APPENDIX A: SPECIES SPECIFIC RECOMMENDATIONS

These reasonable recommendations are derived from the best available science and represent preferred management actions to protect wildlife and wildlife habitats where oil and gas development is occurring.

COLUMBIAN SHARP-TAILED GROUSE

- Consult with CDOW at the earliest stage of development to review detailed maps of Columbian sharp-tailed grouse seasonal habitats and to help select development sites.
- Conduct comprehensive development planning that provides a clear point of reference in evaluating, avoiding, and mitigating large scale and cumulative impacts.
- No surface occupancy within 0.4 mile of any known Columbian sharp-tailed grouse lek.
- Avoid oil and gas operations within 1.25 miles of any known Columbian sharp-tailed grouse lek, and within mapped Columbian sharp-tailed grouse breeding, summer, and winter habitat outside the 1.25 mile buffer. Select sites for development that will not disturb suitable nest cover or brood-rearing habitats within 1.25 miles of an active lek, or within identified nesting and brood-rearing habitats outside the 1.25 mile perimeter.
- Where oil and gas activities must occur within 1.25 miles of Columbian sharp-tailed grouse leks or within other mapped Columbian sharp-tailed grouse breeding or summer habitat, conduct these activities outside the period between March 15 and July 30.
- Where oil and gas activities must occur within mapped Columbian sharp-tailed grouse winter habitat, conduct these activities outside the period between December 1 and March 15.
- Restrict well site visitations to portions of the day between 9:00 a.m. and 4:00 p.m. during the lekking season (March 1 to June 1).
- Establish company guidelines to minimize wildlife mortality from vehicle collisions on roads.
- Avoid surface facility density in excess of 10 well pads per 10-square mile area (one well pad per section) in Columbian sharp-tailed grouse breeding and summer habitat (within 1.25 miles of active leks).
- When surface density of oil and gas facilities exceeds 1 well pad/section, initiate a Comprehensive Development Plan (CDP) that includes recommendations for off-site and compensatory mitigation actions.
- Phase and concentrate all development activities, so that large areas of undisturbed habitat for wildlife remain and thorough reclamation occurs immediately after development and before moving to new sites. Development should progress at a pace commensurate with reclamation success.
- Retain core habitat areas and limit disturbance to ensure Columbian sharp-tailed grouse survival.
- Implement the species appropriate Infrastructure Layout and Drilling and Production Operations Wildlife Protection Measures found in Section II B. and Section II D. of this document.

- Minimize surface disturbance and fragmentation of Columbian sharp-tailed grouse habitat through use of the smallest facility footprints possible, use of multiple well pads, clustering of roads and pipelines, and the widest possible spacing of surface facilities.
- When compressor stations must be sited within 1.25 miles of Columbian sharp-tailed grouse active and inactive (within last 10 years) lek sites, locate compressor stations no closer than 2500 feet from the lek.
- Use noise reduction equipment on compressors and other development and production equipment.
- Use topographical features to provide visual concealment of facilities from known lek locations and as a noise suppressant.
- Muffle or otherwise control exhaust noise from pump jacks and compressors so that operational noise will not exceed 49 dB measured at 30 feet from the source.
- Design tanks and other facilities with structures such that they do not provide perches or nest substrates for raptors, crows and ravens.
- Install raptor perch deterrents on equipment, fences, cross arms and pole tops in Columbian sharp-tailed grouse habitat.
- Utilize a central generator to feed the entire field via underground electrical lines.
- Where feasible, bury new power lines and retrofit existing power lines by burying them or installing perch guards to prevent their use as raptor perches.
- Design wastewater pits to minimize retention of stagnant surface water.
- Treat waste water pits and any associated pit containing water that provides a medium for breeding mosquitos with Bti (*Bacillus thuringiensis v. israelensis*) or take other effective action to control mosquito larvae that may spread West Nile Virus to wildlife, especially grouse.
- In consultation with CDOW, replace any permanently impacted, disturbed, or altered Columbian sharp-tailed grouse seasonal habitats by enhancing marginal sagebrush steppe communities (sagebrush and mountain shrub) and grassland within or immediately adjacent to mapped seasonal Columbian sharp-tailed grouse habitat.
- Implement the species appropriate reclamation guidelines found in Section II G. of this document.
- Use early and effective reclamation techniques, including an aggressive interim reclamation program to return habitat to use by Columbian sharp-tailed grouse as quickly as possible.
- Reclaim/restore Columbian sharp-tailed grouse habitats with native grasses and forbs conducive to optimal Columbian sharp-tailed grouse habitat and other wildlife appropriate to the ecological site.
- Use high diversity (10 species or more) reclamation seed mixes in Columbian sharp-tailed grouse habitat.
- Use approved CP-4D (Columbian sharp-tailed grouse) seed mixes, based on soil type, available from Farm Service Agency or Natural Resources Conservation Service, or other seed mixes approved by CDOW.
- Avoid aggressive non-native grasses in Columbian Sharp-tailed Grouse habitat reclamation.

- A small percentage of the appropriate species of big sagebrush should be re-seeded on disturbed sites.
- Reclamation of breeding habitat should include a substantially higher percentage of forbs than other areas.
- Native and select non-native forbs and legumes should be considered a vital component of reclamation seed mixes.