation, [*have been completely missed*](https://www.newscientist.com/article/2254460-massive-failure-the-world-has-missed-all-its-biodiversity-targets/). The specific ***target*** for fish set out four aims: end overfishing, put recovery plans in place, eliminate significant negative impacts on threatened species and vulnerable ecosystems, and remain within safe ecological limits. None were met. Some progress has been made on overfishing and recovery plans, but on the other two there has been "no significant change" since the ***targets*** were set in 2010.

Even where progress has been made, it is insufficient. Where fish stocks are carefully monitored and assessed and managed with an understanding of how species fit within a broader ecosystem, overfishing has stopped and recovery is under way. But only half of the world's stocks are managed like this. The other half are in poor shape, battered by unregulated, unreported and illegal fishing.

Hang on, you might think, what about the FAO's assessment that two-thirds of stocks are sustainable? There is no contradiction, says Barange. FAO and Aichi use different definitions of "stock". FAO thinks in terms of vast commercial stocks; Aichi in terms of smaller ones defined by ecology. "It depends what units you use," says Barange.

Another major concern is that sustainable doesn't necessarily mean environmentally benign. Large-scale commercial fishing, which began in earnest around 1950, can have many negative impacts on the wider ecosystem, such as the accidental catch of non-***target*** species, called by-catch. Most of the fish, seabirds and other unfortunate creatures that are caught by accident are dead or dying by the time they are tossed back into the sea. By-catch has [*fallen dramatically, from about 40 per cent of the overall catch in 2000 to about 10 per cent in 2014*](https://www.nature.com/articles/s41893-020-0506-9), but it is still considered "unsustainable" by the Convention on Biological Diversity. A [*recent study by WWF concludes that it kills more than a million marine mammals, reptiles and birds every year*](https://wwfeu.awsassets.panda.org/downloads/whatsinthenetfinal.pdf).

Lost or discarded fishing equipment is also a problem. According to some estimates, [*between 640,000 and 800,000 tonnes of "ghost gear" is cut adrift each year*](https://www.ghostgear.org/news/2020/07/07/gggi-annual-report-2019), killing untold numbers of marine animals that get caught up in it.

Certain fishing methods can also take a toll. Bottom trawling, where nets are dragged along the seabed, [*indiscriminately disrupts and damages marine habitats, possibly even contributing to pollution*](https://www.sciencemag.org/news/2020/03/fishing-trawlers-could-harm-water-quality-disrupting-seafloor-microbes) by undermining the ability of sea-floor microbes to ***remove*** harmful sediments.

According to the International Union for Conservation of Nature, which keeps track of the impacts of fisheries on threatened species, fisheries have a net negative impact, and the extinction pressure they create is growing.

Even the concept of sustainability has been questioned. "The word 'sustainable' doesn't mean anything," says Daniel Pauly at the University of British Columbia in Vancouver. "You can actually overfish sustainably – you can reduce the stock to a tiny fraction of its original abundance and fish the rest sustainably. It's like cutting an immense ***forest***, but leaving a few trees standing, which you harvest sustainably." The Canadian cod fishery once yielded 200,000 tonnes a year, for instance. Then industrial fishing quadrupled the catch, collapsing the stock in 1992. It has since recovered somewhat, and now produces around 20,000 tonnes a year – a number that is considered "sustainable", says Pauly.

"A better question to ask is, how much of the biomass that you had in the water in 1950 is left," he says. By that measure, nearly all of the world's fish stocks are profoundly depleted. "If you look at big fish, the biomass has diminished enormously, on the order of 80 to 90 per cent."

Sustainability also often fails to take into account wider ecological factors. The langoustine fishery in the Firth of Forth in Scotland, for example, is sustainable, but only because so many other species have been fished to extinction and the langoustines no longer have any natural predators, says Pauly.

You also have to consider that fishing vessels are more powerful than they once were, says Pauly. "Even though the biomass has declined, they are able to compensate by finding the few fish that remain, and being able to operate where old trawlers would not be able to," he says. "The fact that our trawlers maintain catches is not an indication that abundance has remained the same."

If that wasn't bad enough, there is also the greenhouse gas ***emissions*** of wild fishing operations to consider. According to [*a recent assessment*](https://iopscience.iop.org/article/10.1088/1748-9326/aa6cd5/pdf), per kilocalorie of food produced, wild-caught fish has a bigger global warming footprint than pork, chicken or dairy (see "Carbon costs of food", page 40). Trawler fisheries are the worst, but that is even the case for the lowest-impact wild fisheries. It is because of the huge amount of fuel needed to power long-distance travel over weeks or months, to haul heavy fishing gear, as well as the energy costs of cooling or freezing the fish.

Overall, it is obvious that wild-caught fish come with some hard-to-swallow side orders. "The story of our treatment of the oceans is a shameful one and a very frightening one," says Tara Garnett at the University of Oxford's Food Climate Research Network.

Maybe, then, the answer is aquaculture, aka fish farming. This large and rapidly growing sector already supplies 52 per cent of the fish consumed directly by humans, and is projected to increase as demand for seafood rises but the catch from the wild stays essentially flat.

Aquaculture is the fastest-growing sector of global food production. The vast majority happens in Asia, largely for local consumption. Western consumers mostly encounter it in the form of farmed salmon or shrimp. For those consumers striving to make ethical choices, that can spell trouble.

Trouble on the farm

Fish farming has some well-known and undeniable problems, says Grant Stentiford at the [*Centre for Environment, Fisheries and Aquaculture Science*](https://www.cefas.co.uk/) in Weymouth, UK. Farmed shrimp, for example, mostly comes from southern and South-East Asia and Ecuador, reared in ponds that were created by destroying mangrove swamps. "There has been a loss of habitat and biodiversity in relation to those industries. I don't think anyone can really argue about that," says Stentiford. Add in the environmental cost of feeding the shrimp and freighting them to Western markets, and their calorie-for-calorie carbon footprint can [*sometimes exceed that of beef*](https://doi.org/10.1002/fee.1482).

Salmon farming, meanwhile, has well-publicised problems with parasites, the overuse of antibiotics, escaped fish breeding with wild ones – potentially diluting the gene pool of wild fish and in some cases leading to sterile offspring – and pollution of the sea floor underneath the pens. Producers are aware of these problems and are trying to clean up their act, says Stentiford, but there is a long way to go.

Aquaculture is also considered in the Aichi ***targets***, which say that by 2020 it should be "managed sustainably, ensuring conservation of biodiversity". Unsurprisingly, the ***target*** wasn't met. Although most artisanal freshwater aquaculture is sustainable, sea-based aquaculture – called mariculture – isn't. According to the latest assessment of these ***targets***, it is responsible for "large-scale loss and destruction of coastal wetlands (especially mangroves), and pollution of soil and water".

Another huge problem with aquaculture is that, paradoxically, it often increases the pressure on wild fisheries. Salmon, tuna, sea bass and many other farmed species are top predators that eat other fish. To meet this demand, around 22 million tonnes of wild fish are caught each year and processed into fish meal. Most of these are sardines, anchovies and other small fry that are edible for humans. To make matters worse, they are mostly caught in the waters of low-income countries, which often have [*food security issues*](https://www.nature.com/articles/d41586-019-02810-2), and then exported to richer countries. "This is completely insane," says Pauly. In terms of total biomass, to rear certain species requires more wild fish for feed than you ultimately get farmed fish as a result. "Aquaculture is not a producer of fish, it's a consumer of fish. In part, aquaculture is the reason why fisheries are going down."

The most egregious example is tuna farming in the Mediterranean. "Farming of tuna needs 15 to 20 kilograms [of fish meal] per kilo of tuna," says Pauly. "And when the tuna is fattened it gets a first class ticket to Japan because nobody else can afford it."

Researchers are working on solutions, but they often involve other environmentally problematic sources of protein such as soy.

As a lover of seafood, but also of nature, I was starting to despair. Thankfully, not all aquaculture is so wasteful. There is a category called "non-fed", which includes shellfish such as mussels and oysters that feed themselves and create good habitats for other marine life. "Aquaculture is two sectors that are as separate as growing vegetables and ranching cattle," says Pauly. "The things that don't need to be fed are a net addition to the seafood available to the world. Or you feed 20 kilos of sardines to a tuna to get 1 kilo of tuna."

For all this, fed aquaculture can still be more efficient than ***land***-based meat production, says Stentiford. Fish and crustaceans are cold-blooded and aquatic so don't have to burn energy to heat themselves or to support their own body weight. "There is an inherent efficiency in cold water animals that is not in mammals and birds," he says. Still, in terms of overall greenhouse gas ***emissions***, most aquaculture is roughly equivalent to the production of pork, chicken and dairy.

Not all aquaculture is wasteful – shellfish like mussels and oysters feed themselves

Trawling the aisles

Farmed molluscs aside, buying fish means stepping into a minefield of environmental destruction and social injustice. Yet it is very hard, verging on the impossible, for consumers to make informed choices.

There are several accreditation schemes for wild and farmed fish, but they are far from comprehensive. One of the best known is the Marine Stewardship Council (MSC), which prides itself on its stringent sustainability standards and tracking of supply chains. "It is incredibly complicated to actually know what you are buying," says the MSC's chief science officer, Rohan Currey. "That is the whole reason we exist."

However, just 16 per cent of the world's wild-caught fish is ***landed*** by MSC-certified fleets. The rest may or may not be sustainable, or may not have been assessed by an oversight body. It is impossible to know. And the MSC currently takes no account of greenhouse gas ***emissions*** or animal welfare. The overall impact of the MSC divides scientific opinion, with some studies finding that it promotes sustainability, but others that it [*mostly certifies over-exploited stocks*](https://doi.org/10.1371/journal.pone.0231073).

So how can we be confident our seafood choices are sustainable? Even fisheries scientists struggle to know what to buy. "Even as somebody who has a fairly deep interest in this area, I don't know the answer," says Stentiford.

Barange also admits that it is hard, and says he just buys whatever is on the market with reasonable confidence that it is sustainable by FAO standards. Pauly passes on the question. "Frankly, I don't know," he says. It really ought to be the job of governments, not individuals, to decide what is and what isn't acceptable, he says.

Until that happens, we are rudderless, trawling the supermarket aisles with no map. But bear in mind that if you do eat fish, there's almost certainly something fishy about it.

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[***Indefinite Detention, Colonialism, and Settler Prerogative in the United States***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:61XJ-VJP1-JBMY-H001-00000-00&context=1516831)

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**Body**

**ABSTRACT**

The primacy accorded individual civil and political rights is often touted as one of the United States’ greatest achievements. However, mass incarcerations of indefinite duration have occurred consistently throughout US history and have primarily ***targeted*** people of color. The dominant narrative insists that the United States is a political democracy and portrays each instance of indefinite detention in exceptionalist terms. This essay argues that the historical patterns of indefinite detention are better explained by recognizing the United States as a settler colonial state whose claimed prerogative to expand its territorial reach and contain/control populations over which it exercises jurisdiction has inevitably resulted in the involuntary inclusion and concomitant exclusion of peoples of color.

**FULL TEXT**

[I]ndefinite detention is a national trope, sourced in the violence of colonialism.—Penny Pether (2012: 2550)

The United States has long engaged in officially sanctioned incarceration outside the rule of law, leaving people(s) indefinitely imprisoned without the benefit of due process or other protections articulated in its Constitution and in international human rights law. Such indefinite detentions are generally characterized as ‘exceptional’ measures necessary to protect the public from imminent threats to the national security (Van Bergen and Valentine, 2006: 452), 1 and oft-discussed examples include the internment of almost 120,000 Japanese Americans during World War II, and the detention of some 800 people at the US naval base at Guantánamo Bay beginning in 2002. 2 Such incarcerations conform to Giorgio Agamben’s characterization of the concentration camp as a place in which sovereign power operates directly upon ‘bare life’, unmediated by law, and through which the ‘state of exception begins to become the rule’ (Agamben, 1998: 168–169).

Portraying these indefinite detentions as exceptional implies the existence of a norm in which the rule of law prevails. This, in turn, encourages those contesting particular instances of indefinite detention to frame their efforts in terms of bringing the exception into the realm of the ‘normal’. Thus, for example, in the wake of the attacks of September 11, 2001, many civil libertarians in the United States urged that those suspected of terrorist activity be processed through the criminal justice system rather than detained at Guantánamo. If, however, large-scale indefinite detentions are routinely utilized by the state to maintain the status quo, they can only be understood and, therefore, effectively challenged, as structurally embedded rather than exceptional practices.

In the United States, indefinite detentions may be exceptional in the sense that the formalities of legal process have been abandoned, but they are not aberrational. Adam Klein and Benjamin Wittes observe: Preventive detention is not prohibited by U.S. law or especially frowned upon in tradition or practice. The circumstances in which it arises are not isolated exceptions to a strong rule against it; rather, they are relatively frequent. The federal government and all 50 states together possess a wise range of statutory preventive detention regimes that are frequently used, many of which provoke little social or legal controversy. (Klein and Wittes, 2011: 86–87) We cannot identify a point in United States history where ‘the state of exception begins to become the rule’; it has always been the rule. Mass internments were integral to the establishment of the state and have been consistently utilized to maintain its hegemony, domestically and globally. They constitute a condition of colonialism, as Penny Pether observed, regularly and predictably used to facilitate settler appropriation of ***land*** and natural resources, to ensure a readily available and easily disposable labor force and to exercise a claimed sovereign prerogative to maintain social ‘order’. 3

This order, in turn, represents a status quo in which racial hierarchy is deeply, structurally embedded. Anglo-American settlers, like their European colonial counterparts, have consistently invoked their ‘civilizing mission’ to justify the colonization of peoples of color; a ‘grand project’, to quote Antony Anghie, ‘that has justified colonialism as a means of redeeming the backward, aberrant, violent, oppressed, undeveloped people of the non-European world by incorporating them into the universal civilization of Europe’ (Anghie, 2005: 3; Osterhammel, 2005: 17). Ongoing colonial subjugation, however, requires the colonized to be perpetually constructed as Other (Veracini, 2010: 22; Osterhammel, 2005: 108). The result is a ‘dynamic of difference’ that perpetually ‘creat[es] a gap between two cultures…and seek[s] to bridge the gap by developing techniques to normalize the aberrant society’ (Anghie, 2005: 4). While ‘normalize’ generally connotes assimilation, in a colonial context, it encompasses whatever is required to render life ‘normal’ for the colonizers. Incarceration unconstrained by otherwise applicable law is one such technique that has been utilized regularly toward that end in the United States as well as in other colonial contexts. 4

In considering the genealogy of indefinite detentions in the United States, this essay begins with a few examples of the internments, generally undertaken during times of war, that are commonly considered paradigmatic examples of the exceptional use of what are, in effect, concentration camps. To support my thesis that such incarcerations are not, in fact, aberrational, I then provide illustrations from three broad dimensions of US history. The first is the mass internment of Indigenous peoples who survived the initial colonial invasion. The second considers slavery as a form of collective and racialized indefinite detention, one that has evolved into a carceral state that, in significant respects, is indistinguishable from Agamben’s ‘camp’ (Agamben, 1998: 20; Foucault, 1995). The third dimension is the indefinite detention of immigrants. Each of these broad dimensions of indefinite detention are utilized by the settler class as part of its perceived prerogative to appropriate Indigenous ***lands*** and resources, render those ***lands*** profitable, control who may or may not enter or remain within the borders of ‘their’ state.

In analyzing the Australian High Court’s decision in *Mabo v. Queensland (No. 2)* (1992), Penny Pether noted that while her discussion of the related case law might appear ‘to herald a linear history rather than genealogy in the Foucauldian sense’, she was, in fact, seeking ‘the singularity of certain recurrent constituting stories’ in the ‘accumulated evidence of the “invasions, struggles, plundering, disguises, ploys”’ pervading the legal discourse (Pether, 1998: 139–140, n. 3; Foucault, 1986). Similarly, the examples below are not proffered as a linear history of American internments, but rather as illustrative of ‘certain recurrent constituting stories’ about indefinite detentions. They demonstrate that the United States has consistently utilized its power to imprison large sectors of the population under its jurisdiction without regard for the rule of law. While some instances may appropriately be deemed exceptional, the exclusion of peoples from otherwise applicable rights regimes through large-scale incarceration is integrally related to the establishment and maintenance of the American settler state. This, in turn, means that if such detentions are to be effectively challenged, they must be understood as a form of exclusion originating in and inseparable from the forced inclusions of colonial appropriation and exploitation.

**‘National Security’ Internments**

The term ‘indefinite detention’ generally brings to mind the extrajudicial internments of people deemed threats to the national security under conditions that replicate those Agamben describe as characteristic of the ‘camp’. The extent of these detentions and the conditions under which people are held vary depending upon the people(s) interned, the national political climate, and the United States' need to maintain its image as the paragon of liberty and democracy (Klein and Wittes, 2011: 88). The sites are not, however, subject to the rule of law and, as most recently illustrated by the United States’ ongoing detention of men and boys at its Guantánamo Bay Naval Base, the detainees may not only be reduced to bare life but also tortured, physically and psychologically, to the point that they prefer death (Pugliese, 2015).

The United States’ government has consistently asserted a prerogative to detain persons considered politically subversive, without charge or trial, particularly during times of war. Even before US independence, Thomas Jefferson helped draft Virginia laws that allowed the government to ***remove*** citizens beyond ‘military zones’ and ‘to restrain all persons who refused to take the oath of loyalty to the American cause or who were merely suspected of disaffection’ (Levy, 1989: 31–32). The Alien Enemies Act, first passed in 1798, still allows the president to arrest, detain, and ***remove*** civilians who are subjects or citizens of countries that the United States is at war with, or that pose a threat of invasion or attack, without any individualized determination that they pose a danger to the United States (Alien Enemies Act, 2012: section 21). This authority was used by the executive to detain British citizens during the War of 1812; Germans during World War I; and German, Italian, and Japanese ‘enemy aliens’ during World War II (Klein and Wittes, 2011: 102–106).

President Thomas Jefferson attempted unsuccessfully to suspend the writ of habeas corpus in 1807 (Klein and Wittes, 2011: 116–117), and President Abraham Lincoln did so during the Civil War, ordering the arrest and indefinite detention of those – including dissident newspaper editors and state legislators – he considered threats to public safety (Sandburg, 1954: 246–247; Speer, 1997: 37). While many, including Supreme Court Chief Justice Roger Taney, believed Lincoln’s actions to be unconstitutional, Congress retroactively approved them in 1863 (Klein and Wittes, 2011: 118–120; *Ex parte Merryman* [1861]). Tens of thousands of civilians in northern and border states were interned and many more banished without any specific showing of disloyalty. In one Missouri county, for example, by late 1863 only 600 people remained out of a population of 10,000 (Brownlie, 1958: 126, 163). Congress subsequently authorized suspension of the writ in 1871 to help suppress the Ku Klux Klan in the Reconstruction South, in 1902 to facilitate the colonial conquest of the Philippines, and in 1900 to preclude threats to the annexation of Hawai‘i (Klein and Wittes, 2011: 120–122).

During World War I, Congress passed the Espionage and Sedition Acts, which prohibited virtually all criticism of the government (Chang, 2002: 23; Espionage Act, 1917; Sedition Act, 1918; Unger, 1976: 41–42). More than a thousand people were convicted under these laws, and despite the fact that no one was convicted of espionage, more than 100 individuals were sentenced to prison terms of 10 years or more (Goldstein, 2001: 113; Linfield, 1990: 33–67). In 1919, Attorney General A. Mitchell Palmer conducted raids in 33 cities, arresting and holding 10,000 people, both citizens and noncitizens, as ‘criminal anarchists’ (Churchill and Vander Wall, 2002: 20–23; Unger, 1976: 43–44). During World War II, the US government engaged in the wholesale incarceration of approximately 120,000 persons of Japanese descent, on the grounds it was impossible to distinguish the ‘loyal’ from the ‘disloyal’ (*Korematsu v. United States,* 323 U.S. 214, 1944: 219; Daniels, 1972; Weglyn, 1976). Because two-thirds of those interned were US citizens, the program was authorized not by the Alien Enemies Act but by executive order (Executive Order No. 9066, 1942). Forced to abandon their homes, farms, and businesses, and to store or sell their possessions on a few days’ notice, men and women, children and the elderly, were shipped off to 10 concentration camps – euphemistically designated ‘relocation centers’ – in remote interior locations, where most were held for the duration of the war (Drinnon, 1987: 62; Weglyn, 1976). 5

In 1947, as the United States moved into the Cold War, President Harry S. Truman authorized the Justice Department to investigate the ‘infiltration of disloyal persons’ within the government and to create a list of ‘subversive’ organizations (Executive Order No. 9835, 1947; Weglyn, 1976: 32). The Internal Security Act of 1950 required all members of ‘Communist-front’ organizations to register with the government and authorized a proposal, not rescinded until 1971, to establish ‘emergency detention centers’ for incarcerating those so registered, without trial, any time the president chose to declare an ‘internal security emergency’ (Churchill and Vander Wall, 2002: 33; Matsuda, 1998: 9; Zinn, 1980: 423–424; Cole and Dempsey, 2002). Following the attacks of September 11, 2001, Congress passed the Authorization for Use of Military Force (AUMF), giving the executive broad authority to detain persons suspected of engaging in or supporting terrorism. In the following months, the Department of Justice detained several thousand Muslim or Arab immigrants, as well as those perceived to be of Middle Eastern origin, holding them indefinitely without charge, refusing to release information about who was being held, and often preventing the detainees from contacting their families, friends, or lawyers (Chang, 2002: 67–86). Since then almost 800 men and boys have been captured overseas and imprisoned at the Guantánamo Bay Naval base, where many still remain, and an unknown number of persons have been detained and tortured at an undisclosed number of ‘black sites’ around the world (Pether, 2012: 2562).

Nearly two decades after the ‘war on terror’ was declared, the US government’s power to detain people without legal or judicial safeguards continues unabated. The National Defense Authorization Act for 2012, signed into law by President Barack Obama, allows the indefinite military detention of those suspected of involvement in terrorist activity, without temporal or geographic limitations, and in terms that appear to apply to all persons, regardless of citizenship (National Defense Authorization Act for 2012, 2011: section 1021). The US government thus maintains large-scale, indefinite incarceration as an extrajudicial option for responding to threats to the national security – internal or external, real or imagined.

Despite the consistent and predictable use of such internments, they continue to be characterized as exceptional in the master narrative. It appears that most Americans prefer to believe that such measures are legitimate and extraordinary responses to actual or anticipated military threats, that peacetime is the norm to which the country will shortly return, and that, when it does, the rule of law will again prevail. Underlying these beliefs is a presumption that arbitrary detention can be readily distinguished from the state’s ‘normal’ practices. For the reasons discussed in the following sections, I believe that the indefinite detention of large sectors of the population under US jurisdiction has been and continues to be essential to the maintenance of American settler colonial rule.

**Territorial Control: American Indian Internments**

As theorists of settler colonialism emphasize, the ‘founding fathers’ of the United States were colonizers who came to *stay*, not simply to profit and return home (Wolfe, 1999: 2). These Anglo-American settlers brought with them a presumption of sovereign prerogative, an unshakeable belief in their right to establish a state over which they exercised absolute control (Veracini, 2010: 3, 53–54). This required a territorial foundation and that, in turn, meant ensuring the ‘disappearance’ of the Indigenous peoples of the ***land*** for, as Deborah Bird Rose aptly puts it, they ‘got in the way just by staying home’ (Rose, 1991: 46). It is well documented that the ‘settlement’ of North America involved the decimation of Indigenous nations through military massacres, privatized violence incentivized by scalp bounties and sensationalized disinformation, and the often-deliberate spreading of lethal diseases (Churchill, 1997; Stannard, 1992). But the significance of the systemic imprisonment of American Indians to the appropriation of the continent is often overlooked, as is the fact that the precedents established in the ‘Indian Wars’ continue to be relied upon by the US government in its so-called War on Terror (Fletcher and Vicaire, 2011; Yoo, 2003: 7). 6

Although the British and, subsequently, the United States had entered into numerous treaties with Indigenous nations, thereby acknowledging American Indian sovereignty in the process of legitimating colonial ***land*** claims, by the 1830s the US Supreme Court was proclaiming that American Indian nations would no longer be recognized as either independent or fully sovereign. As Chief Justice John Marshall announced in *Cherokee Nation v. Georgia*, ‘[t]hey may, more correctly, perhaps, be denominated domestic dependent nations’, nations that ‘occupy a territory to which we assert a title independent of their will’ (*Cherokee Nation v. Georgia,* 30 U.S., 1831: 17). This characterization of Indigenous peoples as internal colonies laid the groundwork for the federal government’s subsequent assertion of absolute – ‘plenary’ – power over Indian affairs (Churchill, 2002: 673–679; Newton, 1984). In other words, the unilateral extension of US jurisdiction to encompass – that is, forcibly include – Native peoples simultaneously resulted in their exclusion from all otherwise applicable legal protections.

