

COLORADO PARKS AND WILDLIFE
ACTIONS TO MINIMIZE ADVERSE IMPACTS TO WILDLIFE RESOURCES
(2nd Revision October 17, 2016)

The purpose of this document is to enumerate best management practices that minimize adverse impacts of oil and gas operations on Colorado's wildlife resources consistent with the intent of the Colorado Oil and Gas Conservation Act (Colo. Rev. Stat. § 34-60-100, et seq.) and the Habitat Stewardship Act of 2007 (§ 34-60-128).

*The Habitat Stewardship Act and COGCC's Rules provide a framework that requires operators to **minimize adverse impacts** to wildlife resources the extent reasonably practical. COGCC's 100 Series Rules provide the following definitions:*

- ***Minimize adverse impacts** shall mean, where reasonably practical, to avoid adverse impacts to wildlife resources or significant adverse impacts to the environment from oil and gas operations, minimize the extent and severity of those impacts that cannot be avoided, mitigate the effects of unavoidable remaining impacts, and take into consideration cost-effectiveness and technical feasibility with regard to actions and decisions taken to minimize adverse impacts.*
- ***Mitigation** with respect to wildlife resources shall mean measures that compensate for adverse impacts to such resources, including, as appropriate, habitat enhancement, on-site habitat mitigation, off-site habitat mitigation, or mitigation banking.*
- ***Oil and gas operations** means exploration for oil and gas, including the conduct of seismic operations and the drilling of test bores; the siting, drilling, deepening, recompletion, reworking, or abandonment of an oil and gas well, underground injection well, or gas storage well; production operations related to any such well including the installation of flowlines and gathering systems, the generation, transportation, storage, treatment, or disposal of exploration and production wastes; and any construction, site preparation, or reclamation activities associated with such operations.*

The best management practices enumerated in this document provide operators guidelines to plan and manage their activities to avoid and minimize adverse impacts to wildlife resources. When impacts from oil and gas operations are unavoidable despite implementation of the best management practices outlined below, then mitigation (compensatory mitigation) may be required to offset the residual impacts. Assessing unavoidable adverse impacts and evaluating potential compensatory mitigation actions is best accomplished at a landscape scale with the development of a CPW-approved Wildlife Mitigation Plan (WMP) [COGCC Rule 1202.d.(2)]. The methodology for preparing a WMP is site-specific and not addressed in this document, but incorporates many of the general and species-specific BMPs outlined herein. In some cases, compensatory mitigation is appropriate to address unavoidable impacts from individual well permits.

SPECIES SPECIFIC RECOMMENDATIONS

The species-specific recommendations are derived from the best available science and represent necessary management actions to protect wildlife and wildlife habitats where oil and gas operations are occurring or planned to occur.

BAT ROOST SITES

- The operator will consult with CPW regarding locations of known bat roost sites.
- The operator will avoid surface disturbance activities within 0.25 mile of all Townsend's Big-Eared Bat, Fringed Myotis, and Brazilian Free-Tailed Bat roost sites.
- The operator will report to CPW staff, locations where groups of bats are observed.

BIGHORN SHEEP

- The operator will preclude new oil and gas operations within CPW-identified bighorn sheep production (COGCC RSO) or wintering areas (COGCC SWH).
- If oil and gas operations must occur in bighorn sheep production areas (with documented justification), the operator agrees to preclude oil and gas operations from April 15 to June 30 for Rocky Mountain Bighorn Sheep and from February 1 to May 1 for Desert Bighorn Sheep.
- If oil and gas operations must occur in bighorn sheep winter range (with documented justification), the operator agrees to preclude oil and gas operations from November 1 through April 15.
- The operator agrees to preclude low elevation (below 500 feet altitude) helicopter overflights within 1 mile radius of bighorn sheep winter range between November 1 and April 15.
- The operator agrees to preclude low elevation (below 500 feet altitude) helicopter overflights within 1 mile radius of bighorn sheep production areas from April 15 to June 30 for Rocky Mountain Bighorn Sheep and from February 1 to May 1 for Desert Bighorn Sheep.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile in bighorn sheep winter range and production areas.
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile.
- The operator agrees to avoid using domestic sheep or domestic goat grazing to manage vegetation within bighorn sheep range. Weed control and fire mitigation will be accomplished by mechanical, chemical, or other biological methods.
- The operator agrees to restrict post-construction well site visitations to the hours of 10:00 a.m. to 3:00 p.m. within CPW identified winter habitat, and to reduce the overall number of daily vehicle trips for well site visitations and other non emergency activities to less than per day during winter months.

BLACK BEAR

- The operator will avoid and protect climax mast producing vegetation identified by CPW that annually provides a significant source of fall forage for black bear.
- The operator will implement Rule 1204.a.1 (also see General Operating Recommendations).
- The operator agrees to prohibit food and trash in sleeping quarters.
- The operator agrees to report bear conflicts immediately to CPW staff.

