



Forest Service

Pacific Northwest Region

1220 SW Third Avenue (97204)
P.O. Box 3623
Portland, OR 97208-3623

File Code: 2520; 5180

Date: October 9, 2019

Route To:

Subject: 204 Cow Fire Burned Area Emergency Response Authorization

To: Malheur Forest Supervisor

Enclosed is the approved initial emergency stabilization response authorization for the Cow Fire based on your initial Burned Area Emergency Response (BAER) request dated September 23, 2019. You are authorized to spend up to \$54,948 for improved road and trail drainage and treatments, invasive plant early detection-rapid response treatments, human life and safety treatments, and cultural resource protection effectiveness monitoring as shown below.

	Initial
Land treatments – noxious and invasive plants	\$9,600
Road and trail treatments	\$40,772
Protection and safety treatments	\$4,240
Monitoring - Cultural Effectiveness	\$336
Total	\$54,948

The fire is anticipated to be contained on October 15, 2019. For administrative purposes the Regional Office considers October 15, 2020 a sufficient benchmark from which to complete all authorized treatments. Funds are currently available for this project but could be restricted later if the need arises due to agency apportionment limitations. If this occurs, you will be contacted by the Regional Budget Officer regarding specific spending restrictions and procedures.

An emergency stabilization incident job code H6MMY519 (0604) has been established for the implementation of this project. Your BAER assessment costs are separate from project costs and should be charged to the Region 6 BAER assessment job code H6BAER.

The Forest is responsible for providing financial oversight for this project. Any changes to this plan must be approved by the Regional Office. In addition, you will be required to provide an accomplishment report by February 28, 2021.

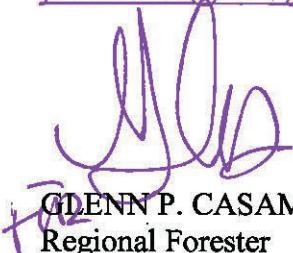


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Please contact Joni Brazier, Acting Regional BAER Coordinator, at 541-471-6760 or joni.brazier@usda.gov, if you have questions regarding this project.



The image shows a handwritten signature in dark ink, appearing to read "GLENN P. CASAMASSA". Below the signature, the name is typed in a standard black font.

GLENN P. CASAMASSA
Regional Forester

Enclosures

cc: Joni Brazier, Marie-Louise Smith, Eric Johnston, Rebecca Slick, Christopher Stratton, Cara Farr, Amy Unthank, Ed Guzman, Hazel Wood

Date of Report: 9/20/2019**BURNED-AREA REPORT****PART I - TYPE OF REQUEST****A. Type of Report**

- 1. Funding request for estimated emergency stabilization funds
- 2. No Treatment Recommendation

B. Type of Action

- 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
- 2. Interim Request # _____
 - Updating the initial funding request based on more accurate site data or design analysis

PART II - BURNED-AREA DESCRIPTION**A. Fire Name: 204 Cow****B. Fire Number: OR-MAF-019204****C. State: Oregon****D. County: Grant/Baker****E. Region: 06****F. Forest: Malheur****G. District: Prairie City****H. Fire Incident Job Code: 0604 P6MMY5****I. Date Fire Started: 8/9/2019****J. Date Fire Contained: Estimated 10/15/2019****K. Suppression Cost: \$12,500,000 estimated total cost****L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

- 1. Fireline repaired (miles): 31.7 miles of fire line repaired
- 2. Other (identify): All drop point, helispots and dip site repaired and seeded

M. Watershed Numbers:*Table 1: Acres Burned by Watershed*

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
170501161103	Crane Creek	29,382	24	0.08%
170501161102	Elk Creek-North Fork Malheur River	13,523	3,369	25%
170501161101	Swamp Creek-North Fork Malheur River	25,576	6,370	25%

N. Total Acres Burned: 9,764

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	9,764
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	0
TOTAL	9,764

O. Vegetation Types: Vegetation types within the fire area mostly consist of forested plant associations. The Forested Plant Association Groups (PAGs) represented are subalpine fire/whitebark pine (9 acres), subalpine fir (210 acres), Douglas-fir (135 acres), lodgepole pine (5,025 acres), ponderosa pine (111 acres), and grand fir (4,095 acres), with about 174 acres unclassified. No non-forested or riparian acres have been mapped in the PAGs, but there are some creeks that cross through the burn area, and some scablands are likely present on the west side of the burn area.