It also laid the groundwork for the forced ***removal*** of the so-called Five Civilized Tribes (the Cherokee, Choctaw, Chickasaw, Creek, and Seminole nations) and some 30 smaller peoples from their homelands and their relocation to reservations west of the Mississippi River (Foreman, 1953; Jahoda, 1975). The nature of the process has been masked by the pervasive use of innocuous terms such as ‘relocation’, ‘***removal***’, and ‘reservations’, but the reality was that Indigenous peoples across the continent were reduced to the conditions of bare life Agamben describes as characterizing the concentration camp, a setting in ‘which human beings could be so completely deprived of their rights and prerogatives that no act committed against them could appear any longer as a crime’ (Agamben, 1998: 171).

For the Indian nations of the Southeast, ‘***removal***’ meant families taken at gunpoint from their homes (which were often then ransacked and burned), imprisoned in stockades, and then force-marched some 1200 miles across the country in mid-winter, with a resulting death rate of up to 50% (Thornton, 1984: 293). 7 These conditions were inflicted on civilians, by the US military, during a period in which no hostilities were occurring. The survivors who made it to ‘Indian country’ in Oklahoma were then assigned to ‘agencies’, that is, reservations. ‘Reserved ***lands***’ sounds relatively benign but, as the following examples illustrate, the reservations to which some 400 American Indian nations were eventually consigned were, in fact, prison camps (Harring, 1994: 204–206).

In 1862, in the aftermath of what is known as Little Crow’s War in Minnesota, almost all of the Santee Sioux were interned at Fort Snelling, where conditions were so miserable that one-quarter of the population died within several months. In addition to the threat of military pursuit, escape was deterred by a US$200 scalp bounty proclaimed on all Santees found outside the fort (Brown, 1970: 60, 63–64; Schultz, 1992: 279–283). In 1863, following the army’s Kit Carson ‘campaign’, the Navajos were first imprisoned at Fort Defiance, Arizona, and then force-marched some 300 miles to the Bosque Redondo near Fort Sumner, New Mexico, where they were held for 4 years. Lodged in crude shelters (sometimes literally holes in the ground), provided grossly inadequate rations and wracked by disease, half of the detainees perished before they were moved to another reservation in 1868 (Bailey, 1988, 1998; Thompson, 1982). Thus trapped on inhospitable ***lands*** with inadequate food or shelter, survival seemed unlikely, prompting many interned peoples to try to escape. But they were prisoners, allowed to leave their assigned agencies only with the permission of the military or a federal Indian agent (Frederickson, 1981: 242–243).

The military was frequently deployed to track down and capture or kill those attempting to escape. In 1877, the Northern Cheyennes were relocated from their traditional Montana territory and imprisoned on the Cheyenne–Arapaho reservation in Oklahoma. As malaria, dysentery, and other illnesses spread rapidly among them, in the fall of 1878, some 300 Cheyennes fled in a desperate attempt to go home (Berthrong, 1976: 27–47; Sandoz, 1964: 27–31). Some 15,000 troops pursued the small group of escapees and incarcerated them at Camp Robinson, Nebraska, where they were denied food and firewood in the dead of winter in an attempt to coerce them to return to Oklahoma. In January 1879, the Cheyennes tried once more to escape but were quickly tracked down and about half of them, children included, were killed (Andrist, 1964: 321–329; Sandoz, 1964: 245–290). Similarly, the infamous Wounded Knee massacre of 1890 was perpetrated by troops pursuing Minneconjou Lakotas whose sole ‘offense’ was to have fled their assigned agency during a period of starvation and severe repression, to seek refuge among their Oglala relatives at the Pine Ridge Agency, about 150 miles away (Andrist, 1964: 350–352; Brown, 1970: 401–402; Sutton, 1985: 122–123; McGregor, 1940).

The message was clear: American Indians had no alternative but to stay in their assigned locations, under whatever conditions the government cared to impose. The explicit purpose of the policy was to ‘clear’ the ***land*** for White settlers and, by 1890, when the federal government declared the ‘frontier’ to be closed, those Indigenous peoples who had survived what David Stannard terms the ‘American holocaust’ were confined to less than 3% of their original ***land*** base (Churchill, 2003: 12; Stannard, 1992). As in all colonial ventures, the dynamic of difference had been employed to render them less than human – to construct them quite literally as bare life – as reflected in the fact that it was 1879 before the Ponca leader Standing Bear became the first American Indian legally recognized as a ‘person’ capable of suing for habeas corpus (*Standing Bear v Crook*, 1879; Dando-Collins, 2004).

Another 30 years passed before an American court ruled in 1909 that Indigenous people could not be classified – or treated – as ‘prisoners of war’ merely because they were Indians, a practice that persisted even after that time and has never been renounced by the government (*United States v. By-a-lil-le* [1909]; Harring, 1994: 198–203). The most egregious example is that of the Chiricahua Apaches. Harsh conditions at the San Carlos reservation had precipitated the escape and protracted military resistance mounted by Geronimo’s band during the 1870s and 1880s. In retaliation, after Geronimo’s surrender in 1886, the government shipped the entire Chiricahua population – children, elders, women, and even those men who had fought *for* the United States against their ‘renegade’ relatives – to military prisons in Florida and then Alabama. During their first 8 years of incarceration, some 40% of the imprisoned Chiricahuas died, and it was not until the winter of 1913–1914 that the survivors were finally transferred to the Kiowa–Comanche reservation in Oklahoma (Lieder and Page, 1997: 28–38; Roberts, 1984).

The purpose of incarcerating the Chiricahua Apaches for an entire generation was to ensure that their spirit was broken, to assimilate them to the ‘American’ way of life, with all that implies. Oversight of this project was entrusted to an army captain, Richard Henry Pratt, the Chiricahuas’ warden at the military prison in Florida. This, in turn, qualified Pratt to inaugurate the American Indian ‘boarding school’ system whose aim, as he stated in 1895, was to ‘kill the Indian, save the man’ in each student (Churchill, 2004: 13–14). These schools represent a massive program of indefinite detention. They operated for the better part of a century and, for generations children were forcibly removed from their families, often by the military. Parents who resisted were imprisoned. The children were very literally held captive, often for 10 years or longer, sexually abused, and tortured (Churchill, 2004). But sadism was not the purpose of their incarceration, as sadistic as their captors may have been. The purpose of the schools was to eliminate all vestiges of Indigenous culture in these children, to strip them of their identity and replace it with the settlers’ vision of what compliant people of color should look and act like.

In 1946, the US government established an Indian Claims Commission (ICC) in attempt to distinguish its record of territorial acquisition from that of the Germans it was then prosecuting at Nuremberg (Churchill, 2003: 125–152; Rosenthal, 1990). The following year, the Chiricahuas filed a claim for damages accruing from the expropriation of their ***lands*** and from their lengthy imprisonment in Florida and Alabama. In 1971, the ICC finally awarded them token payment for their lost ***lands*** but not for their imprisonment (*Fort Sill Apache Tribe v. United States*, 26 Ind. Cl. Comm. 281, 1971). On appeal, the Court of Claims held that while ‘the Apache Tribe did not prosper from the injuries suffered by its constituent members’ during their 27 years of imprisonment, these were claims over which the Commission had no jurisdiction (*Fort Sill Apache Tribe of Oklahoma v United States*, 477 F.2d 1360, 1365 (Ct. Cl. 1973), *cert. denied*, 416 U.S. 993 (1974); Lieder and Page, 1997: 222). By refusing to review this decision, the Supreme Court effectively legitimated the settler state’s prerogative to intern entire peoples in order to consolidate control over its claimed ***land*** base.

This prerogative has been exercised on numerous occasions, both within the claimed boundaries of the United States and in its colonial and imperial ventures across the globe. The Japanese American internment provides one internal example. While it was justified on the grounds of ‘military necessity’ (*Korematsu v. United States,* 323 U.S. 214, 1944: 233), upon closer examination it becomes evident that the ***removal*** of persons of Japanese descent from the West Coast, and their indefinite incarceration, was largely motivated by White settler resistance to their very presence. Despite reports from all relevant intelligence agencies that Japanese Americans posed no security threat, President Franklin D. Roosevelt ceded to pressure brought by organizations of prominent landowners and businessmen including, notably, the future Supreme Court Chief Justice Earl Warren (US Congress, Commission on Wartime Relocation and Internment of Civilians (CWRIC), 1982: 54–55). 8 One such group was the Native Sons of the Golden West, explicitly dedicated to preserving California ‘as it has always been and as God himself intended it shall always be – the White Man’s Paradise’ (CWRIC, 1982: 364n41; tenBroek et al., 1970: 32–57; Daniels, 1968: 85–87). As the California Joint Immigration Committee (formerly known as the Asiatic Exclusion League) stated bluntly in early February 1942, ‘This is our time to get things done that we have been trying to get done for a quarter of a century’ (tenBroek et al., 1970: 79).

California, of course, had not ‘always been…the White Man’s Paradise’. White settler claims had been realized only by the mass extermination of Indian nations (Churchill, 1997; Stannard, 1992) and the utilization and subsequent ***removal*** of Asian, particularly Chinese, and Mexican labor (Johnson, 2004: 661–667; Saito, 2003: 14–16). The Japanese American ‘evacuation’ and ‘relocation’ was entirely consistent with this history. Indian reservations served as ‘prototypes’ for the camps in which Japanese Americans were interned (Drinnon, 1987: xxiv, 265) and Poston, one of the ten major Japanese American concentration camps, was actually located on the Colorado River Indian reservation in Arizona and administered by John Collier, the Commissioner of Indian Affairs (Byrd, 2011: 185).

Poston’s history illustrated the integral – and distinctly colonial – relationship between the American Indian and Japanese American internments. In 1940, Collier had proposed to ‘colonize 10,000 American Indians to the [Colorado River] reservation’ (Byrd, 2011: 185), and Japanese American prisoners were utilized to develop the irrigation system Collier believed would allow the reservation to be self-sustaining. As Jodi Byrd observes: By naming the relocation centers and internment camps ‘colonies’ within their internal documents, the United States revealed the deeper logics of ***removals*** and reservations, and Collier, who saw in Poston an opportunity to develop a social experiment that might innovate future management strategies within the Office of Indian Affairs, had already laid the groundwork so that Hopi and Navajo families might join those relocation colonies after the war ended to continue the work started by the Japanese American internees. (Byrd, 2011: 187) American Indian internments would continue until the mid-1950s, when the government decided that its interests were better served by ‘terminating’ its relationship with Native nations, abruptly pushing them off the reservations and dispersing them in cities (Fixico, 1986; Orfield, 1966). This attempt to once again ***remove*** Indigenous peoples from their ***land*** base became the responsibility of Dillon S. Myer, the new Commissioner of the Bureau of Indian Affairs (BIA). Myer, instructively, had been the Director of the War Relocation Authority (WRA), the agency responsible for managing the Japanese American internment. According to Richard Drinnon: An accident of chronology has masked the underlying meaning of Myer’s termination policy. Had he been commissioner of the BIA *before* he became director of the WRA, then the continuities stretching from the reservations to the camps could hardly have been missed and the fundamental sameness of his treatment of Native Americans and Japanese Americans would have elicited close analysis long ago. (Drinnon, 1987: 265) The extension of this prerogative-to-intern to American imperial ventures is beyond the scope of this essay, but it bears noting that the concentration camp model developed for ‘pacifying’ American Indian nations has been utilized by the United States not only to intern domestic peoples, but in its overseas wars as well. From 1898 to 1903, the US fought a brutal war to bring the Philippines under colonial rule and, as Filipino resistance mounted, the US Secretary of War instructed the Army to employ the ‘methods which have proved successful in our Indian campaigns in the West’ (Linn, 2000: 23). All Filipinos were viewed as ‘hostiles’ and those who were not killed were to be forcibly removed to internment camps (Churchill, 2003: 315–318; Drinnon, 1997: 287–288; Miller, 1982: 196–218). As Stuart Creighton Miller notes: The entire population outside the major cities in Batangas [a province of Luzon] was herded into concentration camps, which were bordered by what [Brig. Gen. J. Franklin] Bell called ‘dead lines’. Everything outside the camps was systematically destroyed – humans, crops, food stores, domestic animals, houses, and boats. (Miller, 1982: 208) For Bell, this was a reasonable policy, ‘since all natives were treacherous, [and] it was therefore impossible to recognize “the actively good from the actively bad”’ (Miller, 1982: 208). In early 1901, the 51,000 inhabitants of Marinduque Island were ordered into concentration camps, and later that year all 266,000 residents of Samar Island ‘were ordered to present themselves to detention camps in several of the larger coastal towns. Those who did not…would be shot’ (Schirmer and Shalom, 1999: 17). As major US newspaper headlines informed the citizenry, Lt. Gen. Arthur MacArthur, commander of US forces in the Pacific, had adopted the ‘Kitchener Plan’, an easily recognized reference to the British tactics of extermination and ‘reconcentration’ being used against the Boers in South Africa (Miller, 1982: 163–164).

In turn, the *reconcentrado* policy used in the Philippines to ‘facilitate counter-insurgency operations’ (Schirmer and Shalom, 1999: xiv, 15, 299) was replicated by the Americans in Vietnam. By 1963, a reported 8.7 million peasants in the Republic of Vietnam (South Vietnam) had been forcibly concentrated in ‘strategic hamlets’ where, according to the *Pentagon Papers*, ‘it was difficult to differentiate between *security for* the rural populace and *control of* that populace, since many of the actions to achieve one were almost identical to the acts to realize the other’ (Shafer, 1988: 267). After US ground troops were introduced in 1965, the process was accelerated, with millions more driven from US-declared ‘free fire zones’ in the countryside and ‘reconcentrated’ by what was termed ‘forced draft urbanization’ (Chomsky and Herman, 1979: 65–66; Sheehan, 1988: 106–107, 540–542). Since then, similar tactics have been and continue to be used by US-backed regimes in Central America to drive Indigenous peoples off their ***lands*** resulting, among other things, in large-scale migrations to the United States (Taylor and Steinberg, 2011: 254–257; Coutin 2011).

**Enslaved and Incarcerated Labor**

As Euro-American colonizers successfully employed strategies of elimination and containment to occupy Indigenous ***lands***, they recognized that they would need a large and subordinated labor force to render the appropriated – and depopulated – territory profitable (Wolfe, 1999: 1–2). Initially, much of this labor came from enslaved persons, primarily of African descent. After ‘emancipation’, criminalization supplanted chattel slavery as a means of maintaining an imprisoned labor force. In turn, as labor needs shifted and Afrodescendant peoples came to be seen as a ‘surplus’ population, mass incarceration has served as a means of controlling and conceptually disappearing large sectors of the population.

**Slave Labor Camps**

By the early 1700s, some 30,000–50,000 American Indians had been enslaved by the British in North America (Ablavsky, 2011: 1466; Mann, 2006: 41), but the colonizers soon turned to the African slave trade already well established in the Caribbean (Davidson, 1980: 67–76). By 1808, when American settlers declared the slave trade to be illegal, an estimated 388,000 persons had been brought directly to the United States, with another 60,000–70,000 coming through the Caribbean (Gates, 2014; Berlin, 1998). By 1860, there were some 4 million enslaved persons of African descent in the United States, accounting for almost 40% of the population of the slaveholding states, and nearly 13% of the total population (Sublette and Sublette, 2016: 13).

The transformation of this (now internally) colonized and entirely involuntary workforce into a source of immense wealth required that persons of African descent be forcibly included within settler-claimed space, transformed into sufficiently compliant workers, and simultaneously excluded, physically and conceptually, from settler society. To accomplish these purposes the settler class, with the full backing of the state’s legal system and police powers, utilized all-encompassing strategies of subjugation (Baptist, 2014; Finkelman, 1986: 21; Higginbotham, 1996: 68–73). These strategies relied upon the foundational construction of Africans and Afrodescendants as a colonially derived ‘resource’ to be appropriated and exploited; in other words, as property rather than human beings (Harris, 1993: 1720). This meant that they could be bought or sold; raped, tortured, or abused at will; bred like animals; pledged as collateral; and deeded and inherited (Bridgewater, 2005: 115–121; Crusto, 2005: 68–69).

This involuntary labor force could only be maintained by physical containment and control. While individual slave ‘owners’ are often portrayed as personally responsible for capturing escaped slaves, the containment of the enslaved population was widely recognized as a broader imperative of settler colonial society. The US Constitution itself required ‘person[s] held to service or labour in one state, under the laws thereof, escaping into another’ – that is, fugitive slaves – to ‘be delivered up on claim of the party to whom such service of labour may be due’ (US Constitution, article 4, section 2, clause 3). 9 Congress passed legislation implementing this requirement in 1793 and strengthened it with the Fugitive Slave Act of 1850 that, among other things, penalized those who interfered with the capture of escaped slaves and provided special federal commissioners to adjudicate rendition proceedings (Act of February 12, 1793; Act of September 18, 1850). State laws imposed similar obligations on all individuals to apprehend and return escaped slaves, and state militias and local law enforcement authorities were utilized to perform this function (Websdale, 2001). Just as American Indians could not leave their assigned reservations without the permission of federal agents, enslaved Africans and their descendants could not travel from their assigned plantations (or other locations) without the written permission of those who purported to own them. As with Indians, those who escaped were hunted down and tortured or killed (Conroy, 2006: 151–157). For example, a 1705 Virginia statute provided that slaves not possessing the required passes could be apprehended by ‘any person’, meaning any White person, and lashed by the local constable. For those deemed runaways, it was ‘lawful for any [White] person or persons…to kill and destroy such slaves by such ways and means as he, she, or they shall think fit’, and the owners of slaves so killed were to be reimbursed from the public treasury (Higginbotham, 1980: 56–57).

The most intense utilization of enslaved labor occurred on southern plantations, sites of indefinite – indeed, indefinitely hereditary – detention. Terror and violence were routinely utilized to extract ever-increasing productivity with no constraints beyond the desire of an ‘owner’ to protect his ‘investment’ (Baptist 2014: 113, 127; Pether, 2012: 2554–2555). 10 These were classic examples of Agamben’s camps, in which ‘no act committed against [an enslaved person] could appear any longer as a crime’ (Agamben, 1998: 171). As explained by the Georgia Supreme Court, if the common law were interpreted to ‘protect[] the life of the slave, why not his liberty? [A]nd if it protects his liberty, then it breaks down, at once, the *status* of the slave’ (*Neal v. Farmer*, 9 Ga 555, 1851: 579). ‘To assure docility and compliance’, A. Leon Higginbotham summarized, ‘the slave had to understand…that resistance was futile, and that any attempt to regain control over his life would be met with severe punishment and possibly death’ (Higginbotham, 1996: 50).

Resistance, of course, was not futile and played a significant role in the outcome of the Civil War and the formal abolishing of slavery, as WEB Du Bois explained in his *Black Reconstruction* (Du Bois, 1983: 55–83). Nonetheless, the mass and indefinite detention of Black Americans continued apace. The constitutional amendments of the Reconstruction era conferred – or imposed, depending on one’s perspective – US citizenship on people of African descent and purported to guarantee them due process and equal protection under law (Touré, 2006: 446). 11 This did not change the underlying opinion of much of the White population and its most powerful leaders, that, as Supreme Court Justice Roger Taney had stated in his infamous 1856 *Dred Scott* opinion, *all* those of the ‘African race’, whether enslaved or not, were ‘beings of an inferior order…so far inferior, that they had no rights which the white man was bound to respect’ (*Scott v. Sandford*, 60 U.S. 393, 1856: 407).

**Convict Labor**

The Thirteenth Amendment to the US Constitution, ratified in 1866, prohibited slavery and involuntary servitude ‘*except as a punishment for crime*’[emphasis added] (US Const. amend XIII, 1866 [emphasis added]). Thus, following ‘emancipation’, criminalization provided the settler class with a ready supply of involuntary labor. Laws governing the enslaved were quickly replaced with ‘Black codes’, which often limited African Americans to ***agricultural*** and domestic employment and criminalized idleness, vagrancy, and ‘disrespect’ of White people (Litwak, 1980: 367–370; *Slaughter-House Cases* [1872]: 70; Higginbotham, 1996: 84–87). 12 The penalty was almost invariably some form of unpaid labor and, as stated bluntly by the Virginia Supreme Court in 1871, convicted persons became ‘the slaves of the State’ (*Ruffin v. Commonwealth*, 62 Va. 790, 1871: 796).

Rather than building prisons, southern states inaugurated convict lease systems that resulted in predominantly Black prisoners being ‘leased’ to private individuals including, in some cases, their former slave masters (Bennett, 1987: 273). The selling of rights to the labor of prisoners enriched both the public coffers and politically powerful individuals, and for some eight decades after the Civil War convict labor undergirded the South’s ***agricultural*** economy as well as its industrialization. The costs of leasing were low enough that there was little incentive to provide adequate food, clothing, or medical care, for more convicts could easily be obtained (Lichtenstein, 1996; Mancini, 1996; Oshinsky, 1996). Those who leased convicts were permitted to chain, whip, and torture the prisoners, and to kill those who attempted to flee (Blackmon, 2008: 54–57). 13 The convict labor system – which also affected, among others, Mexican and Chinese workers in the West (Takaki, 1989: 82) 14 – thus replicated the conditions of slavery and, while the prisoners may have been sentenced to a fixed term of years, the arbitrariness with which they were convicted and the fact that most would not survive their sentences rendered their detentions arbitrary and effectively indefinite (Colvin, 1997: 247–248).

Convict leasing continued into the late 1920s and 1930s, and prison labor continues to be a source of significant profit (Pether, 2012: 2555–2556). Federal prisoners make a wide range of products for the military as well as the ‘free’ market, and at least 37 states contract prison labor to mega-corporations such as IBM, Microsoft and Honeywell as well as smaller enterprises such as JC Penney and Victoria’s Secret. While some states pay minimum wage, the federal government pays much less; overall, prisoners are reportedly paid about US$0.40 per hour (Cummings, 2012: 421–422; Federal Prison Industries Program, 2015). With the rise of private prisons, prisoners themselves are increasingly regarded as commodities rather than persons, just as they were under the convict lease system (Hallett, 2006: 18; Levin, 2014). Nonetheless, in assessing imprisonment as a form of indefinite detention, it appears that the perceived need for social control eclipses profitability as a motivating force. This, in turn, means that people residing in marginalized communities of color are tethered to the carceral state by the pervasive and perpetual threat of imminent incarceration.

**Prisons as Concentration Camps**

As the United States transitioned from an economy based primarily on manufacturing to one dependent upon finance, technology, and the provision of services, income inequality has grown dramatically and Black Americans are increasingly perceived as a surplus population. Unlike the Chinese or Mexican workers deemed redundant in the late 19th and early 20th centuries, they cannot be deported en masse and, instead, are increasingly being warehoused in prisons. Pether observed: mass incarceration of black men makes them invisible to most of us. It thus puts out of sight and mind phenomena of post-bellum U.S. life including the fact that since the great migration…there has never been an adequate supply of jobs in the ‘white economy’ for black men that would enable them to sustain a family. (Pether, 2012: 2558) Illustrating this point, Bruce Western notes that in 2000, the jobless rate for young Black men who had not completed high school was a stunning 49% by conventional measures and 65% if one includes prison and jail inmates. ‘Only by counting the penal population do we see that fully two out of three young black male dropouts were not working at the height of the 1990s economic expansion’, he observes, adding that of these unemployed young men, ‘nearly half were in prison or jail’ (Western, 2006: 91).

Agamben argues that the concentration camp as a ‘zone of indistinction between nature and right’ must be distinguished from the prison because ‘while prison law only constitutes a particular sphere of penal law and is not outside the normal order, the juridical constellation that guides the camp is…martial law and the state of siege’ and, therefore, the camp embodies a ‘space of exemption’ rather than ‘a simple space of confinement’ (Agamben, 1998: 20). For the vast majority of US inmates, however, the prison is anything but ‘a simple space of confinement’ under terms dictated by law. While the judiciary occasionally intervenes to limit some of the excesses inflicted upon imprisoned persons, by and large the reasons for incarceration are arbitrary, the terms frequently indefinite, and the conditions such that prisoners, for the most part, have been reduced to bare life. As a result, it may not be functioning ‘outside the normal order’, but that is only because a state of siege has been normalized with respect to those who remain internally colonized.

The absence of due process and equal protection under law permeates all aspects of the criminal justice system. Police officers can stop, question, and frisk individuals without probable cause, effectively requiring ‘African Americans [and other people of color] to affirmatively justify the legality of their presence on the streets’ (Conroy, 2006: *Terry v Ohio* [1968]; 163; *Hiibel v Sixth Judicial District Court of Nevada, Humboldt County* [2004]). To provide just one example, in an eight-block Brooklyn, New York neighborhood the police conducted 52,000 ‘stop, question, and frisks’ over a 4-year period, resulting in ‘an indiscriminate barrage of degrading detentions’ that one legal scholar analogizes to the counterinsurgency strategy known as ‘cordon and search’ (Fabricant, 2011: 384). Such tactics lead to disparate rates of arrests and convictions that, in turn, result in longer prison sentences. According to the American Civil Liberties Union, in federal courts, Black men receive sentences nearly 20% longer than White men convicted of similar crimes and in some states, the disparities are more dramatic (American Civil Liberties Union, 2014: 1).