BLACK-FOOTED FERRET

- Unless expressly permitted under a Safe Harbor or Section 10(j) Agreement, the operator agrees to place surface facilities outside of prairie dog colonies where black-footed ferrets have been released or documented.
- Unless expressly permitted under a Safe Harbor or Section 10(j) Agreement, the operator agrees to preclude oil and gas activities in prairie dog colonies where documented sightings of black-footed ferrets have occurred.
- Unless expressly permitted under a Safe Harbor or Section 10(j) Agreement, the operator agrees to preclude surface disturbance activities between March 1 and July 15, with special attention to the period between May 1 and July 15, in prairie dog colonies where black-footed ferrets have been released or documented.
- Unless expressly permitted under a Safe Harbor or Section 10(j) Agreement, the operator or its contractor agrees to conduct seismic activity outside the period from March 1 to July 15 in prairie dog colonies where black-footed ferrets have been released or where black-footed ferret occurrence has been documented.
- The operator agrees to conduct seismic activity during daylight hours only in prairie dog colonies where black-footed ferrets have been documented.
- Unless expressly permitted under a Safe Harbor or Section 10(j) Agreement, the operator agrees to preclude development of new roads in active prairie dog colonies where black-footed ferrets have been released or documented.
- The operator agrees to promptly reclaim disturbed areas within prairie dog colonies where black-footed ferrets have been released or documented with native grasses and forbs identified by CPW as appropriate to the ecological site.
- The operator agrees to prepare and implement a written weed management plan to aggressively control non-native and invasive weeds in reclamation areas where black-footed ferrets have been released or documented.
- The operator agrees to survey for black-footed ferret prior to initiating new surface-disturbing activities in prairie dog colonies unless the site is less than 80 acres in size for black-tailed prairie dogs, less than 200 acres in size for white-tailed prairie dogs or Gunnison's prairie dogs, or within a designated block-cleared area.
- Unless expressly permitted under a Safe Harbor or Section 10(j) Agreement, the operator agrees to not use poison bait to control prairie dogs in prairie dog colonies where black-footed ferrets have been released or documented.

BONYTAIL CHUB

The bonytail chub is listed as an Endangered Species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species.

In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for bonytail chub locations or habitat, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in bonytail chub habitat.

- Due to oil and gas operations being proposed within proximity of known bonytail chub locations or habitat, the operator agrees to consult with USFWS.
- The operator will preclude new oil and gas operations within 300 feet from CPW-identified potential bonytail chub habitat.
- The operator agrees to postpone stream disturbances during the spawning season for bonytail chub (April 1 to July 15) to avoid impacts to spawning fish.

COLORADO PIKEMINNOW

The Colorado pikeminnow is listed as an Endangered Species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for Colorado pikeminnow locations or habitat, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in Colorado pikeminnow habitat.

- Due to oil and gas operations being proposed within proximity of known Colorado pikeminnow locations or habitat, the operator agrees to consult with USFWS.
- The operator will preclude new oil and gas operations within 300 feet from CPW-identified potential Colorado pikeminnow habitat.
- The operator agrees to postpone stream disturbances during the spawning season for Colorado pikeminnow (May 1 to July 15) to avoid impacts to spawning fish.

COLUMBIAN SHARP-TAILED GROUSE

- The operator agrees to preclude new oil and gas operations within 0.4 mile of any Columbian sharp-tailed grouse lek (COGCC RSO and BLM NSO).
- The operator agrees to preclude new oil and gas operations within 1.25 miles of any Columbian sharp-tailed grouse lek.
- The operator agrees to preclude new oil and gas operations within CPW-identified nesting, brood-rearing, summer, and winter habitats within 1.25 miles of a Columbian sharp-tailed grouse lek.
- The operator agrees to consult with CPW on site location for new oil and gas operations within CPW-identified nesting, brood-rearing, summer, and winter habitats outside the 1.25 mile perimeter.
- If oil and gas operations must occur (with documented justification) within 1.25 miles of Columbian sharp-tailed grouse leks, the operator agrees to conduct oil and gas operations outside the period between March 15 and July 30.
- If oil and gas operations must occur (with documented justification) within CPW-identified Columbian sharp-tailed grouse winter habitat, the operator agrees to conduct construction, drilling and completion activities outside the period between December 1 and March 15.
- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 9:00 a.m. and 4:00 p.m. during the lekking, nesting and early brood rearing seasons (March 15 to June 1) within 1.25 miles of a lek.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within 1.25 miles of Columbian sharp-tailed grouse leks).
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within 1.25 miles of Columbian sharp-tailed grouse leks.
- The operator agrees to locate compressor stations no closer than 0.4 mile from Columbian sharp-tailed grouse leks.
- The operator agrees to use topographical features as recommended by CPW to provide visual concealment of facilities from lek locations and as a noise suppressant.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within 1.25 miles Columbian sharp-tailed grouse leks.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within CPW-identified Columbian sharp-tailed grouse winter habitat.
- Operator agrees to limit noise to 10 dBA above pre-development background levels at the margin of leks (0.4 mile) during the lekking and nesting seasons (March 15-July 30).