P. Dominant Soils: Dominant soil are predominantly andisols and inceptisols with lithic modifiers, with textures ranging from ashy silt loams to ashy gravelly sandy loams. These soils formed from a mantle of volcanic ash over glacial till or colluvium. The infiltration rate of these soils are high due to the texture and gravel content.

Q. Geologic Types: Poorly mapped and undifferentiated andesite, dacite, and olivine basalt lava flows that erupted from a number of composite volcanoes near John Day.

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	20.23
INTERMITTENT	9.25
EPHEMERAL	0
OTHER (CANAL DITCH)	0.93

S. Transportation System:

Trails: National Forest (miles): 4.35

Other (miles): 0

Roads: National Forest (miles): 46.82

Other (miles): 0.002

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	% within the Fire Perimeter
Unburned	1928	19 %
Low	4301	44%
Moderate	2773	28%
High	751	8%
Total	9754	

B. Water-Repellent Soil (acres):

Water Repellency	Acres
High	75
Moderate	2773
Slight	4301

C. Soil Erosion Hazard Rating:

Soil Erosion Rating	Acres	Percent of Fire
Low	4258	44%
Moderate	4162	43%
High	2626	27%
Very High	324	3%

SBS	0-15%	15-30%	30-60%	+60%
Unburned	Low	Low	Moderate	High
Low	Low	Moderate	Moderate	High
Moderate	Moderate	High	High	Very High
High	High	High	Very High	Very High

D. Erosion Potential:

1.41 ton/A (for H SBS)

Sediment Potential:

	1st year (tons/acre)	2nd year (tons/acre)
SBS		
Unburned	0	0
Low	0.03	0
Moderate	0.33	0.03
High	1.41	0.16

705 cubic yards/square mile (conversion factor 1.3 tons per cu. yd.)

F. Estimated Vegetative Recovery Period (years): 1-3* years (1-3 years grass achieve % effective ground cover 5-15 years shrubs, 20-70 years conifers)

G. Estimated Hydrologic Response: Wildcat was used to estimate pre and post fire discharge based on a storm with a 5 year recurrence interval over 24 hours. Due to hillslope gradient and loss of vegetation, the first, large runoff-producing storms will likely increase surface flows in many streams within the Cow Fire. The highest increases are predicted in Elk Creek, Sheep Creek, and Cow Creek at 1.6, 1.5, and 1.6 times increase, respectively. The highest amounts of sediment yields from the burned watersheds are expected during the first year after the fire and reducing over time as vegetation recovers. Debris flow modelling assigned high hazard ratings to Sheep Creek and portions of the Elk Creek drainages. Valley form and channel condition are expected to lessen impacts of potential debris flow above critical VARs. The majority of the fire burned with low or unburned soil severity; in these areas significant patches of intact riparian vegetation remain. Threats to hydrologic function and water quality were considered low due to the short term and localized extent of predicted impacts.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

BAER team commences on September 13, 2019 to evaluate the effects to the critical BAER values in interim directive 2520-2018-1. Rapid field assessment was completed on September 17, 2019 with final VAR discussion on September 18, 2019. Final VAR spreadsheet with rational for risk and treatment justification is included in VAR spreadsheet.

A. Describe Critical Values/Resources and Threats (narrative):**Table 5: Critical Value Matrix**

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Very High	Very High	Low
Likely	Very High	High	Low
Possible	High	Intermediate	Low
Unlikely	Intermediate	Low	Very Low

1. Human Life and Safety (HLS):

Protection of human life and safety is required due to falling trees, rocks, increased flood and debris flow potential, stump holes, unstable ground, and road prism failures.