The proliferation of ‘two-strike’ and ‘three-strike’ laws across the country led to a surge of life sentences for petty crimes (McCullough, 2002). In Georgia, where prosecutors can recommend life imprisonment for a second drug offense, more than 98% of the prisoners serving life sentences under this provision are Black (American Civil Liberties Union, 2016). Nationally, as of 2013, there were about 160,000 prisoners with life sentences; nearly half are Black and more than 10,000 were juveniles at the time of the crime. Almost 50,000 prisoners with life sentences, including one in four juveniles, have no possibility of parole (Nellis, 2013: 18). What distinguishes the American criminal justice system and brands it as distinctively harsh by comparison with the civilized, and even uncivilized, world is [not the death penalty but] the frequency with which it banishes its own citizens to cages for the duration of their lives and with no pretense of offering a legal mechanism for freedom. (Lerner, 2013: 1103) Until the 1970s, most US jurisdictions allowed judges almost unfettered discretion in sentencing, resulting in the widespread imposition of indeterminate sentences and concomitant disparities in the actual time served for similar offenses, and many states still retain this option (Subramanian and Delaney, 2014: 6–11). In a classic example, in 1961, George Jackson, still a teenager, was convicted of a US$70 robbery and given a sentence of 1 year to life in the California prison system. Ten years later Jackson, who had since become a political activist and author, was assassinated by prison guards (Zohrabi, 2012: 174–176). Almost a half-century later, California prison officials exercise a prerogative to administratively classify prisoners as ‘prison gang’ members and to indeterminately sentence them to solitary confinement in the state’s ‘secure housing units’ (SHUs). As of 2016, inmates are still being ‘validated’ as gang members and consigned to SHUs for possessing George Jackson’s writings or materials pertaining to Black August commemorations honoring Jackson and other political prisoners (*Watts v Ruggiero* [2016]; *Howard v Lane* [2015]; Zohrabi, 2012: 176–186; Foucault et al., 1971).

Finally, it bears noting that the conditions of confinement faced by most American prisoners are often indistinguishable from those of the concentration camps, that is, ‘the very paradigm of political space at the point at which politics becomes biopolitics and *homo sacer* is virtually confused with the citizen’ (Agamben 1998: 171). This is clearly true of incarceration in solitary confinement – often benignly termed ‘administrative segregation’ – which ‘has been transmuted from an occasional tool of discipline into a widespread form of preventive detention’ (Dayan, 2011). Every day, some 86,000 people in the United States are imprisoned in isolation (Cole, 2015). As Angela Allen-Bell observes: there is no real indicator as to who a likely candidate for isolation is and there is no consistency with respect to how long one might remain in an isolation unit. Prisoners have been put in isolation for having in their cells ink pens with metal in the tip, possessing tobacco, talking back to officers,…serving as jailhouse lawyers,…having charisma and leadership traits, serving as prison activists or whistleblowers, having militant and/or radical political beliefs,…and refusing to get out of the shower quickly enough. (Allen-Bell, 2012: 772–773) The conditions of isolation units regularly include confinement for 22–24 h/day with virtually no contact with other human beings; grossly inadequate medical care; ‘[p]hysical torture such as hog-tying, restraint chairs, forced cell extraction’; ‘[c]hemical torture, such as stun grenades and stun guns’; and ‘“no-touch torture,” such as sensory deprivation, permanent bright lighting, extreme temperatures, and forced insomnia’ (American Friends Service Committee, ND). In 2011, the United Nations Special Rapporteur on torture noted that because of the extreme harm inflicted by solitary confinement, it should be banned in almost all cases and there should be an absolute prohibition on isolation in excess of 15 days (*UN News Centre*, 2011). Yet the US has held – and continues to hold – prisoners in isolation not simply for years but for decades (Allen-Bell, 2012: 780). In one of the most extreme cases, political prisoner Albert Woodfox was released from the notorious Angola prison, a former slave plantation in Louisiana, in 2016 after more than 43 years of solitary confinement (Cole, 2015).

It is well documented that prolonged and indefinite incarceration in isolation units subjects human beings to a regime in which they are reduced bare life, devoid of any meaningfully protected rights. But this is also true more generally for US prisoners who are routinely warehoused in overcrowded facilities; denied access to decent food, adequate medical care, or educational materials; and left at the mercy of guards who are all too often sadistically brutal. Theoretically, prison conditions are subject to the ‘cruel and unusual’ limitations of the Eighth Amendment to the US Constitution, but this is a standard that originated in the law of slavery and in many respects ‘cannot be said to have evolved significantly over time’ (Reinert, 2016: 859). 15 As Alexander Reinert notes, ‘prisoners are protected from use of force inflicted for sadistic and malicious purposes, just a slaves once were in theory’, but in reality, they have no legal recourse for dehumanizing treatment such as: being doused with urine and feces by correction officers, punched in the genitals and shoved into cement by prison staff, slapped several times for no reason, sprayed in the face with pepper spray or tear gas long after any disturbance has arisen, or forced to stand naked for eight to ten hours in a two-and-a half-foot square cage. (Reinert, 2016: 858–859) At an individual level, the result is that ‘[p]rison rules and regulations, the day-to-day operation of the institution confront the inmate with an image of himself that is grotesque and absurd’, and any ‘prisoner who refuses to internalize this image, who insists upon seeing other versions of himself, is in constant danger’ (Willens, 1987: 49).

The congruity between concentration camps and American prisons is succinctly highlighted by Penny Pether’s brief sketch of Charles Graner, the US Army reservist and ‘apparent architect of prisoner abuse at Abu Ghraib’, the US prison in Iraq notorious for torture, sexual abuse, and murder by the guards (Pether, 2012: 2559). She noted that Graner began his career during the Iran–Iraq war at a prison camp ‘where Iraqis were starved to the point of madness’ and then became a guard at a maximum security prison in his home state of Pennsylvania (Pether, 2012: 2560). At the latter facility, where the majority of inmates were Black and more than 90% of the guards were White, Graner was among guards accused of beating and sexually assaulting prisoners, spitting in their food, and ‘shower[ing] them with racial epithets’ (Pether, 2012: 2561). From this experience, he moved on to Abu Ghraib where, by his own admission, he beat, humiliated, and terrorized ‘ghost detainees’ (Reid, 2005).

For these and many other reasons, incarceration in the United States is aptly described as another variant of arbitrary and indefinite detention, and it is one that affects huge sectors of the population. Racial or ethnic minorities constitute over 60% of the US prison population. African Americans, constituting about 13% of the overall population, comprise almost 40% of those imprisoned (Sentencing Project, 2015, 2016) American Indian men are imprisoned at four times the rate of White men, and American Indian women at six times the rate of their White counterparts (Lakota People’s Law Project, 2015: 6). Crime rates in the United States have not risen significantly since 1972, but since then its prison population has grown sixfold to over 2.2 million people, giving the US the dubious distinction of having the world’s largest prison population and highest rate of incarceration (Alexander, 2010: 8; Haney López, 2011; Sentencing Project, 2016).

In addition to those who are incarcerated, some 4.7 million people in the United States are being monitored under conditions of probation or parole (Porter, 2016: 1). Purporting to eliminate indeterminate sentencing in the federal system, the 1984 Sentencing Reform Act prospectively eliminated federal parole, replacing it with a system of ‘supervised release’ that follows completion of a prison sentence. However, as Fiona Doherty explains, this ‘allows judges to return people to prison for violating the conditions of their supervised release, including conditions prohibiting behavior that is not criminal’ and justifies re-incarceration as ‘additional punishment for the underlying crime’, thus rendering the amount of time to be spent in prison upon conviction of a wide range of federal crimes ‘structurally indeterminate’ (Doherty, 2013: 960–961).

As summarized by Michelle Alexander, ‘The stark and sobering reality is that, for reasons largely unrelated to actual crime trends, the American penal system has emerged as a system of social control unparalleled in world history’ (Alexander, 2010: 8). It is a system that largely serves to contain, control, and effectively disappear a ‘surplus’ population that is overwhelmingly poor and of color. As it serves those ends, its effects are not confined to those who are incarcerated or under court-ordered surveillance. Much as the plantations were sites of indefinite detention despite their lack of perimeter fencing, systems of containment and control symbiotically related to the criminal ‘justice’ system ensure that the majority of the residents of many contemporary communities of color are just as effectively and indefinitely confined.

These dynamics are illustrated in a 2013 shadow report filed by the Center for Constitutional Rights (CCR) with the UN Human Rights Committee and focusing on the New York City Police Department’s ‘stop and frisk’ practices. According to the CCR, between 2004 and 2012, the police conducted over 4.4 million stops, 85% of which ***targeted*** primarily young Black or Latino men because, as stated by the police commissioner, ‘he wanted to instill fear in them, every time they leave their home’ (Center for Constitutional Rights, 2013: 2–3). Children are growing up confined to their apartments, for those who live in ***targeted*** neighborhoods are vulnerable to being stopped, harassed, or arrested simply for *being* in the hallways, stairwells, or elevators of their apartment buildings, sitting outside, walking to school or the grocery store, riding the subway. As one resident put it, ‘we live in an occupied zone…It almost feels like you’re in an outside prison’ (Center for Constitutional Rights, 2012: 19). Poor people of color, now increasingly viewed as a drain on social resources rather than an asset to be exploited, are – much like Indigenous peoples – getting in the way of the colonizers simply by staying home.

**Immigrant Detention**

The previous sections have briefly addressed ways in which the settlers who believe the United States to be ‘their’ country have routinely imposed regimes of indefinite detention upon American Indians, Afrodescendants, and other peoples of color in order to obtain Indigenous ***lands*** and to profit from the ***lands*** and peoples they have colonized. A discussion of such ‘routine’ internments would be incomplete, however, without mention of the indefinite detention of peoples cast as unwelcome or disposable migrants, for ‘[n]o preventive detention regime in US law sees more use or affects as many people as does the immigration detention system’ (Klein and Wittes, 2011: 141).

Thus far I have argued that indefinite detentions in the US have, in large measure, been a necessary concomitant to the settler colonists’ appropriation of Indigenous ***lands***, their utilization of enslaved labor to ‘develop’ and profit from those ***lands***, and their desire to contain and control sectors of the population they perceive as superfluous to the well-being of ‘their’ state. From this perspective, the exclusion of Indigenous and Afrodescendant peoples through various forms of incarceration is integrally related to their histories of having been involuntarily included in the course of American colonial expansion. Immigrants are generally understood to be voluntary migrants and, therefore, it might appear that their exclusion from the United States, either through internment or deportation, is unrelated to the forced inclusions that inevitably characterize colonial ventures.

In fact, however, immigration-based detentions can be seen as integrally related to American settler colonialism. An assumed right to control who may, must, or may not enter the territory, and who may or must leave it, is a foundational precept of the sovereign prerogative claimed by colonial founders of the state (Veracini, 2010: 16–17). As the Supreme Court candidly stated in its 1901 decision in *Downes v. Bidwell*, where it refused to extend constitutional protections to the residents of external colonies such as Puerto Rico, ‘[t]he power to acquire territory…implies not only the power to govern such territory, but to prescribe upon what terms the United States will receive its inhabitants, and what their status shall be’ (*Downes v. Bidwell*, 182 U.S. 244, 1901: 279). Despite the master narrative’s rhetorical insistence that this is a ‘nation of immigrants’ (White House, Office of Communications, 2013) – a framing that serves primarily to erase Indigenous sovereignty – it has always been more accurately described, as it was by the so-called Native Sons of the Golden West, as ‘the White Man’s Paradise’ (CWRIC, 1982: 364, n. 41). In attempting to create and maintain this ‘paradise’, immigration policies have played a critical role.

Mae Ngai has documented in detail how global migration is not simply ‘a unidirectional phenomenon, in which the hapless poor of the world clamor at the gates of…wealthier nations’ and, more particularly, how American immigration history is ‘the product of specific economic, colonial, political, military, and/or ideological ties between the United States and other countries’ (Ngai, 2004: 11, 10). Given the United States’ remarkably successful campaign to depict this as a ‘***land*** of opportunity’ for all, many undoubtedly came voluntarily, believing – accurately or not – in their ability to share in the benefits accrued by the largely Euroderivative settler class (Lockwood, 2013). Many others, however, have migrated under very different circumstances, from Chinese laborers literally kidnapped and forced to migrate (Redman, 2010: 2–5) to Filipinos, Puerto Ricans and Pacific Islanders driven from their homelands by US colonial occupation and its economic consequences (Andres, 2009: 530–531; Román and Simmons, 2002: 488–519; Torruella, 2013: 82–87); to Central American refugees, themselves Indigenous peoples, forced off their ***lands*** by US-backed military governments (Romig, 1985: 317–18); to those, like Mexican subsistence farmers, no longer able to feed their families as a result of global economic agreements (Belanger, 2006: 2–3, 13–16); to refugees generated by US wars, from Southeast Asia to Iraq, Afghanistan, and Syria (Chow, 2005: 106–111; Hedges, 2013).

In many of these cases, governmental policies have facilitated the importation of labor when the otherwise available workforce was inadequate to settler territorial or economic expansion, and then excluded these workers during periods of economic downturn (López, 2012). In other instances, such as the influx of refugees generated by US wars, the diversification of the population seems less intentional, accepted, often grudgingly, as the collateral damage of the policies and actions perceived as necessary to achieve or maintain global hegemony (Scott, 2014).

Despite the wide range of motivations impelling migrations to the United States, certain commonalities, or patterns, can be seen in terms of the subordination of migrants, particularly migrants of color, in the interest of maintaining colonial relations. One of these is the government’s consistent use of a virtually unfettered prerogative to detain immigrants. This section provides a few illustrative examples of this process.

During the mid-19th century, Chinese workers were heavily – and often involuntarily – recruited to the United States to serve as a readily contained and presumptively disposable pool of low-wage labor essential to the ***agricultural*** and industrial development of the West (Galenson, 1984: 15; Takaki, 1989: 79–88). Within a few decades, however, the Chinese were increasingly depicted as a ‘yellow peril’ intent on displacing White workers and Congress responded to the mounting calls for exclusion by passing the first federal immigration laws since the prohibition of the slave trade. A series of Chinese Exclusion Acts was passed in the 1880s, prohibiting the entry of Chinese workers, precluding the reentry of Chinese residents who left the country, and creating a presumption of illegal presence that could be rebutted only with a certificate of residence (‘a kind of internal passport’) attested to by White witnesses (Daniels, 2004: 17–22). Equally egregiously, during the Depression of the 1930s, when their labor was no longer desired, about one-third of the population of Mexican origin – both citizen and noncitizen – was summarily rounded up and deported (Johnson, 2004: 661–667).

In the *Chinese Exclusion Cases*, the Supreme Court first articulated the plenary power doctrine referenced above with respect to the federal government’s assertion of absolute authority, unconstrained by otherwise applicable constitutional protections, over American Indian nations and external colonies. Deferring to the political branches of government – that is, Congress and the Executive – the Court authorized exclusion based solely upon race or national origin (*Chae Chan Ping v. United States*, 130 U.S. 581, 1889: 606) and refused to characterize deportation as punishment (*Fong Yue Ting v. United States*, 149 U.S. 698, 1893: 730–734). Subsequently, the Court exempted detention pending deportation from otherwise applicable constitutional constraints (*Rodriguez-Fernandez v. Wilkerson*, 654 F.2d, 10th Cir. 1981: 1385). Since then, indefinite detention pending deportation or, more recently, adjudication of asylum claims, has been standard practice, limited only by Supreme Court rulings in 2001 and 2005 that in the absence of a ‘significant likelihood of ***removal***’ persons deemed deportable or inadmissible could not be held for more than 6 months without administrative review (*Zadvydas v. Davis*, 533 U.S. 678, 2001: 701; *Clark v. Martinez*, 543 U.S. 371, 2005; Moore, 2013). Even this limitation has recently been called into question (*Jennings v. Rodriguez*, 138 S.Ct. 830, 2018).

During the Cold War, these immigration powers were utilized to indefinitely detain noncitizens whom the government wished to deport but had nowhere to go. Thus, for example, the Court allowed Ignatz Mezei, a permanent resident who had gone to Europe to visit his ailing mother, to be held indefinitely on Ellis Island, without a hearing, on the attorney general’s assertion that his reentry would be ‘prejudicial to the public interest’ (*Shaughnessy v. United States* ex rel*. Mezei*, 345 U.S. 206, 1953: 208). During the 1980s, these precedents were invoked to allow the indefinite detention of Mariel Cubans (*Fernandez-Roque v Smith* (11th Cir. 1984); *Garcia-Mir v Meese* (11th Cir. 1986); Boswell, 1997: 702; Taylor, 1995). 16 The injustice inherent to such practices was articulated by the Tenth Circuit Court of Appeals in the *Rodriguez-Fernandez* case when it ordered the release of a Mariel Cuban who was excludable but had nowhere else to go: The case law generally recognizes almost absolute power in Congress concerning immigration matters, holding that aliens in petitioner’s position cannot invoke the Constitution to avoid exclusion and that detention pending deportation is only a continuation of exclusion rather than ‘punishment’ in the constitutional sense…[Yet, in] the instant case the detention is imprisonment under conditions as severe as we apply to our worst criminals. It is prolonged; perhaps it is permanent. (*Rodriguez-Fernandez v. Wilkerson*, 654 F.2d 1382, 10th Cir. 1981: 1385) The Tenth Circuit’s view, however, did not prevail (*Jean v. Nelson,* 727 F. 2d 957, 11th Cir. 1984: 968), and it was 25 years before the Supreme Court ruled that the Marielitos could not be held forever (*Clark v. Martinez*, 543 U.S. 371 (2005)). Until then, ‘any Mariel refugee who had not become an American citizen or legal resident could be detained indefinitely after completing a jail term for even the smallest crime’ (Ojito, 2005).

In the meantime, the United States had interdicted and detained or repatriated tens of thousands of Haitian asylum seekers, holding those detainees it found to have credible asylum claims at its naval base at Guantánamo Bay, Cuba (*Sale v. Haitian Centers Council, Inc*., 509 U.S. 155 (1993); Paik, 2016: 91–99; Frelick, 1993). Ultimately, some 12,500 Haitians were interned at Guantánamo before the United States began forcibly returning Haitians intercepted on the high seas and, eventually, invading Haiti in 1994 to restore ‘stability’ to the region and avert ‘the threat of a mass exodus of refugees’ (Paik, 2016: 99). Arguing that Guantánamo was not under US sovereign control, US officials repudiated any legal responsibility regarding the detainees’ basic human rights, setting the stage for its current use of the naval base (Paik, 2016: 95–96). The Haitians were held in overcrowded, unsanitary conditions that they were told could last for decades, forced to live ‘a life of animals, of beasts’, in the words of one detainee (Paik, 2016: 105).

In 1993, as migration from Central America increased largely as a result of the wars being waged by US-backed military governments in the region, the Supreme Court allowed the immigration service to detain over 1000 unaccompanied children each year, often in adult facilities, rather than releasing them to noncustodial family members or guardians (*Reno v. Flores*, 507 U.S. 292, 1993). Mandatory detention was imposed on asylum seekers and most deportable migrants in 1996 (Antiterrorism and Effective Death Penalty Act, 1996; Illegal Immigration and Immigrant Responsibility Act, 1996), and in 2003, asylum and immigration control was transferred to the newly formed Department of Homeland Security. Since 2009, the immigration authorities have consistently filled a congressionally mandated quota of at least 34,000 beds for detainees (Torrey, 2015). During fiscal year 2014, the United States held some 425,000 persons – more than twice the federal prison population – in immigration detention, primarily in private prisons or local jails. While most are held for a matter of weeks, many others remain incarcerated for years (Karaim, 2015). In 2001, the US government opened its first family detention center and in 2014, it dramatically expanded the use of family detention with the stated purpose of deterring undocumented migration (Preston, 2014; Hatoum, 2015). This policy may change following a July 2016 ruling by the Ninth Circuit Court of Appeals that a 1997 settlement agreement prohibiting the detention of unaccompanied children applies to children accompanied by their parents – but not to the parents – but only as a result of political pressure, not legal constraint (*Flores v. Lynch*, 9th Cir., July 6, 2016).

The 2001 USA PATRIOT Act included broad provisions for the indefinite detention of noncitizens, including permanent residents, reasonably believed to be involved in terrorism or subversion, subject only to the attorney general’s review and renewal every 6 months (8 U.S.C. § 1226a(a)(1)–(7) (2001)). As Klein and Wittes note, however, this provision has never been used because ‘[t]he other immigration detention authorities are themselves so robust that it apparently has not been necessary’ (Klein and Wittes, 2011: 143). In the *Rodriguez-Fernandez* case, the appellate court noted that ‘no principle of international law is more fundamental than the concept that human beings should be free from arbitrary imprisonment’ and argued that some constitutional constraints must apply, for ‘[s]urely Congress could not order the killing of Rodriguez-Fernandez and others in his status on the ground that Cuba would not take them back and this country does not want them’ (*Rodriguez-Fernandez v. Wilkerson*, 654 F.2d 1382: 1388, 1387). It is not clear, however, that this is true. Thus, for example, the US government has justified the rendition of noncitizens from the United States to Syria and other unknown locations, with the intent to subject them to intense interrogation and severe torture, by arguing that anyone presenting a foreign passport at a port of entry, even if only changing planes, can be considered to be ‘seeking admission’ into the United States, and that anyone deemed ‘inadmissible’, even wrongly or illegally, remains ‘outside’ the United States and, therefore, outside the protections of the Constitution (Bernstein, 2005; Fitzpatrick, 2003).

**Concluding Thoughts**

Indefinite detention is often described – and contested – as a form of exclusion from society having spatial, biological, conceptual, and legal dimensions. Denied the protections penal law purports to provide, detainees are forcibly confined, subjected to physical and mental torture, and rendered socially invisible. Exclusion, however, implies a border between inside and outside; it can exist only in relation to inclusion. Similarly, exceptions arise only in relation to rules. Thus contextualized, Agamben defines the ‘relation of exception’ as ‘the extreme form of relation by which something is included solely through its exclusion’ (Agamben, 1998: 18). His characterization of ‘the exception [as] an *inclusive exclusion*’ (Agamben, 1998: 21) provides a useful starting point for understanding indefinite detentions in settler colonial contexts, for colonization is a process of forcible inclusion that must be realized for there to be anyone or anything to exclude. 17

To the extent the inclusion of peoples perpetually rendered ‘different’ has been integral to US colonization and imperial expansion, the concomitant exclusions, or internments, must be seen as normative rather than exceptional. The United States would not have the ***land*** base that allows for its physical existence and its wealth without the forced ***removal*** of American Indians from their traditional ***lands*** and their militarily enforced confinement to reservations or boarding schools. The involuntary labor relied upon by the settlers to render these ***lands*** profitable cannot be divorced from the concentration camps of chattel slavery or their subsequent evolution into the world’s largest prison system. The disposable labor force on which the settlers still depend has been constructed and controlled by mass internments and an immigration system that has long relied upon indefinite detention. Most recently, it appears that the arbitrary and dehumanizing incarceration of people who are, or are perceived to be, Arab, Muslim and/or of Middle Eastern origin is integral to the United States’ maintenance of global hegemony (Saito, 2001).

Most of the peoples of color interned by the United States have been in a position to be excluded by virtue of having first been involuntarily included in the American settler colonial project. As a result, the exclusion represented by the indefinite detentions to which they have been subjected cannot adequately be understood – much less redressed – without simultaneously addressing the underlying inclusions, that is, the appropriation of ***lands***, resources, and human bodies in the interest of colonial expansion. More recent migrants and refugees may be perceived as voluntarily requesting inclusion, but in many instances their migrations can be seen as proximately caused by the United States’ exercise of its military and economic power on a global scale. These and many other racialized detentions – each a conscious project of the settler state – are characterized by the twinned dimensions of inclusion and exclusion that reflect the internal logic of colonialism as well as its more practical aims.

To the extent the dynamic of exclusion cannot be separated, in theory or practice, from that of involuntary (i.e., colonial or imperial) inclusion, the resulting injustices are not exceptional but organic to the state’s assertion of its sovereign prerogative (Wolfe, 1999: 204–210). This helps explain the consistency with which the United States has utilized indefinite detentions throughout its history, while also suggesting that such practices cannot be effectively prevented or redressed within a paradigm of law, constitutional or otherwise, that rests upon colonial foundations. Throughout American history, the settler state has exercised its claimed prerogative to indefinitely detain individuals or entire peoples in what it claims to be the national interest. With equal consistency, this power has been ratified by the Supreme Court, often in the name of judicial deference to the plenary authority of the political branches of government.