2. **Property (P):** Property critical values include Short Creek Guard Station water system, Sheep Creek Trail, Open Paved System Roads (Rd 13/16), Elk Creek Crossing on Rd 16, native surface level 2 roads, and closed system roads.
3. **Natural Resources (NR): Cultural and Heritage Resources:** Sheep Creek Trail
 - b. Lithic Scatter Sites
 - c. Old Cabin Site

B. Emergency Treatment Objectives:

Land Treatments: Retard the spread of invasive weeds as a result of suppression repair activities, mainly dozer lines. (**L1b**)

Proposed Road and Trail Treatments:

- a) Protect and stabilize Forest Service infrastructure at risk of damage as a result of increased sedimentation, stream diversion, and erosion from the fire (**RT1a, RT1b, RT6, P6**)
- b) Reduce risk to water quality and other natural resources by reducing risk of infrastructure damage and failure (**RT1a, RT1b, RT13**)

Proposed Protection/Safety Treatments: Caution forest visitors recreating and administrative users about the potential hazards that exist within the burned area. (**P1a/P1b**)

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land 95%	Channel NA
Roads/Trails 75%	Protection/Safety 90%

D. Probability of Treatment Success**Table 6: Probability of Treatment Success**

	1 year after treatment	3 years after treatment	5 years after treatment
Land	80	75	70
Channel	NA		
Roads/Trails	70	80	90
Protection/Safety	85	90	90

E. Cost of No-Action (Including Loss): \$455,000 plus cost of loss of life or injury**F. Cost of Selected Alternative (Including Loss): \$60,500 cost of treatment plus 10% of no action cost, plus non-market value of increased safety and protection of lifeSkills Represented on Burned-Area Survey Team:**

<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Engineering	<input checked="" type="checkbox"/> GIS	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Weeds	<input checked="" type="checkbox"/> Recreation	<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Wildlife	
□ Other:				

Team Leader: Kyle Wright
Email: kyle.wright2@usda.gov

Phone(s): 458-292-6027

Forest BAER Coordinator: Hazel Wood
Email: hazel.wood@usda.gov

Phone(s): 503-440-1587

Team Members: *Table 7: BAER Team Members by Skill*

Skill	Team Member Name
<i>Team Lead(s)</i>	Kyle Wright
<i>Soils</i>	Sarah Brame
<i>Hydrology</i>	Hazel Wood
<i>Engineering</i>	Chase Bloom
<i>GIS</i>	Zach Adams
<i>Archaeology</i>	Robert Dickerson, Marley Chynoweth
<i>Weeds</i>	Jessi Brunson
<i>Recreation</i>	Jared Bowman, Kevin Green
<i>Fisheries</i>	Jeff Nelson
<i>Range</i>	Jason Spence

H. Treatment Narrative:

Land Treatments:

L1b: Invasive EDRR-Suppression: Invasive plant surveys and treatments will focus on suppression-related disturbances. We estimate about 64 miles of hand and dozer lines that will need survey and treatment, along with a few additional spot treatments to prevent or control expansion of existing invasive infestations. We estimate a max of 1 acre of roadside treatment per mile, so we estimate about 64 acres of treatment total. We plan to partner with Grant Soil and Water Conservation District, using existing and new agreements, to accomplish about half of the estimated treatment area, or about 30 acres of survey and treatment along accessible roads and two-tracks. Note all of the treatments are for suppression related impacts due to the low risk rating.

Treatment	Units	Unit Cost	# of Units	Total Cost
L1b Weed Surveys and Treatment by foot using backpack sprayers	acres	\$150	34	\$5,100
L1b Weed Surveys and Treatment using ATVs or truck-mounted spray equipment	acres	\$150	30	\$4,500
Grand total				\$9,600

Channel Treatments: None, a small dilapidated trail bridge on Short Creek near Short Guard Station was initially proposed but was removed by BAER team members during the assessment. **Roads and Trail Treatments:**

RT1a- Road Stormproofing: Road stormproofing involves cleaning or armoring of existing drainage structures, as well as recently installed treatments, and is intended to remove accumulated sediment to ensure culvert capacity prior to seasonal storms, reducing the risk to the transportation infrastructure. This work will be accomplished with Forest Service local engineering and road crew.

Treatment	Units	Unit Cost	# of Units	Total Cost
RT1a. Road Drainage (Stormproofing)	Miles	\$933	11	\$10,263

RT1b: New Drainage Features: Rolling dips are used to drain water effectively from the road surface and prevent concentration of water. Rolling dips also provide a relief for surface waterflow on the road and serve as a relief valve in the event of culvert plugging. This work will be accomplished with Forest Service local engineering and road crew.

Treatment	Units	Unit Cost	# of Units	Total Cost
RT1b. Road Drainage (New Drainage Features)	Each	\$467	11	\$5,137

RT2- Storm Inspection and Response: Storm Inspection and response will keep culverts and drainage features functional by cleaning sediment and debris from in and around features between or during storms. Storm inspection and response includes approximately 16 miles of NFS roads. This work will be accomplished with Forest Service local engineering and road crew.

Treatment	Units	Unit Cost	# of Units	Total Cost
RT2. Storm Inspection and Response	Miles	\$768	16.2	\$12,442

RT6: Culvert Relief Pipe Elk Creek Crossing on 16 Rd - Work will include installing a 24-inch culvert relief pipe in the floodplain of the existing culvert. Asphalt on FSR 16 will be saw cut, the new culvert installed and compacted to grade, and a cold patch surface will be installed over the trench. Overflow structures reduce risk from fill slope erosion and down cutting to the road infrastructure. The structures also reduce adverse effects to soil, water, and aquatic habitat from fill slope erosion. This work will be accomplished with Forest Service local engineering and road crew.

Treatment	Units	Unit Cost	# of Units	Total Cost
RT6. Culvert Relief Pipe Elk Creek Crossing on the 16 Rd	Each	\$7,806	1	\$7,806

RT13: Trail Drainage Sheep Creek Trail- Work will include trail stabilization and hazard mitigation by installing drainage (rolling grade dips, grade reversals, nicks), water bars, restoring out slope, re-establishing tread and snagging trees as appropriate for worker safety. This work is necessary to protect trail infrastructure by diverting anticipated increases in surface run-off. Trail sections to be stabilized were identified through soil burn severity modeling and field verification by BAER team members. The trail sections determined to be at highest risk were those within of areas of moderate soil burn severity. A heritage review will be conducted in order to comply with Section 106 of the National Historic Preservation Act, under the terms of the 2004 Programmatic Agreement (PA) for the State of Oregon. An archeologist will be present throughout the trail stabilization work to ensure the integrity of the heritage resource is protected and to document any new discoveries.

Treatment	Units	Unit Cost	# of Units	Total Cost
RT1. Trail Drainage Sheep Creek Trail	Miles	\$3,942	1.3	\$5,125

Protection/Safety Treatments:

P1a Road Hazard/Closure Signs: This treatment will install burned area warning signs at key road entry points to caution forest users. This work will be accomplished with Forest Service local engineering and road crew.

Sign Type	Location
ENTERING BURNED AREA FALLEN ROCK AND DEBRIS	On FSR 13 @ 1370 Intersection facing North
	On FSR 16 @ 13 Intersection facing East
	On FSR 16 North of 1675 Intersection facing South
ROAD CLOSED	On FSR 1300-559 @ FSR 13 facing east
	On FSR 1300-547 @ FSR 13 facing east
HAZARD TREES AHEAD	On FSR 1300-338 @ FSR 13 facing east

Treatment	Units	Unit Cost	# of Units	Total Cost
P1a. Road Hazard Signs	Each	\$475	6	\$2,850

P1b Trail/Recreation Hazard Sign Installation: This cost is for placing information boards and posting hazard related signs to notify the public of post fire hazards. In addition to the initial installation, there will be a need to monitor and reinstall signage as it becomes damaged. (Short Creek TH, Horseshoe TH, Lookout Mountain TH, and Elk Creek CG)

Treatment	Units	Unit Cost	# of Units	Total Cost
P1b. Trail/Recreation Hazard Sign Installation	Each	\$250	4	\$1,000

P6 Source Water Protection:

Valve Box: Installation of a valve box for the protection of the valve near Short Creek for Short Creek Guard Stations water system. This valve box is needed due to its proximity to Short Creek and the estimated increase in peak-flows and sediment.