In the seminal *Downes v. Bidwell* decision referenced above, Justice Henry Billings Brown acknowledged that such ‘an unrestrained possession of power’ could lead to concerns about despotism. He assured, us, however, that we need not worry, for ‘[t]here are certain principles of natural justice inherent in the Anglo-Saxon character, which need no expression in constitutions or statutes to give them effect’ (*Downes v. Bidwell*, 182 U.S. 244, 1901: 280). In support of this explicitly racialized proposition, he quoted the following statement from Chief Justice John Marshall’s opinion in *Johnson v. McIntosh*, the 1823 case that deemed American Indians incapable of owning their own ***lands***: The title by conquest is acquired and maintained by force. The conqueror prescribes its limits. Humanity, however, acting on public opinion, has established, as a general rule, that the conquered shall not be wantonly oppressed, and that their condition shall remain as eligible as is compatible with the objects of the conquest. (*Downes v. Bidwell*, 182 U.S. 244, 1901: 281; quoting *Johnson v. McIntosh*, 21 U.S. 543, 1823: 589) As of 2018, the US government’s power to indefinitely detain whomever it wishes, under whatever conditions it deems appropriate, still rests on this legal foundation. The ability to detain is constrained not by the rule of law but by ‘the objects of the [colonial] conquest’ and conditions of detention are limited, in essence, only by the ‘principles of natural justice inherent in the Anglo-Saxon character’. If we wish to effectively contest the conditions of exclusion embodied, quite literally, in indefinite detentions, we will also have to address and contest the underlying colonization that dictates the terms upon which those deemed Other have been and continue to be incorporated into, or subsumed by, the claimed jurisdiction of the United States.

**Notes**

Author’s note This work was first presented as a keynote at the *Genealogies of Indefinite Detention* Symposium held at the University of New South Wales, Sydney, Australia, in August 2015.; Declaration of Conflicting Interests The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.; Funding The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The author received summer research grants from the Georgia State University College of Law.; 1. Van Bergen and Valentine note that administrative detentions, also known as indefinite or preventive detentions, ‘are, by definition and practice, sought [by the executive] only during “national emergencies”’.; 2. Some 70,000 Japanese American internees were US citizens by birth in the territory; others were permanent residents precluded from citizenship by racial restrictions in US naturalization law. See *Korematsu v. United States*, 323 U.S. 214 (1944: 242) (Murphy, J., dissenting) (noting the internment of 70,000 Americans citizens) and *Ozawa v. United States* 260 U.S. 178 (1922) (precluding Japanese immigrants from naturalized citizenship). I use the term ‘Japanese American’ to refer to both. On Guantánamo, see Pugliese, 2015. As of 22 February 2017, 41 detainees remained. Guantanamo Docket (ND).; 3. ‘Order’ here refers both to the regulation of society in the interest of the status quo, as in the phrase ‘law and order’, and to the ‘ordering’ of that society in a hierarchy rationalized, implicitly or explicitly, in terms of a Western, linear vision of ‘human progress’.; 4. Agamben (1998:166) references the debate among historians over whether to attribute the origins of the concentration camp to the Spanish in Cuba in 1896 or the English in the Boer War of 1899–1902. For reasons described below, I place its origins much earlier. For a thoughtful analysis applying Agamben's theory of biopower to US militarization and empire in Guam, see Camacho (2016).; 5. Those implementing the internment were clear that these were concentration camps – a term not to be confused with extermination camps. Dillon S. Myer, Director of the War Relocation Authority (WRA) and directly responsible for the camps, stated that the Moab, Utah facility was ‘nothing more than a concentration camp’ (Drinnon, 1987: 62; Daniels, 1972). Tom Clark, the Justice Department’s liaison to the WRA during the war, said upon his retirement from the Supreme Court in 1967, ‘We picked the [Japanese Americans] up and put them in concentration camps. That’s the truth of it’ (Weglyn, 1976: 214). On November 21, 1944, President Roosevelt openly stated that American citizens of Japanese descent were being ‘kept locked up in concentration camps’ (Weglyn, 1976: 217).; 6. Yoo (2003: 7) cites an 1873 opinion by the attorney general on the treatment to be accorded ‘Modoc Indian Prisoners’ to argue that interrogations of terror suspects remain outside the purview of civil law. Fletcher and Vicaire (2011: 18–24) provide additional examples of governmental invocation of the ‘Indian Wars’ to justify the conduct of the War on Terror.; 7. Thornton (1984: 293) states ‘The Choctaws are said to have lost 15 percent of their population, 6,000 out of 40,000; and the Chickasaw…surely suffered severe losses as well. By contrast, the Creeks and Seminoles are said to have suffered about 50 percent mortality’.; 8. The Commission noted that the Federal Bureau of Investigation, the Office of Naval Intelligence, the attorney general, and a State Department investigation had all concluded there was ‘no Japanese “problem”’ on the West Coast prior to President Franklin Delano Roosevelt’s evacuation order of February 1942. On Warren's role, see also Cho, 1998.; 9. Without using the words ‘slave’ or ‘slavery’, the US Constitution provided that: (1) slaves would be counted as three-fifths of a person for purposes of taxation and representation; (2) the slave trade could not be banned before 1808; and (3) fugitive slaves had to be returned to their masters.; 10. Baptist describes the increasingly precise means of ‘calibrating time and torture’ that led to a fourfold increase in the cotton harvested per person between 1800 and 1860.; 11. Touré describes the Fourteenth Amendment as ‘robbing [Afrodescendant peoples] of their right to national independence, repatriation to their Afrikan homeland, or emigration to new ***lands*** of their own choosing’.; 12. In *The Slaughter-House Cases* the Supreme Court noted that the Black codes had been passed so that ‘the condition of the slave race would…be almost as bad as it was before’.; 13. According to Blackmon, mortality rates soared as a result, reaching, for example, 45% in Alabama’s fourth year of convict leasing. He also discusses the less formal system of re-enslavement that continued in Alabama and the Justice Department’s only partially successful attempts to prosecute related ‘peonage’ cases in 1903 (Blackmon, 2008: 155–232).; 14. California, for example, imposed a ‘foreign miners tax’ that generated between one-quarter and one-half of California’s state revenue between 1852 and 1870. Those who could not pay the tax were put to work building roads or otherwise providing free labor for the state (Takaki, 1989: 82).; 15. Nossiter (1997) describes the a practice of shackling inmates to a metal bar, outside in summer and winter, for up to 7 h.; 16. Boswell (1997: 702) notes that Cuban prisoners were not accorded Eighth Amendment rights even while held in maximum security federal prisons because immigration detention was deemed civil, not criminal.; 17. Agamben’s work does not address colonial relations directly. Simone Bignall thus notes that ‘the position of indigenous peoples within the settler-state presents a ‘peculiar’ situation of contested sovereignty, which calls for a revision – or an expanded interpretation – of Agamben’s core concepts’ (Bignall, 2012: 264). I believe such revision or extension is also needed with respect to internally colonized peoples who, as a result of involuntary relocation, may not be indigenous to the ***lands*** on which they now reside. Work describing African Americans as well as American Indians has called them ‘peoples encapsulated within established states’ (Richardson, et al., 1991: 542).

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[***Sen. Booker, Rep. McEachin Announce Reintroduction of The Environmental Justice Legacy Pollution Cleanup Act***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:62XR-M051-F0YC-N04J-00000-00&context=1516831)

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**Body**

Washington: Office of the Senator Cory Booker has issued the following news release:

U.S Senator Cory Booker (D-NJ) and Congressman A. Donald McEachin (D-VA) today announced they will be reintroducing the Environmental Justice Legacy Pollution Cleanup Act, a bill aimed at eliminating pollution that has disproportionately harmed communities of color, Indigenous communities, and low-income communities for generations. This critical legislation would invest over $200 billion to clean up legacy pollution. This bill will also be co-sponsored by Senators Schatz (D-HI), Smith (D-MN), Durbin (D-IL), Whitehouse (D-RI), Wyden (D-OR), Sanders (I-VT), Duckworth (D-IL), Markey (D-MA), Gillibrand (D-NY), Van Hollen (D-MD), Warren (D-MA), Blumenthal (D-CT), Merkley (D-OR) and Padilla (D-CA).

In the United States, pollution is not evenly distributed. Communities of color, Indigenous communities, and low-income communities disproportionately bear the burden of high levels of air pollution, contaminated drinking water, and proximity to toxic waste sites. For example, according to reports, African Americans are 54% more likely to live in areas of heavy air pollution, and low income communities are 35% more likely.

Additionally, studies have shown that living near toxic waste sites can lead to higher rates of cancer, greater likelihoods of birth defects and autism, and countless other avoidable illnesses. Three out of five African Americans live close to toxic waste sites, and they are also three times more likely to die prematurely from exposure to fine particulate matter air pollution. There is also compelling evidence from recent scientific research that communities with higher levels of air pollution have significantly higher levels of coronavirus infections, hospital admissions, and deaths.

Many environmental justice communities lack the basic resources most Americans take for granted: one in eight Native Americans lacks reliable access to water, and Black families are twice as likely as white families to live without modern plumbing. Black children are nearly three times more likely than white children to have unsafe blood lead levels.

“In our nation, the biggest determining factor of whether you live near toxic pollution, whether you drink contaminated water, or whether you breathe dirty air is the color of your skin and your economic status,” said Senator Booker. “That’s wrong, and it’s time to make it right. In order for communities of color, low-income communities, and Indigenous communities to thrive, this legacy of environmental injustice must be addressed. The Environmental Justice Legacy Pollution Cleanup Act will make the necessary federal investments to clean up this legacy pollution, and I plan to fight to have this funding included in the upcoming infrastructure and climate change legislation. ”

“All Americans should have the right to clean air, clean water, and a healthy environment, regardless of their zip code or socioeconomic status. For generations, low-income communities and communities of color have been subjected to legacy pollution and have suffered adverse health effects as a result. For too long, environmental hazards, like toxic waste sites and contaminated water lines, threaten the well-being of our communities,” said Rep. McEachin (VA-04). “We must keep environmental justice issues at the forefront of every discussion and work to combat these inequities. The Environmental Justice Legacy Pollution Cleanup Act is a monumental step towards rectifying the harm these communities face. Not only will it help clean up pollution in our communities, it will help hold large corporations accountable and ensure healthier outcomes for future generations. ”

“Everyone deserves access to clear water and a clean environment, but this isn’t the reality for many communities across the country. Our bill provides the funds we need to address decades of environmental injustices, and to finally ensure that people in communities of color, low-income communities, and Indigenous communities do not bear the burden of legacy pollution and harmful infrastructure,” said Senator Schatz.

“We need to root out environmental injustices that are harming the health and safety of low-income communities, Indigenous populations and communities of color,” said Sen. Smith. “The Environmental Justice Legacy Pollution Cleanup Act addresses existing environmental injustices by cleaning up dangerous toxic sites, eliminating lead-based paint in homes, replacing lead drinking water service lines and more. This bill is one of the many steps we must take to address systemic racism, and fulfill our country’s promise of freedom and equality for all. ”

“Addressing the climate crisis does not only mean transforming our energy system away from fossil fuels,” said Sen. Sanders. “It must also mean making right the dangerous pollution that hits frontline communities hardest and first, including low-income communities, Indigenous communities, and communities of color. This legislation is an important step toward dismantling the toxic legacy of pollution and creating a future built on environmental justice. ”

“We're grateful to Senator Booker and Congressman McEachin for this proposal for investments that will not only remediate former mines, brownfields, and other hazardous sites, but will also create thousands of jobs in disadvantaged communities, including areas in Appalachia dealing with the decline of the coal industry,” said Chelsea Barnes, Legislative Director for Appalachian Voices. “Now is the time to provide a major economic boost where it is needed most. ”

“We value Senator Booker's leadership, vision and commitment to create tangible solutions to the toxic legacy of lead in this country that continues to poison hundreds of thousands of children and communities,' said Ruth Ann Norton, President & CEO of Green & Healthy Homes Initiative, which leads national efforts to integrate lead hazard control, healthy homes and weatherization and energy efficiency work. “We have known for nearly a century how dangerous lead paint and pipes are and we know what must be done to fix it. It's long past time to make investments at scale to address housing and water systems and improve racial and economic disparities and health outcomes, while also providing workforce development opportunities. Passing the Environmental Justice Legacy Pollution Clean Up Act of 2021 is critical, right and necessary to bring an end to lead poisoning and create healthier and more equitable futures for every child. ”

“For generations our country has treated Black, Indigenous, Lantinx, and other disenfranchised and disadvantaged communities as national sacrifice zones. Senator Booker’s historic bill rightly invests in confronting the environmental injustices plaguing frontline communities,” said Mustafa Santiago Ali, vice president of environmental justice, climate, and community revitalization. “The Senate should swiftly take up this landmark legislation, which will lift up communities, create good-paying jobs, address systemic racism, and recover wildlife. ”

“Every person, no matter what they look like or where they live, is entitled to safe drinking water and clean waterways,” said Andy Kricun, Chair of the NJ Environmental Justice Advisory Council’s Water Equity Committee. “No one, no matter what they look like or where they live, should have to worry about lead in their drinking water, or their children walking through puddles of sewage when it rains. Senator Booker's Environmental Justice Legacy Pollution bill will go a long way to end these long standing public health and environmental injustices. ”

“Trees are natural infrastructure that combat the impacts of legacy pollution by cleaning our air and water, providing life-saving protection from extreme heat and flooding, and catalyzing healthier more vibrant communities,” said Joel Pannell, vice president of urban ***forest*** policy at American ***Forests***. “Unfortunately, a map of tree cover in most American cities is too often a map of income and race as far too many neighborhoods suffer from a lack of adequate tree canopy due to decades of exclusionary and exploitative policies and practices. In this moment of bending the arc toward justice, Tree Equity is not just an environmental justice issue, it’s a moral imperative. We applaud Senator Booker and Rep. McEachin for their leadership with this critical legislation, which would plant an estimated 100 million trees in low-income communities. Trees are essential to the health, wealth, and resilience of all communities and now is the time to close the gap so that everyone can enjoy the benefits of the power of trees. ”

“Environmental racism has turned our communities into sacrifice zones, collective dumping grounds for pollution that has a cumulative impact on the health of those who live there, including higher rates of mortality and morbidity,” said Peggy Shepard, Co-Founder & Executive Director of WE ACT for Environmental Justice. “We thank Senator Cory Booker and Congressman Donald McEachin for sponsoring the Environmental Justice Legacy Pollution Cleanup Act, which represents the sort of bold, equitable, and curative response needed to start building healthy communities for all. ”

“It is past time that real action is taken to address the environmental injustice that has impacted Black and Brown and low-income Americans for generations,” said Jason Walsh, Executive Director of the BlueGreen Alliance. “The Environmental Justice Legacy Pollution Cleanup Act announced today by Sen. Booker and Rep. McEachin takes tangible steps to clean up polluted sites and abandoned mine ***lands*** and replace lead service lines, addressing long standing racial injustice, creating good-paying, union jobs for workers, and ensuring that families and communities have access to clean water and safe homes. ”

Senator Booker’s Environmental Justice Legacy Pollution Cleanup Act would:

Cleanup Toxic Sites

· Provide $10 billion to the EPA Superfund National Priorities List to accelerate the cleanup of toxic sites and help clear the largest backlog of unfunded sites since 2004.

· Provides $10 billion to the Abandoned Mine Reclamation Fund, an investment that would fund the reclamation of thousands of eligible abandoned mine ***lands*** sites.

· Dedicates $10 billion to the Environmental Protection Agency Superfund Program to remediate abandoned hard rock mines, with priority given to sites located on tribal ***land***.

· Provide $3 billion for grants to remediate brownfield sites. Such remediation efforts are a major boon to economically depressed communities, producing roughly $20 in economic benefits for every $1 spent.

· Provide $10 billion to the Formerly Used Defense Sites Program and clean up 90% of these sites. The EJLPA also commits $3 billion to the Formerly Utilized Sites Remedial Action Program, which will remediate tens of thousands of acres of formerly radioactive ***land*** and return hundreds of properties back to public use.

Improve Air Quality

· Provide $30 billion to replace over 50% of diesel school buses with zero ***emission*** school buses in the most disadvantaged school districts.

· Commits $25 billion to urban tree planting initiatives, an investment that will plant an estimated 100 million trees with priority given to projects in low-income communities and communities with lower tree canopy cover and higher daytime maximum temperatures.

Address Lead, Clean Water, and Sanitation Issues

· Inject $45 billion into a U.S Department of Housing and Urban Development grant program to remediate lead-based paint hazards in low income housing, the leading cause of childhood lead poisoning in the United States. This funding would eliminate lead based paint hazards in nearly 4 million low income households.

· Provides $1 billion for grants to tribal governments to address housing-related safety hazards.

· Provide $45 billion in funding to replace every lead drinking water service line in the country.

· Commits $10 billion in funding to the U.S Department of ***Agriculture***’s Rural Decentralized Water Systems Program, which will give nonprofits capacity to provide grants to hundreds of thousands of homes to construct or improve individual household water well and wastewater systems.

· Provide $3 billion to the Indian Health Service (IHS) to build and renovate sanitation infrastructure, which will bring safe drinking water and adequate sewage systems to everyAmerican Indian and Alaskan Native household.

· Provides $25 billion to the EPA to address combined sewer overflows, which will eliminate most overflow problems in economically distressed communities.

The full list of endorsing organizations can be viewed here.

The full text of the Environmental Justice Legacy Pollution Cleanup Act is available here.

Throughout his time in the Senate, Sen. Booker has extensively worked on and passed environmental justice legislation. In 2019, Booker re-introduced the Environmental Justice Act that requires federal agencies to mitigate environmental injustices through agency action and strengthens the legal protections of those affected by environmental injustices. Additionally, that same year, he introduced and passed into law the Water Infrastructure Funding Transfer Act that gave states facing a threat to public health from lead in drinking water the flexibility to make a one-time transfer of the federal funds in their Clean Water State Revolving Fund to their Drinking Water State Revolving Fund for projects that will ***remove*** lead from drinking water. Additionally, in 2020, he introduced the Environmental Justice Legacy Pollution Cleanup Act with former Congresswoman Debra Haaland (D-NM) that would invest $100 billion to clean up legacy pollution that disproportionately harms low income communities, communities of color, and Indigenous communities such as Superfund sites, abandoned coal mines, and lead in drinking water.

**Load-Date:** June 16, 2021

**End of Document**



[***Federal Register: Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of the California Condor in the Pacific Northwest Pages 15602 - 15623 [FR DOC #2021-05646]***](https://advance.lexis.com/api/document?collection=news&id=urn:contentItem:628W-8H61-F0YC-N2KP-00000-00&context=1516831)

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**Body**

Washington: Office of the Federal Register has issued the following notice:DEPARTMENT OF THE INTERIORFish and Wildlife Service50 CFR Part 17[Docket No. FWS-R1-ES-2018-0033; FXES111300000900000 178 FF09E42000]RIN 1018-BC65Endangered and Threatened Wildlife and Plants; Establishment of a Nonessential Experimental Population of the California Condor in the Pacific NorthwestAGENCY: Fish and Wildlife Service, Interior.ACTION: Final rule.-----------------------------------------------------------------------SUMMARY: We, the U.S Fish and Wildlife Service (Service or USFWS), are establishing a nonessential experimental population (NEP) of the California condor (Gymnogyps californianus) in the Pacific Northwest, under section 10(j) of the Endangered Species Act of 1973, as amended (Act). Establishment of this NEP will facilitate reintroduction of California condors to the region and provide for allowable legal incidental taking of the California condor within a defined NEP area. The geographic boundaries of the NEP include northern California, northwest Nevada, and Oregon. The best available data indicate that reintroduction of the California condor into the Pacific Northwest is biologically feasible and will promote the conservation of the species.DATES: This final rule is effective April 23, 2021.ADDRESSES: This final rule is available on [*http://www.regulations.gov*](http://www.regulations.gov) at Docket No. FWS-R1-ES-2018-0033 and on our website at [*https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B002*](https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B002). Comments and materials we received, as well as supporting documentation we used in preparing this rule, are also available for public inspection at [*http://www.regulations.gov*](http://www.regulations.gov). Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 1-800-877-8339.FOR FURTHER INFORMATION CONTACT: Jesse D'Elia, Pacific Regional Office, U.S Fish and Wildlife Service, Ecological Services, 911 NE 11th Ave., Portland, OR 97232; telephone 503-231-6131. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 1-800-877-8339.SUPPLEMENTARY INFORMATION:Executive Summary Why we need to publish a rule. Under the Endangered Species Act, a population of a threatened or endangered species may be designated as an experimental population prior to its reintroduction. Experimental populations can only be designated by issuing a rule. What this document does. This rule will designate California condors (Gymnogyps californianus) reintroduced to the Pacific Northwest as a nonessential experimental population on the List of Endangered and Threatened Wildlife in title 50 of the Code of Federal Regulations at 50 CFR 17.11(h) with a rule issued under section 10(j) of the Act (hereafter referred to as a ``10(j) rule'') at 50 CFR 17.84 The basis for our action. Based on the best scientific and commercial data available (in accordance with 50 CFR 17.81), we find that releasing the California condors into the Pacific Northwest, with the regulatory provisions in this final rulemaking, will further the conservation of the species. The nonessential experimental population status is appropriate for the reintroduced population because we have determined that it is not essential to the continued existence of the species in the wild. In making our finding that this action will further the conservation of the species, we evaluate any possible adverse effects on extant California condor populations, the likelihood that any such experimental population will become established and survive in the foreseeable future, the relative effects that establishment of an experimental[[Page 15603]]population will have on the recovery of the species, and the extent to which the reintroduced population may be affected by existing or anticipated Federal or State actions or private activities within or adjacent to the experimental population area. This rule also identifies the boundaries of the experimental population, explains our rationale for why the population is not essential to the continued existence of the species in the wild, describes management restrictions, protective measures, or other special management concerns of that population, and explains a process for periodic review and evaluation of the success or failure of the release and the effect of the release on the conservation and recovery of the species. In June 2016, a Memorandum of Understanding (MOU) was finalized to assess the potential to recover California condors in the Pacific Northwest and to work to seek funding to support that effort if it proved feasible. The MOU currently has 16 signatories. Peer review and public comment. We sought comments from three objective and independent specialists (and received two responses) to ensure that our findings are based on scientifically sound data, assumptions, and analyses. As directed by the Service's Peer Review Policy dated July 1, 1994 (59 FR 34270) and a recent memo updating the peer review policy for listing and recovery actions (August 22, 2016), we invited these peer reviewers to comment on our proposal. We also considered all comments and information received during the public comment period. All comments received during the peer review process and the public comment period have either been incorporated throughout this rule or addressed below in Summary of Comments and Recommendations.Background On April 5, 2019, we published in the Federal Register a proposed rule to establish a nonessential experimental population of the California condor in the Pacific Northwest (84 FR 13587). The comment period on the proposed rule was open for 60 days, through June 4, 2019. Comments on the proposed rule are addressed below under Summary of Comments and Recommendations.Statutory and Regulatory Framework The 1982 amendments to the Endangered Species Act of 1973 (ESA or Act; 16 U.S.C 1531 et seq.) included the addition of section 10(j), which allows for the designation of reintroduced populations of listed species as ``experimental populations.'' Under section 10(j) of the Act and our regulations in title 50 of the Code of Federal Regulations (at 50 CFR 17.81), the Service may designate as an experimental population a population of endangered or threatened species that has been or will be released into suitable natural habitat outside the species' current natural range (but within its probable historic range, absent a finding by the Director of the Service in the extreme case that the primary habitat of the species has been unsuitably and irreversibly altered or destroyed). Before authorizing the release as an experimental population (including eggs, propagules, or individuals) of an endangered or threatened species, and before authorizing any necessary transportation to conduct the release, the Service must find by regulation that such release will further the conservation of the species. 50 CFR 17.81(b). In making such a finding the Service uses the best scientific and commercial data available to consider: (1) Any possible adverse effects on extant populations of a species as a result of ***removal*** of individuals, eggs, or propagules for introduction elsewhere (see Donor Stock Assessment and Effects on Donor Population, below); (2) The likelihood that any such experimental population will become established and survive in the foreseeable future (see Likelihood of Population Establishment and Survival and Addressing Causes of Extirpation, below); (3) The relative effects that establishment of an experimental population will have on the recovery of the species (see Relationship of NEP to Recovery Efforts, below); and (4) The extent to which the introduced population may be affected by existing or anticipated Federal or State actions or private activities within or adjacent to the experimental population area (see Likelihood of Population Establishment and Survival, below; National Park Service (NPS) 2018, entire). Further, as set forth in 50 CFR 17.81(c), all regulations designating experimental populations under section 10(j) must provide: (1) Appropriate means to identify the experimental population, including, but not limited to, its actual or proposed location, actual or anticipated migration, number of specimens released or to be released, and other criteria appropriate to identify the experimental population(s) (see Location and Boundaries of the NEP, below); (2) A finding, based solely on the best scientific and commercial data available, and the supporting factual basis, on whether the experimental population is, or is not, essential to the continued existence of the species in the wild (see Is the Experimental Population Essential or Nonessential?, below); (3) Management restrictions, protective measures, or other special management concerns of that population, which may include but are not limited to, measures to isolate and/or contain the experimental population designated in the regulation from natural populations (see Management, below); and (4) A process for periodic review and evaluation of the success or failure of the release and the effect of the release on the conservation and recovery of the species (see Monitoring and Evaluation, below). Under 50 CFR 17.81(d), the Service must consult with appropriate State fish and wildlife agencies, local governmental entities, affected Federal agencies, and affected private landowners in developing and implementing experimental population rules. To the maximum extent practicable, 10(j) rules represent an agreement between the FWS, the affected State and Federal agencies, and persons holding any interest in ***land*** that may be affected by the establishment of an experimental population. Under 50 CFR 17.81(f), the Secretary may designate critical habitat as defined in section 3(5)(A) of the Act for an essential experimental population. No designation of critical habitat will be made for nonessential populations. In those situations where a portion or all of an essential experimental population overlaps with a natural population of the species during certain periods of the year, no critical habitat will be designated for the area of overlap unless implemented as a revision to critical habitat of the natural population for reasons unrelated to the overlap itself. Any population determined by the Secretary to be an experimental population will be treated as if it were listed as a threatened species for purposes of establishing protective regulations with respect to that population. The protective regulations adopted for an experimental population will contain applicable prohibitions, as appropriate, and exceptions for that population. 50 CFR 17.82 Any experimental population designated for a listed species (1) determined not to be essential to the survival of that species and (2) not occurring within the National Park[[Page 15604]]System or the National Wildlife Refuge System will be treated for purposes of section 7 (other than paragraph (a)(1) thereof) as a species proposed to be listed under the Act as a threatened species. 50 CFR 17.83(a). Any experimental population designated for a listed species that either (1) has been determined to be essential to the survival of that species or (2) occurs within the National Park System or the National Wildlife Refuge System as now or hereafter constituted will be treated for purposes of section 7 of the Act as a threatened species. Notwithstanding the foregoing, any biological opinion prepared pursuant to section 7(b) of the Act and any agency determination made pursuant to section 7(a) of the Act will consider any experimental and nonexperimental populations to constitute a single listed species for the purposes of conducting the analyses under such sections. 50 CFR 17.83(b).Legal Status We listed the California condor as an endangered species under the Endangered Species Preservation Act of 1966 (ESPA) on March 11, 1967 (32 FR 4001, March 11, 1967). This list was later codified in part 17 of title 50 in the U.S Code of Federal Regulations (35 FR 16048, October 13, 1970). With the passage of the Endangered Species Act of 1973 (ESA), those species previously listed in the Code of Federal Regulations were directly incorporated into the Lists of Endangered and Threatened Wildlife and Plants under the ESA, found at 50 CFR 17.11 and 17.12 In October 1996, we designated a nonessential experimental population of the California condor in portions of northern Arizona, southern Utah, and southern Nevada (61 FR 54044, October 16, 1996). Therefore, the California condor is currently listed as an endangered species wherever it is found, except in portions of northern Arizona, southern Utah, and southern Nevada, where it is considered a nonessential experimental population. The California condor is protected by the State of California under both the State Endangered Species Act and the California Fish and Game Code as a Fully Protected species. It is also listed as a Sensitive Species under California ***Forest*** Practice Rules. In September of 2018, the State of California passed legislation that allows the California Department of Fish and Wildlife (CDFW) to consider the content of any final rules under section 10(j) of the Federal Endangered Species Act for the California condor. This legislation (AB2640) allows the Director of the CDFW to evaluate the final rule, and exempt take associated with the rule if the Director finds the Service's final rule would further the conservation of the species. If we are compelled, through court order or other means, to change the California condor's NEP status to essential, threatened, or endangered, FWS would meet with the parties to the 2016 MOU to discuss options on how to proceed, including the option of attempting to capture and relocate all condors in the wild within the NEP. We would make a fact-specific assessment of how to proceed based on the information at that time, including whether there was general agreement from the MOU partners that the condors should remain in the wild. Changes in the legal status and/or ***removal*** of this population of California condors will be made in compliance with any applicable Federal rulemaking and other procedures.Biological InformationSpecies Description The California condor is one of seven New World vultures in the Cathartidae family and the only extant species in the genus Gymnogyps (Amadon 1977, pp. 413-414; Johnson et al. 2016, pp. 193, 197). It is the largest of the North American vultures and the largest soaring ***land*** bird on the continent with a wingspan of approximately 9.5 feet (ft) (2.9 meters (m)) (Koford 1953, p. 3; Finkelstein et al. 2015, Introduction, Appearance). Males weigh slightly more than females (average weight of 19.4 pounds (lb) (8.8 kilograms (kg)) for males and 17.9 lb (8.1 kg) for females) and have slightly higher wing loading, but otherwise there are no obvious differences in coloration or morphology between the sexes (Finkelstein et al. 2015, Appearance). California condors exhibit age-related coloration changes (Koford 1953, p. 5; Snyder and Snyder 2000, pp. 14-19). Adults have black feathers except for prominent white underwing linings and edges of the upper secondary coverts. The head and neck of adults are mostly naked and range in color from yellowish to reddish orange on the head to gray, yellow, orange, and red on the neck (Koford 1953, pp. 4-5). The heads of juveniles up to 3 years old are grayish-black, and their wing linings are variously mottled or completely dark (Koford 1953, p. 5; Snyder and Snyder 2000, pp. 14-19). During the third year, the head develops yellow coloration, and the dark juvenile underwing linings are gradually replaced with white adult feathers (Snyder and Snyder 2000, pp. 15, 17). By the time individuals are 5 or 6 years of age, they are essentially indistinguishable from adults, but full development of the adult wing patterns may not be completed until 7 or 8 years of age (Snyder and Snyder 2000, pp. 15, 17; Finkelstein et al. 2015, Appearance). As obligate scavengers (i.e , relying entirely on dead animals for food), California condors have a number of physical and physiological adaptations that accommodate their highly specialized diet, including: (1) Large size, which is important for maintaining low-energy soaring flight, and enduring long periods without food; (2) excellent eyesight, which helps condors efficiently find food; (3) hooked bills and long necks, which allow condors to access muscle tissue deep within a carcass and to rip pieces of meat from a carcass; and (4) resistance to bacterial toxins, which is necessary for species that rely on carcasses (Snyder and Snyder 2005, pp. 7-31).Historical Range During the Pleistocene Epoch, the California condor was broadly distributed in North America from southern British Columbia to Baja California, and eastward throughout the southern United States and northern Mexico to Florida (Koford 1953, p. 7; Brodkorb 1964, pp. 253-254; Messing 1986, pp. 284-285; Steadman and Miller 1987, p. 423; Snyder and Snyder 2005, p. 6; D'Elia and Haig 2013, p. 17). The extent of its distribution along the east coast of North America during the late Pleistocene also extended to the boreal ***forests*** of upstate New York (Steadman and Miller 1987, pp. 416-423). The disappearance of the California condor from its prehistoric range in North America east of the Rocky Mountains occurred about 10,000-11,000 years ago coinciding with the late-Pleistocene extinction of the North American megafauna (Emslie 1987, pp. 768-770; Steadman and Miller 1987, pp. 422-425). Analysis of stable isotopes in bone collagen suggests that the California condor's persistence along the Pacific coast at the end of the Pleistocene was at least partially due to the availability of marine-derived carrion (Chamberlain et al. 2005, p. 16710; Fox-Dobbs et al. 2006, p. 688). Historical observations of California condors indicate that they were widespread and locally abundant from southern British Columbia, Canada, to Baja California, Mexico, during Euro-American colonization (Koford 1953, pp. 8-19; Wilbur 1978, pp. 13, 72-85; Snyder and Snyder 2005, pp. 4-5; D'Elia and Haig 2013, pp. 38-59). At that time they were apparently restricted to the[[Page 15605]]area west of the Rocky Mountains, with most observations occurring from the Cascade Mountains and Sierra Nevada to the coast (Snyder and Snyder 2000, p. 12; D'Elia and Haig 2013, pp. 38-59). California condor population declines and range contractions were concurrent with Euro-American settlement of the West, with condors disappearing from the Pacific Northwest in the early 1900s (D'Elia and Haig 2013, pp. 58-59), and from Baja California by the end of the 1930s (Wilbur and Kiff 1980, entire). By the middle of the 20th century, the species was reduced to about 150 individuals limited to the mountains of southern California (Snyder and Snyder 2000, pp. 81-82), and at the time we formally classified them as an endangered species in 1967, the population had further declined to an estimated 60 condors (Snyder and Snyder 2000, pp. 82-83). Most probable causes of their historical decline include: (1) Secondary poisoning from predator ***removal*** campaigns, (2) direct persecution, and (3) lead poisoning from spent ammunition that fragmented in animals condors later fed upon (D'Elia and Haig 2013, pp. 77-122).Captive Breeding, Reintroduction Efforts, and Current Range Due to concerns over the few remaining California condors and the population's continued downward trend, beginning in 1983, we took all condor eggs from the wild to the San Diego Wild Animal Park and Los Angeles Zoo for artificial incubation to form a captive flock (Snyder and Hamber 1985, p. 378; Snyder and Snyder 2000, pp. 278-293). By taking all wild eggs and inducing multiple clutches and annual nesting, the productivity of the population was increased several-fold, allowing the captive population to grow rapidly (Snyder and Hamber 1985, p. 378). However, with the sudden loss of several wild California condors in 1984 and 1985, it became necessary for us to capture the remaining wild individuals to ensure the genetic viability of the species and enhance the chances of the captive-breeding program's success (Snyder and Snyder 2000, pp. 298-304). By 1987, the California condor existed only in captivity, having suffered a severe population bottleneck and loss of genetic diversity (Ralls and Ballou 2004, p. 225; D'Elia et al. 2016, pp. 707-708). Thus, the conservation of the species was dependent upon captive breeding and releases back into the wild. We first released captive-reared California condors in 1992 in southern California, but because of behavioral problems exhibited by these individuals we returned them all to captivity in early 1995 (Snyder and Snyder 2000, pp. 344-345). We reinitiated releases of captive-reared and formerly wild California condors in southern California in 1995, and additional release sites were established in northern Arizona in 1996, central California near Big Sur in 1997, Sierra de San Pedro M[aacute]rtir in Baja California, Mexico, in 2002, Pinnacles National Park (formerly Pinnacles National Monument) in 2003, and in the mountains near San Simeon, California, in 2015. Currently, these release sites comprise four general release areas (central California, southern California, Baja California, and Arizona/Utah) in three condor populations (a population in central and southern California--where individuals from each release area occasionally intermingle--and independent populations in northern Arizona/southern Utah and Baja California). The California condor is currently absent from the northern portion of its historical range and remains reliant on the release of captive-bred individuals for population growth (USFWS 2013, p. 14). As of December 2019, there were 337 California condors in the wild, divided among the four release areas: Central and southern California (200 condors); northern Arizona and southern Utah (98 condors); and the Sierra de San Pedro M[aacute]rtir release site in Baja California (39 condors) (USFWS 2019a, p. 1). There were also 181 California condors in captivity (USFWS 2019a, p. 1) distributed among release sites, zoos, and four captive-breeding facilities in the United States. Breeding facilities include the Peregrine Fund's World Center for Birds of Prey, the Oregon Zoo's Jonsson Center for Wildlife Conservation, the Los Angeles Zoo, and the San Diego Zoo's Safari Park. Despite population growth, the total number of wild California condors is still relatively small and the species requires intensive management for survival, including: (1) Monitoring a large proportion of condors in the wild to track resource use, identify behavioral problems, and detect mortalities; (2) biannual trapping for health screening, to test blood samples for lead, inoculate for West Nile virus, and to attach or replace wing tags and transmitters; (3) taking injured or poisoned condors back into captivity temporarily to administer treatment; and (4) nest observations and interventions to maximize productivity in the wild (Walters et al. 2010, pp. 972, 976, 982-984; USFWS 2017, pp. 5-19).Habitat Use and Movement Ecology Along with our conservation partners, we have reintroduced California condors to a variety of habitats, including coastal mountains, old-growth ***forests***, desert cliffs, and temperate montane shrublands and grasslands. Within these habitats they can have enormous home ranges (Meretsky and Snyder 1992, p. 321; Hunt et al. 2007, pp. 84-87; Romo et al. 2012, pp. 43-47; Rivers et al. 2014a, pp. 496-498) and often use different portions of their range for nesting and foraging (Meretsky and Snyder 1992, p. 329; Snyder and Snyder 2000, pp. 140-147; D'Elia et al. 2015, p. 96). Estimates of home range size varied among release sites (95 percent confidence intervals for southern California: 173,295-282,760 acres (ac) (70,130-114,429 hectares (ha)); Pinnacles National Park: 86,825-174,266 ac (35,137-70,523 ha); and Big Sur: 42,613-90,495 ac (17,245-36,622 ha)), probably as a result of geography, food availability (Rivers et al. 2014a, pp. 496-497, 500), years since the release program started, and flock size (Bakker et al. 2017, p. 100). Nesting habitat is generally characterized by steep, rugged terrain (Wilbur 1978, p. 7; Snyder and Snyder 2000, p. 18; D'Elia et al. 2015, pp. 94-95). Within these areas, nests have been documented in various types of rock formations including crevices, overhung ledges, potholes, and in cavities or broken tops of giant sequoia (Sequoia giganteus) (Snyder et al. 1986, pp. 235-236) or coast redwood (Sequoia sempervirens) trees (Burnett et al. 2013, pp. 478-479). Breeding adults segregate themselves into nesting territories, rarely crossing into the nesting territories of other California condors (Finkelstein et al. 2015, Behavior). California condors will generally use the same nesting territory in successive years as long as pairs remain intact, but will often switch nesting sites within that territory, regardless of whether they fail or succeed in their nesting efforts (Snyder et al. 1986, p. 236). California condors roost communally along rocky outcrops, steep canyons, and in tall trees or snags near foraging grounds, water sources, and nests (Koford 1953, pp. 35-36; Snyder and Snyder 2000, p. 167). California condors select roosts that offer winds or thermals favorable for soaring flight (Poessel et al. 2018, pp. 48-50), good peripheral visibility, where there is a long unobstructed space for taking off downhill and for approaching the roost in flight, and areas where there is some protection from high winds (Koford 1953, pp. 35-36). There may be trade-[[Page 15606]]offs for condors between these factors and selecting roosts that provide protection from predators (Poessel et al. 2018, pp. 48-50). While at a roost, condors devote considerable time to preening, sunning, and other maintenance activities (Snyder and Snyder 2000, p. 24). California condors are obligate scavengers and obligate soaring birds, making them reliant on the availability of sufficient food resources and upward air movement (Ruxton and Houston 2004, p. 434, Poessel et al. 2018, pp. 36-37). Foraging habitats generally have high landscape productivity, moderate to steep slopes, sparse vegetation, and updrafts necessary to keep California condors aloft (Rivers et al. 2014b, pp. 7-9; D'Elia et al. 2015, p. 96). In coastal areas condors show strong selection for beaches, likely because of the relative abundance of marine mammal carcasses (Rivers et al. 2014b, p. 8). A feature of carrion is that dead animals are highly dispersed and ephemeral (Ruxton and Houston 2004, p. 433). This exclusive food resource has resulted in evolutionary pressure for condors to be large, obligate soaring birds that forage socially (Ruxton and Houston 2004, p. 433). Social foraging means the population is particularly susceptible to contaminated food resources, as a contaminated carcass can poison a large number of individuals in a single feeding (Green et al. 2004, pp. 796-800; Green et al. 2008, pp. 6-9; Finkelstein et al. 2012, p. 11453; D'Elia and Haig 2013, p. 87). As birds with a large wingspan that use soaring and gliding flight, California condors can move long distances while expending minimal energy (see Pennycuick 1969, pp. 542-545; Ruxton and Houston 2004, p. 435; Horvitz et al. 2014, pp. 676-678). Examples of exceptional flight distances include: California condor movements between the central and southern California flocks--a distance of approximately 150 miles (mi) (241 kilometers (km)) (e.g , USFWS 2017, pp. 20-21); a condor released at Pinnacles National Park flying to the southern Sierra Nevada and back--a one-way distance of approximately 249 mi (400 km) (USFWS, unpublished data); a condor released in the Sierra de San Pedro M[aacute]rtir in Baja California, Mexico, traveling north to San Diego County, a distance of approximately 140 mi (225 km) (Romo et al. 2012, p. 44); and observations of condors released in northern Arizona traveling to southern Wyoming, Colorado, and New Mexico, at distances of approximately 340 mi (547 km), 400 mi (643 km), and 325 mi (523 km), respectively. In addition, GPS telemetry data are now revealing that California condors in southern California are beginning to regularly travel 93-124 mi (150-200 km) away from core use areas (USFWS unpublished data). As the populations continue to grow, the number of long-distance flights is likely to increase. To date, nests have been concentrated in a relatively limited area around release sites when compared to exceptional flight distances. The farthest nest documented from release sites in each release area is approximately 47 mi (76 km) in central California, 57 mi (92 km) in southern California, 62 mi (100 km) in Arizona/Utah, and 15 mi (24 km) in Baja California. We expect that as flock size grows the population will continue to expand and nest sites will eventually be located farther from release sites. Seasonal shifts in movements to foraging grounds occur with changes in food availability, and perhaps as a result of social factors (e.g , traditional movements) (Meretsky and Snyder 1992, p. 328; Snyder and Snyder 2000, pp. 145-147; Hunt et al. 2007, pp. 85-87). There are also seasonal changes in home range, with larger home ranges in late summer and fall compared to late fall and early winter (Rivers et al. 2014a, pp. 497, 499).Life Cycle Breeding California condors form pairs in late fall or early winter and visit various potential nest sites within their nesting territory in January and February (Finkelstein et al. 2015, Breeding). Once pairs are formed they tend to stay together year-round for multiple years until one member of the pair dies (Snyder and Snyder 2000, p. 19). However, the death of one member of a pair can trigger a chain reaction with multiple pairs switching mates. This situation can occur because each California condor that loses its mate represents a potentially more desirable mate to individuals of lower rank in the social hierarchy of the flock. Breeding California condors lay a single egg between late January and early April (Finkelstein et al. 2015, Breeding). The egg is incubated by both parents and hatches after approximately 53-60 days (Snyder and Snyder 2000, p. 19). California condor pairs that lose their egg early in the breeding season (February through mid-April) will generally lay a replacement egg (Snyder and Hamber 1985, p. 377). When a replacement egg is lost, it has occasionally been followed by a third egg (Finkelstein et al. 2015, Breeding). Both parents share responsibilities for feeding the nestling (Snyder and Snyder 2000, p. 19). Feeding, via regurgitation, usually occurs daily for the first 2 months, then gradually diminishes in frequency (Snyder and Snyder 2000, p. 197). As early as 6 weeks after hatching, California condor chicks leave the nest cavity but remain in the vicinity of the nest where they are fed by their parents (Snyder and Snyder 2000, p. 201). The chick takes its first flight at about 5.5 to 6 months of age but does not become fully independent of its parents until the following year (Snyder and Snyder 2000, pp. 201-202). Parents occasionally continue to feed a fledgling even after it has begun to make longer flights to foraging grounds (Koford 1953, p. 103; Snyder and Snyder 2000, pp. 202-203). Because of the long period of parental care, it was formerly assumed that successful California condor pairs normally nested every other year (Koford 1953, pp. 22-23). However, this pattern can vary, depending mostly on the time of year that the nestling fledges. If a nestling fledges relatively early (in late summer or early fall), its parents can nest again in the following year, but late fledging may inhibit nesting in the following year (Snyder and Hamber 1985, pp. 377-378; Snyder and Snyder 2000, p. 19). Once independent, juvenile California condors often associate with one another on the foraging grounds and join adults and other juveniles at communal roosts (Finkelstein et al. 2015, Breeding). In a study of the remnant wild population in southern California (1982-1987), Meretsky and Snyder (1992, pp. 324-325; 329-330) found that California condors in their first 2 years after fledging were generally limited to natal nest areas and adjacent foraging areas. Older juveniles would forage more widely, but it was not until age 4 or 5 that condors visited virtually all foraging and nesting areas within a given population. However, more recent data from the reintroduced populations show that fledglings under 1 year of age can be fully integrated into the flock, foraging hundreds of miles from natal or release areas and by 2 years of age some individuals have demonstrated the ability to cover the flock's entire range (USFWS, unpublished data). This difference between the remnant wild population in the 1980s and the current population is likely a product of the larger size of the current population, and the larger number of older California condors that are available to serve as mentors to recently fledged condors.