Tree Felling: Minor Tree felling of fire weakened trees is required for the protection of the Short Creek Guard Stations water system. Infrastructure protection includes, spring development and holding tank.

Treatment	Units	Unit Cost	# of Units	Total Cost
P6. Source Water Protection (Valve Box)	Each	\$100	1	\$100
P6. Source Water Protection (Tree Felling)	Day	\$145	2	\$290

I. Monitoring Narrative:

M3- Cultural Resource BAER Effectiveness Monitoring: A District Archaeologist or heritage professional will perform extended BAER effectiveness monitoring of Site 06040400140 (Historic Structure Remains) for effectiveness of the 1300-559 road closure and at site 06040401093 (Sheep Creek Trail) for effectiveness of erosion control activities. Total request is for \$336.

Treatment	Units	Unit Cost	# of Units	Total Cost
M3. Cultural Resource Effectiveness Monitoring	Days	\$168	2	\$336

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

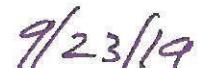
Line Items	Units	NFS Lands			Other	Other Lands			All	
		Unit Cost	# of Units	BAER \$		# of units	Fed \$	# of Units	Non Fed \$	Total \$
A. Land Treatments										
L1b. EDRR-Suppression	acres	150	64	\$9,600	\$0		\$0		\$0	\$9,600
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
Subtotal Land Treatments					\$9,600	\$0	\$0		\$0	\$9,600
B. Channel Treatments										
None				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
Subtotal Channel Treatments					\$0	\$0	\$0		\$0	\$0
C. Road and Trails										
RT1a- Road Drainage	Miles	933	11	\$10,263	\$0		\$0		\$0	\$10,263
RT1b-New Drainage	Each	467	11	\$5,137	\$0		\$0		\$0	\$5,137
RT2 Storm Inspection and R	Miles	768	16	\$12,442	\$0		\$0		\$0	\$12,442
RT6. Culvert Relief Pipe	Each	7,806	1	\$7,806	\$0		\$0		\$0	\$7,806
RT13 Trail Drainage	Miles	3,942	1	\$5,125	\$0		\$0		\$0	\$5,125
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
Subtotal Road and Trails					\$40,772	\$0	\$0		\$0	\$40,772
D. Protection/Safety										
P1a. Road Hazard Signs	Each	475	6	\$2,850	\$0		\$0		\$0	\$2,850
P1b Trail/Rec Hazard Signs	Each	250	4	\$1,000	\$0		\$0		\$0	\$1,000
P6. Valve Box	Each	100	1	\$100	\$0		\$0		\$0	\$100
P6. Tree Felling	Day	145	2	\$290	\$0		\$0		\$0	\$290
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
Subtotal Protection/Safety					\$4,240	\$0	\$0		\$0	\$4,240
E. BAER Evaluation										
Initial Assessment Total	Report			\$27,862	\$0		\$0		\$0	\$0
Trainee Cost				\$18,338	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
Subtotal Evaluation					\$46,201	\$0	\$0		\$0	\$0
F. Monitoring										
M3. Cultural Effectiveness	Day	\$168	2	\$336	\$0		\$0		\$0	\$336
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>					\$0	\$0	\$0		\$0	\$0
Subtotal Monitoring					\$336	\$0	\$0		\$0	\$336
G. Totals										
Previously approved				\$54,948	\$0		\$0		\$0	\$54,948
Total for this request				\$54,948	\$0		\$0		\$0	\$54,948

PART VII - APPROVALS

1.



Forest Supervisor



Date

Burned Area Emergency Response

204 Cow BAER
Malheur National Forest
Treatment Recommendations
September 20, 2019



0 .25 .5 1 Miles