[[Page 15607]]Demography and Threats California condors are long-lived birds. In captivity, they can live more than 50 years. Average age of first breeding is 8 years and 6 months for females and 9 years and 10 months for males (Mace 2017, pp. 240, 243). The oldest known breeding female was 38 years old (Mace 2017, p. 239). Slow maturation and low reproductive rates in California condors mean that low mortality rates are necessary for populations to be stable or to grow (Mertz 1971, p. 448; Verner 1978, pp. 19-21; Meretsky et al. 2000, pp. 960-961). Demographic models indicate that annual adult mortality rates certainly must average <10 percent annually to achieve stable or increasing populations (Verner 1978, pp. 19-21; Meretsky et al. 2000, p. 961), and likely need to be <5 percent (Meretsky et al. 2000, p. 961; Cade 2007, p. 2129; Woods et al. 2007, p. 65; Walters et al. 2010, p. 974). Estimates of mortality rates in the first decade of the release program in California and Arizona--when individuals treated for lead poisoning were considered mortalities--were between 17-35 percent, greatly exceeding the mortality rates needed for a self-sustaining stable population (Meretsky et al. 2000, p. 963). Currently, populations in the wild are only viable as a result of augmentation through ongoing captive-breeding and release efforts, in concert with intensive monitoring and management to reduce mortality (Green et al. 2008; Finkelstein et al. 2012, p. 11452; USFWS 2013, pp. 27-30). The primary threat to the viability of the California condor is lead poisoning from spent ammunition left in gut-piles or carcasses of animals that condors feed upon (Meretsky et al. 2000, p. 963; Church et al. 2006, p. 6148; Cade 2007, entire; Woods et al. 2007, pp. 73-75; Green et al. 2008, p. 9; Walters et al. 2010, pp. 993-994; Finkelstein et al. 2012, pp. 11452-11453; Rideout et al. 2012, pp. 108-109; Kelly et al. 2015, pp. 395-398; Bakker et al. 2017, pp. 101-103). Without intensive management of the impacts from this threat, which includes periodic trapping for health exams, monitoring blood lead levels, and treatment if necessary, the wild populations would trend toward extinction (Woods et al. 2007, p. 65; Green et al. 2008, pp. 8-9; Walters et al. 2010, pp. 993-994; Finkelstein et al. 2012, pp. 11452-11453). In the absence of this threat, California condor populations would likely grow and become self-sustaining, without the need for intensive management (Woods et al. 2007, p. 65; Green et al. 2008, p. 9; Finkelstein et al. 2012, pp. 11452-11453). Several laws and voluntary programs to reduce the threat from lead ammunition have been enacted. The State of California instituted a restriction on the use of lead ammunition for hunting within the range of the California condor in southern and central California in July 2008 (Ridley-Tree Condor Preservation Act 2008, entire). The geographic and regulatory scope of this restriction was expanded with Assembly Bill 711 (AB711) that was signed into law in October 2013. AB711 amended section 3004.5 of the California Fish and Game Code, relating to hunting. The law, which restricts the use of lead ammunition for taking wildlife, has been phased in; the final phase, which went into effect in July 2019, enacted a State-wide ban of lead ammunition for all take of wildlife. Nevada also has a regulation mandating the use of nontoxic shot on all Nevada Wildlife Management Areas (NAC 503.183). In addition to these laws and regulations, voluntary lead-reduction programs are in place in California, Oregon, Nevada, Arizona, and Utah. While these voluntary programs vary by State, actions under these programs have included: (1) Surveys to understand attitudes toward lead reduction; (2) outreach to hunters at sportsman shows, hunter education classes, and in the field; (3) coordination with hunter constituency groups; and (4) ***targeted*** vouchers for free non-lead ammunition (Sieg et al. 2009, pp. 344-345; Chase and Rabe 2015, pp. 2-3; AGFD 2017, web page, UDWR 2017, web page, ODFW 2017, web page; Huntingwithnonlead.org 2017, web page; nonleadpartnership.org, web page). Other threats to California condors include: Rangeland conversion, wind energy development, collision with and electrocution from powerlines, predation, disease, inadequacy of existing regulatory mechanisms, shooting, microtrash ingestion, pesticides, and habituation to humans. A full description of these threats, and efforts to abate them, are provided in our most recent status review for the California condor (USFWS 2013, entire).Relationship of NEP to Recovery Efforts We published a California condor recovery plan in 1974 (USFWS 1975, entire), and revised the plan in 1980 (USFWS 1980, entire), 1984 (USFWS 1984, entire), and 1996 (USFWS 1996, entire). To date, recovery efforts have focused on reintroduction and recovery in the southern portion of the species' historical range (see Captive Breeding and Reintroduction Efforts, above). Recovery criteria for ***removing*** the California condor from the endangered species list were not provided in the 1996 revision to the recovery plan, as its primary focus was keeping the species from going extinct. At the time the 1996 revised recovery plan was written, there were only 17 California condors in the wild (USFWS 1996, p. 9) and we could not anticipate at that time all actions that would be necessary for full recovery. We recently clarified why it remains impracticable to incorporate delisting criteria for the California condor in the recovery plan (USFWS 2019b). The overall strategy for recovery outlined in the 1996 recovery plan was to focus on: (1) Increasing reproduction in captivity to provide condors for release, (2) the release of condors to the wild, (3) minimizing condor mortality rates, (4) maintaining habitat for condor recovery, and (5) implementing condor information and education programs (USFWS 1996, p. 21). While the recovery plan did not have delisting criteria, it included as criteria for reclassifying (or downlisting) to a threatened species an objective of establishing at least two, preferably more, self-sustaining disjunct wild populations in order to reduce the risks to the overall population and to facilitate genetic and demographic management (USFWS 1996, p. 24). The 1996 revised recovery plan does not provide specific recovery ***targets*** or actions for the Pacific Northwest, but our 1980 recovery plan recommended surveys of Oregon, Washington, and California to identify potential habitat for future releases into unoccupied portions of the historical range (USFWS 1980, p. 50). Recent habitat modeling has revealed large areas of potentially suitable nesting, roosting, and feeding habitats in the Pacific Northwest (D'Elia et al. 2015, pp. 95-96). Although criteria for full recovery were not provided in our latest recovery plan revision (USFWS 1996, entire), increasing the global population of the California condor and expanding its geographic distribution among the ecosystems it once occupied are, on first principles, consistent with efforts to recover the species. An existing population model based on published demographic rates (Bakker et al. 2017, entire) was used to simulate statewide California condor population growth in California over the next 30 years (2018-2048), assessing scenarios with and without the allocation of some of the available captive-bred individuals to a new geographically disjunct flock (Bakker and Finkelstein 2018, entire).[[Page 15608]]Preliminary model simulations suggest that allocating captive-bred individuals to a new, geographically disjunct flock, which is expected to have lower survival and reproduction compared to the existing flocks, may reduce the population growth of condors in California. Model simulations reinforce the importance of increasing captive chick production and releases to the wild. The number of chicks produced in the captive program and released to the wild has been variable over time, but continues to drive population growth in the wild due to the high chick and juvenile survivorship attainable in a captive setting and to ongoing mortality in the free-flying population combined with the long generational gap between chick stage and breeding age (approximately 6-8 years) in California condors (Finkelstein et al. 2012, entire; Bakker et al. 2017, entire; Bakker and Finkelstein 2018, entire). The California Condor Recovery Program is currently proposing to increase the number of captive-produced condors for release into the wild, and would continue to allocate the number of chicks to each release site necessary to maintain positive population growth at each site, to the extent practicable. Continuing to grow the wild population of California condors while reestablishing them in an unoccupied portion of their historical range is consistent with our overall strategy to recover the species. In summary, an NEP in the Pacific Northwest would establish an additional population in the United States, beyond the minimum of two populations envisioned for downlisting to a threatened species. This population would contribute to the conservation of the species by: Further reducing the risk that any one catastrophic event would affect a large proportion of the species (increasing the population redundancy); increasing the global population of the species (increasing resiliency); and expanding the geographic distribution of the species among ecosystems (increasing representation by expanding the ecological settings in which the species occurs).Is the experimental population essential or nonessential? When we establish experimental populations under section 10(j) of the Act, we must determine whether such a population is essential to the continued existence of the species in the wild. Although the experimental population will contribute to the recovery of the California condor, it is not essential to the continued existence of the species in the wild. California condors are currently distributed among three disjunct and intensively managed populations in California, Arizona and Utah, and Baja California, Mexico. Management at these sites includes: Monitoring individuals with VHF or GPS/GSM transmitters; biannual trapping for health screenings; vaccination for West Nile virus; aversive conditioning to power poles prior to release; chelation therapy to treat California condors with elevated blood-lead levels; and nest observations, entries, and interventions to maximize productivity in the wild (Walters et al. 2010, pp. 972, 976, 982-984; Romo et al. 2012, pp. 28-56; Southwest Condor Review Team 2017, pp. 4-21; USFWS 2017, pp. 5-19). In addition, there are ongoing releases of captive California condors into each of the wild populations. Releases are carefully coordinated among sites to ensure a healthy age structure, sex ratio, and distribution of founder genomes (Ralls and Ballou 2004, pp. 221-225). As a result of the continued release of condors and the coordination among release programs, the populations of wild California condors continue to grow (USFWS 2018, p. 6). In addition to the three wild populations, there is also a sizable captive population at four breeding facilities, which are distributed in California, Oregon, and Idaho (see Biological Information, above). The breeding facilities are secure facilities, not open to the public, where California condors are kept under 24-hour surveillance by condor keepers or video cameras. The captive population is given extensive care and deaths and injuries are rare, with a captive annual survival rate after the first month of life of 0.989 percent (95 percent confidence interval: 0.984-0.992) (Bakker et al. 2017, p. 97). In addition, the geographic separation of the four breeding facilities protects the captive population from the threat of extinction due to a single catastrophic event. The captive population was formed with only 13 apparent genetic founders that comprised three genetic clans (Geyer et al. 1993, p. 573; Ralls and Ballou 2004, p. 219; Pryor and Ralls 2016, p. 3). Genetic management, which includes control of all captive matings, has been implemented to minimize the loss of remaining genetic diversity and ensure this remaining genetic diversity is well distributed among the captive-breeding facilities and reintroduction sites (Ralls et al. 2000, p. 152; Ralls and Ballou 2004, p. 226; Pryor and Ralls 2016, p. 2). California condors released within the experimental population would come from a mixture of the founder clans represented in the captive population and would not represent a unique genetic lineage of California condors. Therefore, loss of this population would not represent a substantive change in the genetic diversity or genetic viability of the worldwide population of California condors. This reintroduction project will further the recovery of the California condor by attempting to establish another wild population in an unoccupied portion of the species' historical range. However, for the reasons stated above, California condors released into the Pacific Northwest are not essential to the survival of the species in the wild. Therefore, as required by 50 CFR 17.81(c)(2), we find that the experimental population is not essential to the continued existence of the species in the wild, and we designate the experimental population in the Pacific Northwest as a nonessential experimental population (NEP).Location and Boundaries of the NEP Section 10(j) of the Act requires that an experimental population be geographically separate from wild populations of the same species. Considering a number of factors (as described in detail, below), we drew the NEP area to include a portion of northern California, northwestern Nevada, and all of Oregon. The western boundary of the NEP is the Submerged ***Lands*** Act boundary line along the Pacific coast. The southern boundary of the NEP is formed by an east-west line from California's Submerged ***Lands*** Act boundary to Hare Creek; Hare Creek from the Pacific Ocean to its junction with California State Route 1; north to the junction of State Route 1 and State Route 20; east along California State Route 20 to where it meets Interstate 80; and Interstate 80 from its intersection with California State Route 20 to U.S Route 95 in Nevada. The eastern boundary of the NEP is U.S Route 95 in Nevada to the State boundary of Oregon and then east and north along Oregon's southern and eastern boundaries, respectively. The northern boundary of the NEP is the northern State boundary of Oregon. All highway boundaries are inclusive of the entire highway right of way. See map below and in the Environmental Assessment (NPS et al. 2018, Figure 2, p. 5). The last California condor specimen collected within the NEP area was in 1892 along Yager Creek in Humboldt County, California (Smith 1916, p. 205; D'Elia and Haig 2013, pp. 39-46). Although there were a few reported[[Page 15609]]California condor sightings up to 1925 in the area we are proposing to designate an NEP, since then there have been no credible sightings of condors in the wild in this area, or anywhere north of San Francisco (D'Elia and Haig 2013, pp. 58-59). Given that almost all released California condors are actively tracked with electronic transmitters, we are confident that there are no wild condors in the NEP. The location of the primary reintroduction site is the Bald Hills of Redwood National Park, an area proximal to suitable nesting and feeding habitat. Ten potential release sites were identified by the Yurok Tribe, and the primary release site was selected following careful consideration of site suitability, logistics, threats and hazards, cultural resources, and suitability of adjacent ***lands*** (Yurok Tribe 2020, entire). The release site will be situated in grassland habitat above a redwood ***forest*** with sufficient topography to allow young California condors to more easily achieve flight. Redwood ***forests*** in the vicinity of the release site, as well as proximal mountain ranges (Oregon Coast Range, Klamath-Siskiyou Mountains, and the Northern Coast Range in California) are expected to provide ample roosting and nesting habitat. Inland valleys and mountaintop prairies, in conjunction with a proximal coastline, are expected to provide a mixture of sufficient terrestrial and marine feeding areas and food resources. Landscape-scale models indicate that the amount and characteristics of habitat in the region compare favorably to other portions of the historical range (D'Elia et al. 2015, pp. 95-96). In defining the experimental population boundary, we attempted to encompass the area where the population is likely to become established in the foreseeable future. The term ``foreseeable future'' appears in the Act in the statutory definition of ``threatened species.'' The Act does not define the term ``foreseeable future.'' However, our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. While we use the term ``foreseeable future'' here in a different context (to establish boundaries for identification of the experimental population), we apply a similar conceptual framework. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant effects of release and management of the species and to the species' likely responses in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors. For the purposes of this rule, we define the foreseeable future as approximately 20 years, the time horizon within which we can reasonably forecast California condor population expansion given the number of years of data we have on condor movements from release sites in southern and central California (25 years in southern California and 23 years central California). We expect that the contribution of the experimental population toward recovery of the California condor will be evident during this time span, although we recognize that establishing a self-sustaining population of condors in the region may take longer given the species' extremely low reproductive rates. We established the experimental population boundary large enough to account for expansion over time as the introduced population begins to breed in the wild, and to assist in identifying any individuals belonging to the NEP. When possible, we used recognizable features on the landscape, legal ***land*** descriptions, or administrative boundaries to demark this experimental population boundary. We included the entire State of Oregon to ensure that any California condors originating from the releases at Redwood National Park and flying north into Oregon are recognized as members of the NEP and are covered by the NEP regulations. Information we considered in drawing our NEP boundary included California condor movement data from existing release sites, and the location of the closest existing condor population, as well as input from State wildlife agencies. Movement data indicate that, after 20 years of releasing California condors, most individuals remain within approximately 124 mi (200 km) of their release site--although exceptional flight distances occasionally occur and the existing populations continue to expand as flock size increases. The closest California condor release site to the Bald Hills release site is at Pinnacles National Park, approximately 350 mi (563 km) to the south. The proposed release site is approximately 124 mi (200 km) from the nearest edge of the experimental population boundary, and the southern edge of the experimental population boundary is approximately 112 mi (180 km) from the northern extent of the closest endangered population of California condors. Thus, the southern boundary of the NEP approximates a mid-point between the nearest population in central California and the proposed release site at Redwood National Park. The farthest documented nesting pair of California condors from any release site since the inception of the captive-breeding program was approximately 62 mi (100 km), while most nests are within 47 mi (75 km) of their release site of origin. Given our definition of foreseeable future and the information from existing release sites, we anticipate that California condors initially released at Redwood National Park--with the exception of occasional exceptional flights--would remain within the experimental population boundary over the first 20 years of reintroductions. If a reintroduction of California condors in northern California is successful, it is possible that some individuals from the NEP may eventually move outside of the NEP area. It is also possible that California condors from the other California release sites may enter this NEP. We expect that these movements, if they occur, would be infrequent in the foreseeable future given the size of the NEP, the NEP's distance from existing populations, and observed California condor movements at other release areas over the last two decades. Further, we find that the interaction of individuals among the NEP and existing endangered populations and the merging of these populations are even more unlikely to occur in the foreseeable future given the distance between the populations and the small number of California condors likely to occupy the NEP. Even if California condors occasionally moved into or out of the NEP, the presence of one or a few individual dispersing condors would not constitute a ``population'' and any individuals dispersing into or out of the experimental population area would be treated as if they were part of the population at the location where they are found (See Wyoming Farm Bureau Federation v. Babbitt, 199 F.3d 1224, 1234-6, FN 5 (10th Cir. 2000) (finding the Secretary reasonably exercised his management authority under section 10(j) in defining the experimental wolf population by location)). Based on definitions of ``population'' used in other experimental population rules[[Page 15610]](e.g , 59 FR 60252, November 22, 1994 (gray wolves), 71 FR 42298, July 26, 2006 (Northern aplomado falcons)), we consider a population to require a minimum of two successfully reproducing California condor pairs over multiple breeding cycles. Using this definition of a population, the best available information suggests that the population of California condors formed from releases in Redwood National Park is likely to be wholly separate from other populations of California condors for the foreseeable future.Likelihood of Population Establishment and Survival The best available scientific data indicate that the reintroduction of California condors into suitable habitat in Redwood National Park is biologically feasible and would promote the conservation of the species. Along with our numerous recovery partners, we have over 25 years of experience breeding and releasing California condors into the wild at several release areas across various ecosystems. Release techniques are well established, as are protocols for managing released California condors. Based on our collective knowledge gained from these efforts, we anticipate California condors will become successfully established for the following reasons: (1) Landscape-scale modeling indicates the NEP may have some of the most extensive nesting, roosting, and feeding habitats remaining within the historical range in California, Oregon, and Washington (D'Elia et al. 2015, pp. 95-97). California condors are habitat generalists and have been successfully reintroduced to a variety of ecosystems, including the mountain foothills of southern California, coastal ***forests*** of central California, high desert and canyon ***lands*** in northeastern Arizona and mountainous areas in Baja California, Mexico. This species is flexible in its diet, eating carrion of many different species of wildlife and livestock. Therefore, we do not anticipate climate change effects on habitat will negatively impact our ability to reestablish a population of this species in the Pacific Northwest. (2) A site-specific habitat evaluation, which considered site suitability, logistics, threats and hazards, cultural resources, and suitability of adjacent ***lands***, found the release site to have suitability ratings similar to existing release sites (Yurok Tribe 2020, entire). (3) The causes for California condor extirpation from the region are either no longer active or are being addressed through a mixture of regulatory and proactive voluntary conservation measures (see Addressing Causes of Extirpation, below). (4) The extent of effects of existing and proposed actions and activities within the NEP on the reintroduced population have been evaluated in an environmental assessment and are compatible with conservation of the California condor (NPS et al. 2018, entire). (5) The reintroduced population will receive ongoing demographic support from a managed captive population and an active field monitoring and management program (Similar population support has allowed population growth and establishment at all of the other California condor release sites). (6) The reintroduced population will be integrated with the California Condor Recovery Program to ensure that California condors released in Redwood National Park have an appropriate sex ratio and age-structure and include representatives of the founder genomes. (7) There is broad institutional and partner support for a California condor reintroduction in Redwood National Park and Yurok ancestral territory. On June 14, 2016, a Memorandum of Understanding between 16 parties was finalized. The purpose of the MOU was to formalize an agreement to assess the potential to recover California condors in the Pacific Northwest and to work to seek funding to support that effort if it proved feasible. Signatories to the MOU included the U.S Fish and Wildlife Service, National Park Service (NPS), Bureau of ***Land*** Management, Yurok Tribe, California Department of Fish and Wildlife (CDFW), California Department of Parks and Recreation (CDPR), Oregon Department of Fish and Wildlife (ODFW), Oregon Zoo, Sequoia Park Zoo, Ventana Wildlife Society, Oakland Zoo, Pacific Gas and Electric Company, Pacific Power Company, Green Diamond Resource Company, and Hells Canyon Preservation Council. In 2018, the U.S ***Forest*** Service also signed this MOU. Based on all of these considerations, we anticipate that reintroduced California condors are likely to become established and persist within the NEP.Addressing Causes of Extirpation Investigating the causes for decline and extirpation of California condors is necessary to understand whether the threats have been sufficiently curtailed such that reintroduction efforts are likely to be successful. Evaluation of various hypotheses for the extirpation of California condors in the Pacific Northwest revealed that secondary poisoning related to predator control and extermination campaigns, direct persecution, and possibly lead poisoning from spent ammunition were the primary causes (D'Elia and Haig 2013, pp. 119-122). Two of these primary drivers of regional extirpation--predator poisoning and direct persecution--are no longer the primary threats to the California condor. According to the most comprehensive assessment of California condor deaths from 1992 through 2009, of the 76 deaths where a definitive cause was determined, there were no confirmed cases of secondary poisoning related to predator control (although there was one possible case involving glycol toxicosis) and only five cases of condors directly persecuted by gunshot or arrow (Rideout et al. 2012, pp. 108, 110). Based on multiple lines of evidence, the primary threat to the recovery of the California condor is lead poisoning from spent ammunition (see Biological Information, above). Regulations banning lead ammunition for taking wildlife in California are in effect (see Biological Information, above). In addition, voluntary efforts to reduce lead exposure in wildlife are ongoing in Oregon and Nevada (see Biological Information, above). Finally, the reintroduction program will carefully monitor the population and conduct regular health checks to evaluate whether reintroduced California condors are being exposed to lead, the rate of exposure, and how this situation compares to other portions of the species' range. When necessary, California condors with elevated lead levels will be treated for lead poisoning. While the threat from lead ammunition is still present in the experimental population area, it is being addressed through a mixture of regulatory and proactive voluntary measures (see Biological Information, above); therefore, we will not request further regulation of lead ammunition for this experimental population. Sources of mortality will be carefully monitored, and if high mortality rates are preventing the establishment of a self-sustaining population, we will work with our conservation partners to implement additional voluntary measures to address threats, as we have at other California condor release sites. If a formal evaluation indicates the project is experiencing a 40 percent or greater mortality rate over multiple years or released California condors are not finding food on their own, serious consideration will be given to terminating the project.[[Page 15611]]Release Procedures Release procedures at Redwood National Park are described in the environmental assessment (NPS et al. 2018, pp. 23-28) and would be similar to those at existing release sites. Procedures include: (1) The use of an onsite release pen where California condors are kept for a short period of time prior to release; (2) tracking of all released condors via telemetry (VHF and GPS/GSM); and (3) supplying condors with proffered food at the release site to allow for repeated trappings to monitor health and replace transmitters. In general, a new cohort of captive-reared California condors will be released annually. The size of each release group will depend on the number of California condors in captivity available for release, but annual releases will likely involve up to six condors. California condors hatched in captivity will be raised by their parents or a condor look-alike hand puppet until they are approximately 6 months to 1 year old. They will then be placed with other California condors in a single large pen so they will form social bonds and undergo aversion training to power poles. The young California condors will be transported to the release site at Redwood National Park when they are approximately 1.5 to 2 years old. At the release site they will be placed in a flight pen and will remain there for an acclimation period of approximately 3 months. Biologists will remain near the release pen, observing the young California condors' behavior and guarding against predators or other disturbance. After the initial adjustment period, California condors will be released from the flight pen. Any release candidate showing signs of physical or behavioral problems will not be released. A small area of NPS ***land*** will be closed to recreational activity to protect the California condors in or around the release facility. Carcasses will be provided at the release site, as supplemental food for newly released California condors, and as necessary, to attract condors for periodic trapping to check their health and swap-out transmitters. All California condors released to the wild will be marked to allow identification of individuals. Current methods for doing this include placing electronic transmitters (e.g , Argos, GSM (Global System for Mobile communication), and VHF transmitters) and wing markers on the wings of each California condor. The movements and behavior of each California condor will be monitored remotely using electronic transmitters and ground observations. Aerial tracking will be used to find lost individuals, and telemetry flights will be coordinated with the appropriate ***land*** management agencies. Our methods for identifying and monitoring individuals will be adaptive and may change as technology improves. We will endeavor to maintain an even sex-ratio across a range of age-classes in the released population. Adult California condors unfit for release may be transported to the release site and kept in the pen as mentors for the acclimating cohort. Adjustments will be made in release cohort structure annually based on availability from captive-breeding facilities, genetics, sex-ratio, and age.Donor Stock Assessment and Effects on Donor Population The donor population for the reintroduction of California condors to Redwood National Park is the captive population of California condors. Although the captive population is located at four breeding facilities, these facilities cooperate to manage the entire wild population and captive population as a single entity, exchanging California condors and condor eggs among the facilities as necessary for population and genetic management (Ralls and Ballou 2004, p. 216). As of December 2019, there were 181 California condors in captivity, and the size of the captive population has been relatively stable over the last 5 years, with end-of-year counts ranging from 167 to 181 during this time period (USFWS 2020, p. 5). With the assistance of the captive-breeding program, the total population of California condors increased from 370 condors in 2010 to 518 condors in 2019 (USFWS 2020, p. 5). The donor population is carefully managed to ensure its long-term viability. Annual reviews of breeding, captive pairings, genetic health, and demographic factors are undertaken to ensure that captive-releases will not be detrimental to the stability of the captive flock. In addition, the captive-breeding program has capacity to pair additional captive California condors to increase reproductive output as they become available for breeding and to replace senescent condors. This could be done through multiple clutching, the use of non-breeding adults to serve as foster parents, and/or puppet rearing. Given the careful management of the donor population, the ability to increase its productivity, and the relatively small number of California condors that will be released at Redwood National Park annually, impacts to the donor population are expected to be negligible.Management The Service, NPS, and the Yurok Tribe will plan and manage the reintroduction of California condors at Redwood National Park. In addition, these agencies will carefully collaborate on releases, monitoring, condor care and behavior management, nest observations and interventions, coordination with landowners and ***land*** managers, public awareness, and other tasks necessary to ensure successful reintroduction of the species (Yurok Tribal, 2020, entire). A few specific management considerations related to the experimental population are addressed below. (a) Incidental Take: Experimental population special rules contain specific prohibitions and exceptions regarding the taking of individual animals. These special rules are compatible with most routine human activities in the expected reestablishment area. Section 3(19) of the Act defines ``take'' as ``to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.'' ``Incidental take'' is further defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. By adopting the 10(j) rule, most incidental take of California condors within the experimental population area is allowed, provided that the take is unintentional and not due to negligent conduct. However, habitat alteration (e.g , ***removing*** trees, erecting structures, altering the nest structure or perches near the nest) or significant visual or noise disturbance (e.g , tree felling, chainsaws, helicopter overflights, concrete cutters, fireworks, explosives) within 656 ft (200 m) of an occupied nest are prohibited. Excluded from this prohibition are emergency fuels treatment activities by Federal, State, and local agencies and Tribes to reduce the risk of catastrophic wildfire and emergency response services. Activities such as ranching and use of existing roads and trails within the 656-ft (200 m) buffer area around an occupied nest would not be considered a significant visual or noise disturbance. For the purposes of this rule, an occupied California condor nest is defined as a nest that is: (1) Attended by a breeding pair of condors, (2) occupied by a condor egg, or (3) occupied or attended by a <1-year-old condor. The 656-ft (200 m) buffer is meant to serve to minimize visual and auditory impacts associated with human activities near nest sites. We chose a 656-ft (200 m) buffer after considering[[Page 15612]]buffer distances used for other raptors, which varied widely from 162 to 5,249 ft (50-1,600 m) (Richardson and Miller 1997, pp. 635-636; Romin and Muck 2002; USFWS 2007, p. 13), as well as past recommendations on buffer distances for California condor nests, which ranged from 0.5 to 1.5 mi (0.8-2.4 km) (Carrier 1973, pp. 71-73). This variation is likely the result of differences in environmental setting, species-specific responses, status of the species at the time of the recommended buffer, the nature of the disturbance, and the purpose of the buffer. It is important to note that historical California condor buffer distances of 0.5 to 1.5 mi (0.8-2.4 km) were based on anecdotal observations of a small number of condor nests in a declining population, and were necessarily conservative given the context of a nearly extinct species. The nest buffer for this rule is smaller than those earlier recommendations because of new information suggesting that nesting California condors may be more tolerant of disturbance than previously believed (see below). We also accounted for the fact that we are establishing this population as a nonessential experimental population. Therefore, our buffer distance around nests may be less conservative than our recommended buffer distances from nests where California condors are listed as endangered. While species-specific responses to disturbance have not been formally studied for the California condor, observations in the 1950s and 1960s found that once a condor nest is started, it will not be abandoned unless the egg or chick is lost or the parents killed (Sibley 1969, p. 8). In addition, recent observations have documented successful nests within 0.5 mi (0.8 km) from active oil and gas operations and within 656 ft (200 m) of busy highways, hiking trails, and forestry practices such as operating chainsaws and chippers (A. Welch, NPS, pers. comm. 2015). One nest in a giant sequoia tree was successful despite being ``right on the edge'' of a clearcut operation (which ceased only 3 weeks prior to egg laying) and only about 656 ft (200 m) from, and in direct view of, an intermittently used dirt road (Snyder et al. 1986, p. 238). Although the best available information suggests that California condors may not be as susceptible to disturbance as we thought in the 1960s-1980s, flushing of condors from nests has been documented due to disturbance and this activity has the potential to result in the egg breaking if the adult that is flushed is incubating the egg (Sibley 1969, p. 8). It is also possible that prolonged or repeated disturbances may cause nest failure (Sibley 1969, p. 15). To minimize the chances of nest or egg destruction and to preserve the structural integrity of habitat around nests while minimizing impacts to stakeholders, we are prohibiting habitat alteration or significant visual or noise disturbance within 656 ft (200 m) of occupied nests, with the exceptions noted above. Existing and proposed activities and ***land*** uses surrounding the park that could potentially result in incidental take include wind power, utility transmission lines, mining, commercial timber production, ranching operations, and recreational activities (NPS et al. 2018). As noted above in our evaluation of the likelihood of population establishment and survival, we determined that the extent of effects of these activities within the NEP is compatible with conservation of the California condor. We expect few restrictions on these activities because most incidental take, including take associated with lead ingestion, is not prohibited. Some activities, such as those associated with habitat alteration or significant visual or noise disturbance within 656 ft (200 m) of an occupied nest, would be prohibited, as described above. However, because (1) the number of individuals initially released would be small, (2) California condors nest only on cliffs and in large tree cavities, (3) California condors tend to nest in less accessible and remote areas, and (4) the nests would be dispersed rather than concentrated in a particular area, we expect impacts to existing and proposed activities to be minimal (NPS et al. 2018). For the reasons stated above, it is unlikely that a condor would nest within areas with ongoing timber harvest operations, as only about 0.5 percent of harvestable timber on private ***lands*** within the study area are likely to contain suitable nesting trees. (NPS 2018). Once the condor chick has fledged, activities could resume, so any prohibitions on activities would be temporary in nature. (b) Interagency Consultation: For purposes of section 7 of the Act, section 10(j) of the Act and our regulations (50 CFR 17.83) provide that nonessential experimental populations are treated as species proposed for listing under the Act except on National Park System and National Wildlife Refuge System ***lands***, where they are treated as threatened species for the purposes of section 7 of the Act. (c) Special Handling: USFWS, NPS, CDPR, CDFW, ODFW, Nevada Department of Wildlife (NDOW), and Yurok Tribe Natural Resource Division employees, and authorized agents acting on their behalf, may handle California condors for scientific purposes; to relocate or haze California condors to avoid conflict with human activities; for recovery purposes; to aid sick or injured California condors; and to salvage dead California condors. However, non-Service or other non-authorized personnel will need to acquire permits from the Service and the appropriate State or Tribal agency for these activities. Protocols for management and monitoring have been developed based on decades of experience from releasing condors in other areas (Yurok Tribe 2020, entire). Management and monitoring practices covered by these protocols include holding and releasing condors, monitoring, condor care and behavior management, nest observations and interventions, and other tasks necessary to ensure successful reintroduction of the species (Yurok Tribe 2020, entire). These protocols are designed to be adaptive and will be updated periodically as new information is acquired. Management and monitoring activities (see Yurok Tribe 2020) by any employee or agent of the Service, National Park Service, Yurok Tribe Natural Resource Division, CDPR, CDFW, NDOW, or ODFW who is designated and trained for such purposes, when acting in the course of official duties, will be exempt from take prohibitions. (d) Public Awareness and Cooperation: During January 2017, in cooperation with the Yurok Tribe and Redwood National Park, we conducted five NEPA scoping meetings on the proposed action of reintroducing California condors to the Pacific Northwest, with the possibility of designating the reintroduced population as an NEP. We notified a comprehensive list of stakeholders of the meetings including affected Federal and State agencies, Native American Tribes, local governments, landowners, nonprofit organizations, and other interested parties. The comments we received were included in the formulation of alternatives considered in the NEPA process, and were considered in formulating proposed experimental population regulations for California condors within the NEP. We opened a 60-day comment period on our proposed regulations and EA, with another round of notifications to our comprehensive list of stakeholders. We also held public meetings in Portland, OR, Medford, OR, Klamath, CA, and Arcata, CA during the public comment period.[[Page 15613]]Monitoring and Evaluation In cooperation with conservation partners, we will monitor movements, habitat use, and survival of all released California condors (NPS et al. 2018, pp. 23-28). Monitoring individual movements will allow field staff to identify potential problem-behaviors and to capture, relocate, or haze individual California condors for their safety. It will also allow us to detect any California condors that move outside of the experimental population area. Trapping will occur at the release site to allow for hands-on physical exams of individuals, replacement of faulty or aging transmitters, marking growing feathers, sampling feathers marked previously for lead history construction, and drawing blood for immediate testing of circulating blood lead levels and laboratory analysis for other contaminants of interest including, but not limited to, organophosphates and anticoagulant rodenticides. We will also attempt to determine the cause-of-death for all condor mortalities so we can look for emergent patterns and evaluate whether additional management interventions are necessary. Annual reports that summarize monitoring and management activities will be collaboratively developed by the Yurok Tribe, NPS, and USFWS. We will evaluate the reintroduction program to determine whether to continue or terminate reintroductions every 5 years as part of our 5-year status review for the species.Summary of Comments and Recommendations In the proposed rule published on April 5, 2019 (84 FR 13587), we requested that all interested parties submit written comments on the proposal by June 4, 2019. In addition, in accordance with our joint policy on peer review published in the Federal Register on July 1, 1994 (59 FR 34270) and updated guidance issued on August 22, 2016 (USFWS 2016, entire), we solicited peer review of our proposed rule from three knowledgeable individuals with scientific expertise in California condor ecology and management. We received responses from two of the peer reviewers. We also contacted appropriate Federal and State agencies, Tribes, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. In addition, on May 7-9, 2019, we held public meetings on the proposal in Portland, OR; Medford, OR; Arcata, CA; and, Klamath, CA. We reviewed all comments received from the public, States, Tribes, and peer reviewers for substantive issues and new information regarding the establishment of an experimental population of California condors in the Pacific Northwest. Substantive comments are addressed in the following summary and have been incorporated into the final rule as appropriate. Any substantive changes incorporated into the final rule are summarized in the Summary of Changes from the Proposed Rule section, below.Peer Review Comments In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from three knowledgeable individuals with scientific expertise in the species' biology, habitat, and raptor reintroductions in general. We received responses from two of the peer reviewers. Both peer reviewers expressed support for the reintroduction with an associated 10(j) rule and agreed the action is likely to contribute to the conservation of the species. We incorporated specific updated information, comments, and suggestions from peer reviewers into the final rule as described in our responses, below. Comment: One peer reviewer pointed out that, in our proposed rule, we stated that predator-poisoning was no longer a primary threat to condors. The reviewer notes that another form of poisoning, from anticoagulant rodenticides, remains a serious concern for wildlife in northern California and may pose a greater threat than in central and southern California condor populations. Response: Predator-poisoning campaigns ***targeting*** large predators, like gray wolves and grizzly bears, are fundamentally different from the use of anticoagulant rodenticides that are primarily ***targeting*** small rodents. Nevertheless, we acknowledge that condors released in northern California may be exposed to rodenticides. We do not yet know the rate of exposure or whether this exposure will have a significant effect on condor demographic rates. It is currently unclear whether exposure rates will be higher, lower, or the same as observed in other parts of the condor's range, or whether their exposure rates will be comparable to exposure rates in other surrogate avian scavengers. As stated in the final rule, we will be conducting regular physical exams of condors and will attempt to determine cause-of-death for all condors that die and whose bodies are available for necropsy. If exposure to anticoagulant rodenticides is a significant factor affecting population growth, we will adapt our management accordingly. Comment: One peer reviewer noted that, in our proposed rule, we mention the lead ammunition ban in California and the efforts being taken in Oregon to get hunters to voluntarily switch to non-lead alternatives. They asked whether Nevada, part of which is included in the NEP boundary, would be undertaking any outreach for voluntary effort to curb lead ammunition use. Response: NDOW has implemented some voluntary measures to encourage hunters to switch to non-lead ammunition. In 2015, NDOW collaborated with the North American Non-lead Partnership to train hunter education instructors about non-lead ammunition. Non-lead ammunition outreach is now included in all hunter education training in Nevada. In addition, Nevada also has a regulation mandating the use of nontoxic shot on all Nevada Wildlife Management Areas (NAC 503.183). Comment: One peer reviewer noted that the nest buffer of 200 m is somewhat less conservative that what has previously been recommended, but, given the evidence presented and the fact that this is being designated as an NEP, they thought that the buffer size was a reasonable starting point. This reviewer suggested providing a mechanism for expanding the buffer, under certain circumstances. The other peer reviewer stated that the 200 m buffer around nests seemed risky. They suggested starting with a larger buffer, with the option of making it smaller in certain circumstances. Response: The 656 ft (200 m) buffer distance around occupied nests is intended to provide some protection to condor eggs and nestlings. We recognize that, in certain situations, noise or habitat disturbance outside of this buffer may cause harassment, or even harm, to an individual condor. We expect these instances to be extremely rare given the small number of anticipated breeding condors in the foreseeable future and the vastness of the landscape they will occupy. For the reasons articulated in this final rule (see Management, above), we find that a 656 ft. (200 m) buffer distance provides a reasonable balance between protection of condors and limiting the impact of this reintroduction effort on landowners. Comment: One peer reviewer asked about the timing of our program review and how that relates to the timing of the Service's 5-year status review of the species. As the last California condor 5-year review was completed in 2013, they were concerned that our review periods would not be aligned.[[Page 15614]] Response: We will informally review the status of the reintroduction program on an annual basis. We intend to release key information from this informal annual review (e.g , population size, number of releases, number of deaths) to the public. Our formal status review of the reintroduction program, where we will assess whether we should continue or discontinue the reintroduction program in the Pacific Northwest, will likely occur within the first 5 years of the program. The review cycles will be aligned from that point forward. Based on our experiences releasing California condors in other areas, we caution that evaluating whether or not the program is successful--and therefore, whether it should continue--will take at least two decades (i.e , several 5-year review cycles). Comment: One peer reviewer suggested that we should provide mechanisms for cancelling the program if a sufficient number of condors are killed or lost for reasons that cannot be alleviated due to the experimental NEP status. Response: As stated in the proposed rule, and in this final rule, if a formal evaluation indicates the project is experiencing a 40 percent or greater mortality rate over multiple years or released California condors are not finding food on their own, we would evaluate options, including discontinuing releases, capturing and ***removing*** condors from the NEP area, and whether to ***remove*** the NEP designation and regulations. If we proposed ***removal*** of the regulations, we would provide an opportunity for public review and comment. Comment: One peer reviewer expressed concern over whether establishing a new population would impact the viability of existing populations. They also asked us to describe how the captive facilities will increase production and questioned whether funding and support would be available to accomplish that work. Response: In our proposed rule, and in this final rule, we provide information on a preliminary demographic analysis that shows existing populations are likely to continue to grow even when breeding facilities are producing California condor chicks at less than existing capacity. The condor program has a long history of cooperation among partner institutions, and we have broad support among these institutions for establishment of a new release site in the Pacific Northwest. Likewise, the condor program is funded by a wide variety of partners and sources which are expected to continue to be able to support the existing breeding facilities capacity. Decisions on allocation of condor chicks are made in collaboration with these partner institutions and geneticists. Given the available information on condor demography and the strength and longevity of our partnerships, we are confident that captive-breeding facilities will continue to produce sufficient numbers of California condors to ensure the viability of existing populations and the success of a new reintroduction program in the Pacific Northwest. Comment: One peer reviewer stated success of the reintroduction program was not defined. They requested that we included an explicit definition of success or ***remove*** the term from the final rule. Response: The ultimate goal of any conservation reintroduction is to establish a self-sustaining wild population. We will evaluate, every 5 years, whether the program is progressing toward achieving that goal. Based on our experience, estimates of mortality rates in the first decade of the release programs at existing sites in California and Arizona were between 17-35 percent. Since we expect it will take many years to achieve our ultimate goal of a self-sustaining wild population, we will consider success to be the continued progress toward achieving that goal. As stated in the final rule, if we observe a 40 percent or greater mortality rate over multiple years, or released California condors are not finding food on their own, serious consideration will be given to terminating the project. Comment: One peer reviewer asked whether there might be threats unique to northern California or Oregon, that are not threats in the current range of the California condor. Response: We are not aware of any threats to the California condor that are unique to the Pacific Northwest. We will closely monitor the health of released condors and address any novel threats, should they emerge. Comment: One peer reviewer stated that he thought the scientific and biological components of the proposed rule were excellent and clearly described. He also provided several technical corrections and edits related to condor biology and management. Response: We thank the reviewer for his comments and, as appropriate, have incorporated corrections.Public Comments Comment: Condors should be removed from the field if designation of a nonessential population changes recreational activities that were legal at the time of the designation, specifically hunting and recreational shooting. Other activities that should be protected in this manner include ranching, timber harvest activities, mining, environmental remediation and restoration, power operations, transportation for both inter- and intra-state commerce, currently in-place endangered species recovery plans, and housing development in cities. Commenters suggested that ***removing*** condors from the field should also be included if a sufficient number of individuals are lost during the program. Response: This rule exempts almost all incidental take of California condors. Significant noise or visual disturbance or habitat alteration within 656 ft (200 m) of occupied nests are prohibited. Excluded from this prohibition are emergency fuels treatment activities by Federal, State, and local agencies and Tribes to reduce the risk of catastrophic wildfire and emergency response services. Activities such as ranching and use of existing roads and trails within the 656 ft (200 m) buffer area around an occupied nest would not be considered a significant visual or noise disturbance. Thus, this rule provides substantial assurances that there will be minimal (if any) impacts to the activities the commenter mentions. As stated in the proposed rule, and in this final rule, if a formal evaluation indicates the project is experiencing a 40 percent or greater mortality rate over multiple years or released California condors are not finding food on their own, serious consideration will be given to terminating the project. Comment: Commenters asked for clarification on how the 10(j) rule would address condors that leave the NEP area. One commenter suggested that the rule should require condors that leave the designated NEP boundary to be recaptured and returned, which would address the requirement that this population be geographically disjunct from other populations and result in better survival of birds that leave the NEP area. Response: California condors that fly outside of the NEP area will be evaluated on a case-by-case basis. We do not require the relocation of condors that leave the NEP area. We will consider recapture if a condor moves outside of the NEP and is observed--by an individual trained in condor biology and behavior--exhibiting signs of illness, obvious distress, or exhibits behavior indicating it is at increased risk of harm. While this population is likely to be wholly separate from other condor populations for the foreseeable future, we do not intend to actively[[Page 15615]]preclude the eventual connectivity of condor populations. Comment: Commenters stated that the 10(j) designation should eliminate the proposed exemptions for electric utilities and wind farms because these companies could use other resources/structures (e.g , geofencing) to meet the 10(j) requirements. Commenters also stated that the voluntary actions undertaken by the utility owners may not be adequate to protect the NEP. Response: The primary reason to designate a population as experimental is to engender support for reintroducing an endangered species by more surgically applying the necessary protections of the ESA. Based on known mortalities in other portions of the condor's range, deaths from electric utilities and wind turbines are not the primary threats to condor demographic rates. We will work with electric utilities and wind farm developers and operators to minimize and avoid impacts to condors. As noted in the proposed rule, PG&E has developed and is implementing a plan to minimize take of condors throughout the range of the species. The Service is working with wind energy companies in other parts of the species' range to minimize risk of condor collision with turbines. Comment: Commenters stated that the 10(j) rule should increase the level and enforcement of penalties. Response: Section 11 of the ESA addresses civil and criminal fines and penalties associated with violations of the provisions of the ESA and permits issued under the ESA. Any enforcement actions under the ESA will be subject to the maximum fines and penalties outlined in this statute, as those amounts have been adjusted pursuant to Federal law. The current penalty amounts are in 50 CFR 11.33, as adjusted this year (85 FR 10310, February 24, 2020). Enforcement actions and any ensuing penalties for violations of the ESA are based on the facts of each case. Comment: The California condor should not be established as an NEP without assurances that hunting and recreational shooting would continue. Commenters indicated that a ``special rule'' should be in place to ensure that hunting and/or recreational shooting are not affected. Response: Incidental take of California condors associated with legal and non-negligent hunting and recreational shooting is not prohibited within the NEP, provided such take is unintentional and non-negligent. Habitat alteration and significant visual and noise disturbance within 656 ft (200 m) of an occupied nest is prohibited. Excluded from this prohibition are emergency fuels treatment activities by Federal, State, and local agencies and Tribes to reduce the risk of catastrophic wildfire and emergency response services. Comment: The 10(j) rule as written is too permissive and should be revised to start with full protection and note where protections do not apply. Response: ESA section 10(j) rules are intended to promote recovery of threatened and endangered species, while reducing the impact of reintroductions on stakeholders. For the reasons articulated in the preamble (see Management, above), we find that the special regulations will provide the appropriate balance of species protection and reduced impact to stakeholders. Comment: Commenters expressed concern that reducing protections for the California condor would establish a new baseline for policymaking in the future. Response: We evaluate the need for an experimental population designation and associated 10(j) rules on a case-by-case basis. After carefully reviewing the best available information and coordinating with our State and Tribal partners, Federal ***land*** managers, local landowners, and other conservation partners, we have determined that a California condor reintroduction in this area would not have the necessary support without an experimental population designation. This is not the first nonessential experimental population of the California condor and, therefore, is not precedent-setting. Furthermore, nothing in this rule establishes a new baseline for future policy decisions on achieving condor recovery as this rule applies only to this population. Comment: Several commenters were concerned about potential impacts on ***land*** use and socioeconomics in Nevada. One commenter suggested that take of condors should not be deemed negligent where there have been infrequent or inconsistent occurrences of the species in a given project area or where a given instance of take is the first occurrence. Response: Although the northwestern corner of Nevada is included in the NEP boundary, the best available information on habitat suitability and landscape connectivity suggests that this area is unlikely to become occupied by condors in the foreseeable future. We included northwestern Nevada within the NEP to provide assurances to Nevada that in the unlikely event California condors travel to this area, they would be treated as nonessential experimental animals under the Act. While we do not expect condors to occupy northwestern Nevada within the foreseeable future, we are exempting incidental take from otherwise lawful activities within the NEP, including this area, as long as such take is unintentional and non-negligent. We decline to exempt negligent take, even if the species is infrequently observed in an area. California condors are easily identified and should not be mistaken for any animal that can be legally harvested, killed, captured, wounded, or harassed. Habitat alteration or significant visual or noise disturbance within 656 ft (200 m) of an occupied nest are prohibited. Excluded from this prohibition are emergency fuels treatment activities by Federal, State, and local agencies and Tribes to reduce the risk of catastrophic wildfire and emergency response services. These exemptions and regulations are expected to minimize impacts on ***land*** use and socioeconomics in the remote event condors occupy northwestern Nevada. Comment: One commenter requested clarification on the proposed timeline of the stipulations in the rule, specifically asking about the 20-year timeframe noted in the rule. Response: This rule will remain in place unless it is rescinded through formal rulemaking. The 20-year timeframe in this rule refers to the time horizon over which we can reasonably forecast California condor population expansion to define the boundary of the experimental population. It also provides a time horizon over which we analyzed the likelihood the population will become established and survive in the NEP. We chose 20 years based on the number of years of data we have on condor movements from release sites in southern and central California. We expect that the contribution of the experimental population toward recovery of the California condor will be evident during this time span, although we recognize that establishing a self-sustaining population of condors in the region may take longer given the species' extremely low reproductive rate. Comment: One commenter asked for further clarification on how a decision would be made to ***remove*** condors from the field in the event that the FWS was compelled by a court order to change the protection status of the population, asking if it would be based on votes of participating parties or would MOU signatories have any type of veto power. Response: While FWS would ultimately be responsible for determining how to proceed and ensuring any changes in the legal status and/or ***removal*** of this population of[[Page 15616]]California condors are made in compliance with any applicable Federal rulemaking and other procedures, we would carefully consider input from partners. The MOU signatories include a range of agencies, conservation partners, and stakeholders with interests that represent a wide variety of interests associated with ***land*** management activities. FWS would meet with all of the 17 partners to the MOU to discuss the options on how to proceed, including the option of attempting to capture and relocate all the condors in the wild. We would discuss the consequences of each option with the MOU partners and would make a fact-specific assessment of how to proceed based on the information at that time, including whether there was general agreement from the MOU partners that the condors should remain in the wild. FWS does not intend to hold a formal vote, and none of the MOU signatories would hold veto power. Comment: Commenters requested that additional activities exempt from take prohibitions be specifically stated in the rule, including existing authorized uses of private and public ***lands***; administrative and emergency functions carried out by local, State, or Federal government; and normal ***agricultural*** practices. Response: We have clarified that the activities provided by the commenters are also exempt from incidental take prohibitions, provided the take is unintentional and the activities are lawful. Please see the Management section above for these changes. Comment: Commenters requested that our 10(j) rule include more specific language stating that the construction, operation, and maintenance of wind energy and electric transmission facilities would not constitute take. To address this concern, they suggested paragraph (i)(2) be amended to ***remove*** the term ``non-negligent'' and to specifically add electric transmission and distribution and wind generation facilities. Response: Construction, operation, and maintenance of wind energy and electric transmission facilities may result in take of California condors. However, by issuing this rule, we are exempting such incidental take (provided it is lawful and non-negligent) from the prohibitions of the ESA. We decline to ***remove*** the term ``non-negligent'' as we do not intend to exempt negligent take from the prohibitions of the ESA. Comment: One commenter asked that the phrase ``unavoidably and unintentionally'' used in the 10(j) rule be further clarified. The following clarification was proposed: ``[t]ake that occurs unavoidably and unintentionally is that which occurs despite reasonable care and is not done on purpose.'' Response: The commenter's interpretation of ``unavoidably and unintentionally'' is consistent with how we intend its use in this rule. We have updated the final rule to include this clarification. Comment: Commenters noted concern with how take is defined in the 10(j) rule and felt that how it is defined would open various parties to charges of non-permitted incidental take. They noted that logging companies, NPS, and others could be exposed to liability under the current definition because the rule is not clear on the complex interactions of terrain as part of the current regulatory overlay of different species and habitat conservation plans. Response: By adopting the 10(j) rule, most incidental take of California condors within the experimental population area is allowed, provided that the activity is otherwise lawful and the take is unintentional and not due to negligent conduct. Habitat alterations and significant visual or noise disturbance within 656 ft (200 m) of an occupied nest are prohibited. Excluded from this prohibition are emergency fuels treatment activities by Federal, State, and local agencies and Tribes to reduce the risk of catastrophic wildfire and emergency response services. Activities such as ranching and use of existing roads and trails within the 656 ft (200 m) buffer area around an occupied nest would not be considered a significant visual or noise disturbance. Comment: Some commenters suggested that the proposed 10(j) boundary is too large and that it should be reduced to the Klamath Siskiyou bioregion. They noted that because of the time it would take birds to leave the currently proposed region, they should have the full protection of the ESA once they leave. Response: Experimental population boundaries are generally drawn to encompass the likely movements of the reintroduced population within the foreseeable future. However, they do not need to tightly circumscribe that area, and boundaries may be drawn larger to provide assurances to concerned stakeholders that individuals from a reintroduced experimental population will not be treated as a fully ESA-listed species. Given long-distance movements observed at other release sites, it is unlikely that condors reintroduced to Redwood National Park will limit their movements to the Klamath-Siskiyou bioregion in the foreseeable future. Comment: Commenters requested that the application of the 10(j) stipulation in the Sheldon National Wildlife Refuge be clarified. Response: Although the northwestern corner of Nevada (where Sheldon National Wildlife Refuge is located) is included in the NEP boundary, the best available information on habitat suitability and landscape connectivity suggests that this area is unlikely to become occupied by condors in the foreseeable future. We included northwestern Nevada within the NEP to provide assurances to Nevada that in the unlikely event California condors travel to this area, they would be treated as nonessential experimental animals under the Act. The 10(j) rule would apply on National Wildlife Refuges, including Sheldon National Wildlife Refuge. However, experimental populations in National Wildlife Refuges and National Parks are treated as a threatened species for the purposes of section 7 of the ESA (but not under section 9 of the ESA) and consultation requirements of section 7(a)(2) of the ESA would apply. Comment: Commenters suggested the exception for fuels management be limited to emergency fire response or fuel treatment. They noted that there is no need to risk disturbance to active condor nests in a non-emergency situation. Response: We agree and have updated the rule accordingly. Comment: Commenters asked if the existing program has the funding and capacity in terms of number of available birds to add a release site at the park. Response: The Condor Recovery Program is based on a broad long-term partnership between FWS and many other partners. Funding for this program does not rely entirely on FWS funds, as many partners have other sources of funding to help run the program. In fact, a majority of the funding for the program comes from outside partners. In 2017, FWS started to work with our partners to increase the capacity at the existing breeding facilities in order to provide more captive-reared birds for release to the wild. Based on these efforts, we expect to have additional birds available for release at Redwood National Park, without impacting our releases at the other release sites. Comment: Commenters stated that the condor recovery program could be mismanaged and suggested that condors may have a better chance of surviving if released at an existing site, rather than a new site. Response: Along with our partners, we have over a quarter century of experience in raising condors in[[Page 15617]]captivity and releasing them into the wild. Individuals managing the proposed release site have experience at existing release sites and will be assisted by the recovery program as needed. We intend to monitor and manage the population consistent with monitoring and management efforts at existing release sites. While we acknowledge that survival rates may increase with the length of time a release site has been active (Bakker et al. 2017), we also must weigh this information against the opportunity to reintroduce condors to this portion of its historic range, which would have long-term benefits to the overall conservation goals of this species. We have determined that establishing a new population--the first in the northern half of the species' historical range--is worth the possibility of slightly lower survival rates in the early years of the new reintroduction site. Comment: Commenters noted that landowners should be advised when monitored birds have fledged so that they can comply with the proposed standards for buffers around occupied nest sites. Response: As part of the condor reintroduction program, monitoring will occur through various methods, as described in the Monitoring and Evaluation section of this rule. Field crews will, to the best of their ability, notify adjacent landowners when occupied nest sites are identified. NPS, FWS, and the Yurok Tribe have coordinated with many surrounding landowners and ***land*** managers throughout the planning process and remain committed to working with our partners and neighbors during project implementation. Comment: Commenters asked during which year of the program we would review reintroduction efforts. Response: We will informally review the status of the reintroduction program on an annual basis. We intend to release key information from this informal annual review (e.g , population size, number of releases, number of deaths) to the public. Our formal status review of the reintroduction program, where we will assess whether we should continue or discontinue the reintroduction program in the Pacific Northwest, will likely occur within the first 5 years of the program. The review cycles will be aligned from that point forward. Based on our experiences releasing California condors in other areas, we caution that evaluating whether or not the program is successful--and, therefore, whether it should continue--could take at least two decades (i.e , several 5-year review cycles). Comment: Commenters suggested that the proposed rule include language that allows buffers to expand if needed. Response: The 656-ft (200-m) buffer distance around occupied nests is intended to provide some protection to condor eggs and nestlings. We recognize that, in certain situations, noise or habitat disturbance outside of this buffer may cause harassment, or even harm, to an individual condor. We expect these instances to be extremely rare, given the small number of anticipated breeding condors in the foreseeable future and the vastness of the landscape they will occupy. For the reasons articulated in this final rule (see Management, above), we find that a 656-ft (200-m) buffer distance provides a reasonable balance between protection of condors and limiting the impact of this reintroduction effort on landowners. Comment: Commenters suggested further research regarding preventing condor mortality from power lines. Response: Over the last 28 years, there have been 18 incidents of condor electrocutions. FWS has worked with two major utility companies in California to minimize risk of future incidents. PG&E has recently completed a California Condor Conservation Strategy to reduce risk of electrocution and collisions of condors throughout its service area in California. In addition, PG&E has been working with partners in the condor recovery program to train chicks bred in captivity to avoid ***landing*** on power poles once they are released. These efforts continue to reduce the risk of electrocutions in the wild population. Comment: Commenters stated that the statistics of condor survival in the wild are skewed because some carcasses are returned from the field in such a way that it makes it difficult to determine the cause of mortality. Response: It is not possible to determine the cause of death for every condor that dies in the wild, as some carcasses are not located, and some have decayed to the point that the cause of death is indeterminable. The information the FWS provides to the public acknowledges that the data is limited to birds that we have been able to retrieve and determine the cause of death. However, given the large sample of condors for which cause of death has been determined (n = 185), it is likely that our data on mortality sources are representative of the mortality sources in the population. Comment: Commenters questioned statements that describe the historical range of the California condor and note the causes of California condor decline. They note that the condor's preferred nesting habitats were not in areas that settlers would have normally used and, if direct persecution occurred, it was most likely related to condors feeding on livestock. They also noted that when game is shot, the carcass is usually retrieved, making lead poisoning from ammunition unlikely. Response: The probable causes for condor declines being related to direct persecution, indirect poisoning, and lead poisoning are well documented (D'Elia and Haig 2013). Condors can travel great distances from their nesting areas to feed and were documented on numerous occasions by early explorers and settlers. Condors are obligate scavengers and are not livestock predators; however, it is true that some settlers killed condors under the mistaken belief that condors might harm their livestock. In addition, there is ample historical evidence of numerous condors being shot for no purpose at all. While hunters usually retrieve game, misplaced shots may wound animals, and these individuals may carry lead fragments in their tissues until they die and the lead becomes available to scavengers. Further, many hunters field-dress game, leaving nonedible gut piles that can contain lead fragments. Finally, varmint hunters, typically ***targeting*** nongame animals such as ground squirrels and coyotes, shoot animals and leave carcasses in the field. Comment: Commenters made suggestions for adding tribal governments to the list of entities able to take condors during the course of recovery activities, modifying the fuels management exception to just emergency response activities, and clarifying that the Yurok Tribe Natural Resource Division is the responsible agency. Response: We thank the commenters for the suggestions and have updated the rule accordingly. Comment: Commenters questioned if non-lead outreach efforts and efforts for the voluntary switch to non-lead ammunition would occur in Nevada. Response: NDOW has implemented some voluntary measures to encourage hunters to switch to non-lead ammunition. In 2015, NDOW collaborated with the North American Non-lead Partnership to train hunter education instructors about non-lead ammunition. Non-lead ammunition outreach is now included in all hunter education training in Nevada. In addition, Nevada also has a regulation mandating the use of nontoxic shot on all Nevada Wildlife Management Areas (NAC 503.183). Comment: Commenters stated that past studies show that the lead ammunition ban would not be effective[[Page 15618]]in reducing the rates of lead in California condors because there are other sources of lead in the environment. They requested that the NEP include a special rule protecting all aspects of hunting, including use of all types of ammunition. Response: There is consensus, based on decades of scientific research, that lead ammunition is the primary source of lead toxicosis in California condors. While other sources of lead (e.g , lead paint) exist in the environment, instances of these sources poisoning California condors are extremely rare compared to poisoning from lead ammunition. This rule does not restrict lawful hunting and does not mandate the use any specific type of ammunition. Comment: Commenters stated that condors can be exposed to many contaminants. Contaminants of concern included mercury, anticoagulant rodenticides, DDT, and heavy metals from mining activities. Commenters stated there should be further study of the threats of emerging chemicals on condors and suggested that current statistics may underestimate the mortality resulting from these sources because the cause of death for many birds is undetermined. They also suggested that exposure to these chemicals may be considered ``take'' under the proposed rule. Response: While we cannot determine the cause of death for every individual condor, our mortality data indicate that, of the known causes of death, contaminants (not including lead), make up a very small proportion of deaths (USFWS 2020, p. 3). Nevertheless, we intend to monitor the health of released condors and assess contaminant loads in condors during health screenings and when we retrieve deceased condors in the field. We welcome additional research into exposure rates and impacts of contaminants on condor demography. In this rule, we are exempting incidental take associated with lawful activities that is non-negligent and unintentional. Habitat alteration and significant visual and noise disturbance within 656 ft (200 m) of an occupied nest are prohibited. Use of pesticides in compliance with EPA labels would not be prohibited within the NEP, whereas, use of pesticides out of compliance with EPA labels that results in take would be a violation of the ESA. Comment: Comments expressed specific concerns about the use of rodenticides in illegal marijuana growing sites. They requested that the 10(j) designation include a plan for rapid response if contamination related to mortalities occur. Response: As at existing release sites, field crews will closely monitor released condors and perform regular heath checks. If we detect toxicants are making condors sick or causing mortality, we will attempt to address the source(s) of contamination as rapidly as possible. Comment: Commenters expressed concern regarding the establishment of a new wind project near Cape Mendocino and the potential impact that project could have on the reintroduced population of condors. Response: To date, after more than 20 years of releasing California condors in areas with extensive wind energy development, we have not observed a single condor mortality from collisions with wind turbines. In addition, the amount of wind energy development (existing and proposed) is far less than the existing wind energy development in occupied condor habitat in southern and central California. Nevertheless, we recognize that poorly sited wind energy infrastructure can pose a threat to condors. Project proponents for wind projects in northern California have publicly expressed a willingness to work with the condor program and implement technology that can shut down turbines if a monitored condor flies close to a facility. We will seek to cooperate with energy producers for all existing and proposed energy projects in the region.Summary of Changes From Proposed Rule In the final rule we have: Clarified that fuels treatments that are considered an emergency are exempt from the prohibited actions within 656 ft (200 m) of occupied nests. Added Tribal and local governments to the list of entities that are exempt from the prohibitions within 656 ft (200 m) of occupied nests when conducting emergency fuels treatments to reduce the risk of catastrophic wildfire. Added an exemption to the prohibitions within 656 ft (200 m) of occupied nests for responses to wildfire or other emergencies. Clarified that activities such as ranching and use of existing roads and trails would not be considered a significant visual or noise disturbance occurring within 656 ft (200 m) of an occupied nest. Clarified that we use the phrase ``unavoidably and unintentionally'' to mean take that is not done on purpose and that occurs despite exerting reasonable care to avoid take. Provided, in response to comments, additional examples of otherwise lawful activities that are exempt from incidental take prohibitions. Provided, in response to comments, additional examples of specific activities that would be prohibited around occupied nests. Changed, at the request of the Yurok Tribe, the entity that may take condors to aid in their recovery from the Yurok Wildlife Department to the Yurok Tribe Natural Resource Division.Findings Based on the best scientific and commercial data available (in accordance with 50 CFR 17.81), we find that releasing the California condors into Redwood National Park with the regulatory provisions in this final rulemaking will further the conservation of the species. The nonessential experimental population status is appropriate for the reintroduced population because we have determined that it is not essential to the continued existence of the species in the wild.Required DeterminationsRegulatory Planning and Review (Executive Orders 12866 and 13563) Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant. Executive Order 13563 reaffirms the principles of E.O 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.Regulatory Flexibility Act (5 U.S.C 601 et seq.) Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996; 5 U.S.C 60 et seq.), whenever a Federal agency is required[[Page 15619]]to publish a notice of rulemaking for any proposed or final rule, it must prepare, and make available for public comment, a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e , small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities. We certify that this rule would not have a significant economic effect on a substantial number of small entities. The following discussion explains our rationale. The areas that would be affected under this rule include the release site at Redwood National Park and areas where individual California condors are likely to disperse. Because of the regulatory flexibility for Federal agency actions provided by the NEP designation and the exemption for incidental take in the rule (with a minor exception around occupied nests), we do not expect this rule to have significant effects on any activities within Federal, State, or private ***lands*** within the NEP. In regard to section 7(a)(2) of the Act, the population would be treated as proposed for listing, and Federal action agencies are not required to consult on their activities, except on National Wildlife Refuges and National Park System ***lands***, where the NEP is treated as a threatened species for the purposes of section 7 of the Act. Section 7(a)(4) of the Act requires Federal agencies to confer (rather than consult) with the Service on actions that are likely to jeopardize the continued existence of a species proposed for listing. However, because the NEP is, by definition, not essential to the survival of the species, conferring will likely never be required for the California condor population within the NEP area. Further, the results of a conference are advisory in nature and do not restrict agencies from carrying out, funding, or authorizing activities. Section 7(a)(1) of the Act requires Federal agencies to use their authorities to carry out programs to further the conservation of listed species, which would apply on any ***lands*** within the NEP areas. On National Wildlife Refuges and National Park System ***lands*** within the NEP, the California condor would be treated as a threatened species for the purposes of section 7 of the Act. As a result, and in accordance with our regulations, some modifications to proposed Federal actions within National Wildlife Refuges and National Park System ***lands*** may occur to benefit the California condor, but we do not expect projects to be substantially modified because these ***lands*** are already administered in a manner that is compatible with California condor conservation. This rule broadly authorizes incidental take of the California condor within the NEP area. The regulations implementing the Act define ``incidental take'' as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity, such as ***agricultural*** activities and other rural development, camping, hiking, hunting, vehicle use of roads and highways, and other activities in the NEP areas that are in accordance with Federal, Tribal, State, and local laws and regulations. Intentional take for purposes other than authorized data collection or recovery purposes would not be authorized. Intentional take for research or recovery purposes would require a section 10(a)(1)(A) recovery permit under the Act. The principal activities on private property near the proposed release site are recreation, timber production, ***agriculture***, and activities associated with private residences. The presence of the California condor will not significantly affect the use of ***lands*** for these purposes because--with a minor exception around occupied condor nests--there will be no new or additional economic or regulatory restrictions imposed upon States, non-Federal entities, or private landowners due to the presence of the California condor (NPS, 2018). Therefore, this rulemaking is not expected to have any significant adverse impacts to activities on private ***lands*** within the NEP area.Unfunded Mandates Reform Act (2 U.S.C 1501 et seq.) In accordance with the Unfunded Mandates Reform Act (2 U.S.C 1501 et seq.): (1) This rule would not ``significantly or uniquely'' affect small governments. We have determined and certify pursuant to the Unfunded Mandates Reform Act, 2 U.S.C 1502 et seq., that, if adopted, this rulemaking would not impose a cost of $100 million or more in any given year on local or State governments or private entities. A Small Government Agency Plan is not required. Small governments would not be affected because the NEP designation would not place additional requirements on any city, county, or other local municipalities. (2) This rule would not produce a Federal mandate of $100 million or greater in any year (i.e , it is not a ``significant regulatory action'' under the Unfunded Mandates Reform Act). This NEP designation for the California condor would not impose any additional management or protection requirements on the States or other entities.Takings (E.O 12630) In accordance with Executive Order 12630, the rule does not have significant takings implications. When reintroduced populations of federally listed species are designated as nonessential experimental populations, the Act's regulatory requirements regarding the reintroduced population are significantly reduced. This rule would allow for the taking of reintroduced California condors when such take is incidental to an otherwise legal activity, with a minor exception that incidental take resulting from habitat alteration and significant visual or noise disturbance within 656 ft (200 m) of occupied condor nests is prohibited. A takings implication assessment is not required because this rule: (1) Would not effectively compel a property owner to suffer a physical invasion of property, and (2) would not deny all economically beneficial or productive use of the ***land*** or aquatic resources. This rule would substantially advance a legitimate government interest (conservation and recovery of a listed species) and would not present a barrier to all reasonable and expected beneficial uses of private property.Federalism (E.O 13132) In accordance with Executive Order 13132, we have considered whether this rule has significant Federalism effects and have determined that a Federalism assessment is not required. This rule would not have substantial direct effects on the States, on the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government. In keeping with Department of the Interior policy, we requested information from and coordinated development of this rule with the affected resource agencies in California, Nevada, and Oregon. Achieving the recovery goals for this species will contribute to its eventual delisting and return to State management. No intrusion on State policy or administration is expected, roles or responsibilities of Federal or[[Page 15620]]State governments would not change, and fiscal capacity would not be substantially directly affected. The rule operates to maintain the existing relationship between the State and the Federal Government and is being undertaken in coordination with the States of California, Nevada, and Oregon. We have cooperated with CDFW, the NDOW, and ODFW in the preparation of this final rule. Therefore, this rule does not have significant Federalism effects or implications to warrant the preparation of a Federalism assessment pursuant to the provisions of Executive Order 13132.Civil Justice Reform (E.O 12988) In accordance with Executive Order 12988 (February 7, 1996, 61 FR 4729), the Office of the Solicitor has determined that this rule would not unduly burden the judicial system and would meet the requirements of sections (3)(a) and (3)(b)(2) of the Order.Paperwork Reduction Act This rule does not contain any new collection of information that requires approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C 3501 et seq.). OMB has previously approved the information collection requirements associated with permitting and reporting requirements associated with native endangered and threatened species, and experimental populations, and assigned the following OMB Control Numbers: 1018-0094, ``Federal Fish and Wildlife Permit Applications and Reports--Native Endangered and Threatened Species; 50 CFR 10, 13, and 17'' (expires 03/31/2021), and 1018-0095, ``Endangered and Threatened Wildlife, Experimental Populations, 50 CFR 17.84'' (expires 9/30/2023). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.National Environmental Policy Act In compliance with all provisions of the National Environmental Policy Act of 1969 (NEPA), we have analyzed the impact of this final rule. In cooperation with the NPS and the Yurok Tribe, we have prepared an environmental assessment on this action and have made it available for public inspection (see ADDRESSES).Government-to-Government Relationship With Tribes In accordance with the President's memorandum of April 29, 1994, ``Government-to-Government Relations with Native American Tribal Governments'' (59 FR 229511), Executive Order 13175, and the Department of the Interior Manual Chapter 512 DM 2, we have coordinated closely with the Tribal governments near the release site throughout the development of this rule. In collaboration with the NPS, we extended an invitation for government-to-government consultation to all federally recognized Tribes in the NEP area, have formally met with tribes that have requested government-to-government consultation, and have fully considered information and comments received through the consultation process. We have also considered all comments received from Tribes and tribal members during the public comment period.Energy Supply, Distribution, or Use (E.O 13211) Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. This rule is not expected to significantly affect energy supplies, distribution, and use. Therefore, this action is not a significant energy action and no Statement of Energy Effects is required.References Cited A complete list of all references cited in this final rule is available online at [*http://www.regulations.gov*](http://www.regulations.gov) in Docket No. FWS-R1-ES-2018-0033 or upon request from the Pacific Region Office (see FOR FURTHER INFORMATION CONTACT).Author The primary author of this final rule is Jesse D'Elia of the Pacific Regional Office (see FOR FURTHER INFORMATION CONTACT).List of Subjects in 50 CFR 17 Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.Regulation Promulgation Accordingly, we are amending part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:PART 17--ENDANGERED AND THREATENED WILDLIFE AND PLANTS01. The authority citation for part 17 continues to read as follows: Authority: 16 U.S.C 1361-1407; 1531-1544; and 4201-4245, unless otherwise noted.02. Amend Sec. 17.11(h) by revising the entry for ``Condor, California'' under BIRDS in the List of Endangered and Threatened Wildlife to read as follows:Sec. 17.11 Endangered and threatened wildlife.\* \* \* \* \* (h) \* \* \*-------------------------------------------------------------------------------------------------------------------------------------------------------- Common name Scientific name Where listed Status Listing citations and applicable rules-------------------------------------------------------------------------------------------------------------------------------------------------------- \* \* \* \* \* \* \* Birds \* \* \* \* \* \* \*Condor, California............ Gymnogyps U.S.A only, except where listed as an E 32 FR 4001, 3/11/1967; 61 FR 54045, 10/16/ californianus. experimental population. 1996; 50 CFR 17.95(b)\CH\.Condor, California............ Gymnogyps U.S.A (specific portions of Arizona, Nevada, XN 61 FR 54045, 10/16/1996; 50 CFR 17.84(j) californianus. and Utah)--see Sec. 17.84(j). \10j\.Condor, California............ Gymnogyps U.S.A (Oregon, and specific portions of XN 86 FR [Insert Federal Register page where the californianus. northern California and northwest Nevada)-- document begins], 3/24/2021; 50 CFR 17.84(i) see Sec. 17.84(i). \10j\. \* \* \* \* \* \* \*--------------------------------------------------------------------------------------------------------------------------------------------------------[[Page 15621]]03. Amend Sec. 17.84 by adding paragraph (i) to read as follows:Sec. 17.84 Special rules--vertebrates.\* \* \* \* \* (i) California condor (Gymnogyps californianus). (1) Where is the California condor designated as a nonessential experimental population (NEP)? The NEP area for the California condor is within the species' historical range in northern California, northwestern Nevada, and Oregon. (i) The western boundary of the NEP is the Submerged ***Lands*** Act boundary line along the Pacific coast. The southern boundary of the NEP is formed by: An east-west line from California's Submerged ***Lands*** Act boundary to Hare Creek; Hare Creek from the Pacific Ocean to its junction with California State Route 1; north to the junction of State Route 1 and State Route 20; east along California State Route 20 to where it meets Interstate 80; and Interstate 80 from its intersection with California State Route 20 to U.S Route 95 in Nevada. The eastern boundary of the NEP is U.S Route 95 in Nevada to the State boundary of Oregon and then east and north along Oregon's southern and eastern boundaries, respectively. The northern boundary of the NEP is the State boundary between Oregon and Washington. All highway boundaries are inclusive of the entire highway right of way. (ii) Map follows:BILLING CODE 4333-15-P[[Page 15622]][GRAPHIC] [TIFF OMITTED] TR24MR21.003BILLING CODE 4333-15-C (iii) We are designating the experimental population area to accommodate the potential future movements of a wild population of California condors. The released population is expected to remain in the experimental area for the foreseeable future (approximately 20 years) due to the geographic extent of the designation. (iv) We do not intend to change the status of this nonessential population unless: (A) The California condor is recovered and subsequently removed from the list[[Page 15623]]in Sec. 17.11(h) in accordance with the Act; or (B) The reintroduction is not successful and the regulations in this paragraph (i) are revoked. (v) Legal actions or other circumstances may compel a change in this nonessential experimental population's legal status to essential, threatened, or endangered, or compel the Service to designate critical habitat for the California condors within the experimental population area defined in this rule. If this happens, all California condors will be removed from the area and this experimental population rule will be withdrawn, unless the participating parties in the reintroduction effort agree that the condors should remain in the wild. Changes in the legal status and/or ***removal*** of this population of California condors will be made in compliance with any applicable Federal rulemaking and other procedures. (vi) We will not designate critical habitat for this NEP, as provided by 16 U.S.C 1539(j)(2)(C)(ii). (2) What take of the California condor is allowed in the NEP area? (i) Throughout the California condor NEP, you will not be in violation of the Act if you unavoidably and unintentionally take a California condor (except as noted in paragraph (i)(3)(ii) of this section), provided such take is non-negligent, incidental to a lawful activity (i.e , not done on purpose), and you report the take as soon as possible as provided under paragraph (i)(2)(iii) of this section. The phrase ``unavoidably and unintentionally'' means take that occurs despite the exertion of reasonable care to avoid take. Examples of activities that will not violate the take prohibitions of this section include, but are not limited to: Legal hunting of species other than condors; recreational shooting; ranching; farming; existing authorized uses of private and public ***lands***; driving; recreational activities; and administrative and emergency functions carried out by local, State, or Federal government agencies. (ii) Any person with a valid permit issued by the Service under Sec. 17.32 may take California condors in the wild in the experimental population area, pursuant to the terms of the permit. Additionally, any employee or agent of the Service, National Park Service, Yurok Tribe Natural Resource Division, California Department of Parks and Recreation, California Department of Fish and Wildlife, Nevada Department of Wildlife, or Oregon Department of Fish and Wildlife who is designated and trained for such purposes, when acting in the course of official duties, may take a California condor within the NEP area if such action is necessary: (A) For scientific purposes; (B) To relocate or haze California condors within the experimental population area to improve California condor survival or recovery; (C) To relocate California condors that have moved outside the experimental population area; (D) To transport California condors to and from veterinary facilities or captive-breeding facilities; (E) To address conflicts with ongoing or proposed activities in an attempt to improve California condor survival; (F) To aid a sick, injured, or orphaned California condor; (G) To salvage a dead specimen that may be useful for scientific study; (H) To dispose of a dead specimen; or (I) To aid in law enforcement investigations involving the California condor. (iii) Any take pursuant to paragraphs (i)(2)(i), (i)(2)(ii)(F), (i)(2)(ii)(G), or (i)(2)(ii)(H) of this section must be reported as soon as possible to the California Condor Field Coordinator, California Condor Recovery Office, 2493 Portola Road, Suite A, Ventura, California 93003, (805/644-5185), who will determine the disposition of any live or dead specimens. (3) What take of the California condor is not allowed in the NEP area? For the purposes of this rule, an occupied California condor nest is defined as a nest that is attended by a breeding pair of condors, occupied by a condor egg, or occupied or attended by a condor less than 1 year of age. (i) Except as expressly allowed in paragraph (i)(2) of this section, all of the provisions of Sec. 17.31(a) and (b) apply to the California condor in areas identified in paragraph (i)(1) of this section, and any manner of take not described under paragraph (i)(2) of this section is prohibited in the NEP. (ii) Habitat alteration (e.g , ***removing*** trees, erecting structures, altering the nest structure or perches near the nest) within 656 ft (200 m) of an occupied nest is prohibited, except for emergency fuels treatment activities by Federal, State, Tribal, or local government agencies to reduce the risk of catastrophic wildfire or during responses to wildfire or other emergencies. (iii) Significant visual or noise disturbance (e.g , tree felling, chainsaws, helicopter overflights, concrete cutters, fireworks, explosives) within 656 ft (200 m) of an occupied nest is prohibited, except for emergency fuels treatment activities by Federal, State, Tribal, or local government agencies to reduce the risk of catastrophic wildfire or during responses to wildfire or other emergencies. Activities such as ranching and use of existing roads and trails would not be considered a significant visual or noise disturbance. (iv) You must not possess, sell, deliver, carry, transport, ship, import, or export, by any means whatsoever, any California condor or part thereof from the experimental population taken in violation of this paragraph (i) or in violation of applicable tribal or State laws or regulations or the Act. (v) It is unlawful for you to attempt to commit, solicit another to commit, or cause to be committed, any take of the California condor, except as expressly allowed in paragraph (i)(2) of this section. (4) How will the effectiveness of this reintroduction be monitored? The status of the reintroduction project will receive an informal review on an annual basis, and we will evaluate the reintroduction program to determine whether to continue or terminate reintroductions every 5 years as part of our 5-year status review for the species. (i) This evaluation will include, but will not be limited to: A review of management issues; California condor movements and post-release behavior; assessment of food resources and dependence of California condors on supplemental food; fecundity of the population; causes and rates of mortality; project costs; public acceptance; and progress toward establishing a self-sustaining population. (ii) If a formal evaluation indicates the project is experiencing a 40 percent or greater mortality rate over multiple years or released California condors are not finding food on their own, serious consideration will be given to terminating the project.\* \* \* \* \*Martha Williams,Principal Deputy Director, Exercising the Delegated Authority of the Director, U.S Fish and Wildlife Service.[FR Doc. 2021-05646 Filed 3-23-21; 8:45 am]BILLING CODE 4333-15-P

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