- The operator agrees to make use of tanks and other facilities designed such that they do not provide perches or nest substrates for raptors, crows and ravens.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in Columbian sharp-tailed grouse habitat.
- The operator agrees to design and construct wastewater/freshwater pits to curtail retention of stagnant surface water.
- The operator agrees to treat waste water/fresh water pits and any associated pit containing water that provides a medium for breeding mosquitoes 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 from May 1 through September 30 (does not apply to elevations above 7000 ft).
- The operator agrees to replace any permanently impacted, disturbed, or altered Columbian sharp-tailed grouse seasonal habitats by enhancing CPW-identified marginal sagebrush steppe communities (sagebrush and mountain shrub) and grassland within or immediately adjacent to mapped seasonal Columbian sharp-tailed grouse habitat.
- The operator agrees to reclaim/restore Columbian sharp-tailed grouse habitats with native grasses and forbs identified by CPW that contribute to optimal Columbian sharp-tailed grouse habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of aggressive non-native grasses in Columbian Sharp-tailed Grouse habitat reclamation.

CUTTHROAT TROUT

- The operator agrees to preclude surface disturbance within 300 feet of any water within a Designated Cutthroat Trout Habitat watershed.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within Designated Cutthroat Trout Habitat Watersheds.
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within Designated Cutthroat Trout Habitat Watersheds.
- The operator agrees to bridge stream crossings or use culverts to prevent stream bed damages.
- The operator agrees to avoid installing stream crossing or culverts that create a barrier to fish passage and movement, unless such barriers would be beneficial to the management of cutthroat trout as determined by CPW.
- The operator agrees to postpone stream disturbances during the spawning period for cutthroat trout (May 1 to August 31) to avoid impacts to spawning fish.

DEER AND ELK

- The operator agrees to preclude new oil and gas operations within CPW-identified mule deer critical winter range and elk winter concentration areas.
- The operator agrees to preclude new oil and gas operations within CPW-identified elk production areas.
- The operator agrees to preclude new oil and gas operations within CPW-identified deer and elk migration corridors.
- If new oil and gas operations must occur within CPW-identified mule deer critical winter range or elk winter concentration areas), the operator agrees to conduct new oil and gas operations outside the time period from December 1 through April 15.
- If new oil and gas operations must occur within CPW-identified elk production areas, the operator agrees to conduct new oil and gas operations outside the time period from May 15 through June 30.
- If new oil and gas operations must occur within CPW-identified deer or elk migratory corridors, the operator agrees to conduct new oil and gas operations between June 1 to October 10 (outside of spring and fall migration).
- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 10:00 a.m. and 3:00 p.m. during winter season (Dec 1 through April 15) within CPW-identified mule deer critical winter range and elk winter concentration areas.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within CPW-identified mule deer critical winter range and elk winter concentration areas.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within CPW-identified elk production areas.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within CPW-identified mule deer and elk migratory corridors.
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within CPW-identified mule deer critical winter range, elk winter concentration areas, elk production areas, or mule deer and elk migratory corridors.
- The operator agrees to avoid locating oil and gas operations in sagebrush habitat to avoid impacts to mule deer.
- The operator agrees to replace any permanently impacted, disturbed, or altered mule deer critical elk winter range or elk winter concentration area habitats by enhancing CPW-identified marginal sagebrush steppe communities (sagebrush and mountain shrub) and grassland within or immediately adjacent to mapped habitat.
- The operator agrees to preclude the use of aggressive CPW-identified non-native grasses and shrubs in mule deer and elk habitat restoration.

- The operator agrees to reclaim mule deer and elk habitats with CPW-identified native shrubs, grasses, and forbs appropriate to the ecological site disturbed.

GREATER PRAIRIE CHICKEN

- The operator agrees to preclude new oil and gas operations within 0.6 mile of any Greater prairie chicken lek (COGCC RSO and BLM NSO).
- The operator agrees to preclude new oil and gas operations within 2.2 miles of any Greater prairie chicken lek.
- The operator agrees to preclude new oil and gas operations within CPW-identified nesting and brood-rearing within 2.2 miles of a Greater prairie chicken lek.
- The operator agrees to consult with CPW on site location for new oil and gas operations within CPW-identified Greater prairie chicken habitats outside the 2.2 mile perimeter.
- If oil and gas operations must occur (with documented justification) within 2.2 miles of Greater prairie chicken leks, the operator agrees to conduct oil and gas operations outside the period between March 1 and June 30.
- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 9:00 a.m. and 4:00 p.m. during the lekking, nesting and early brood rearing seasons (March 1 to May 15) within 2.2 miles of a lek.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within 2.2 miles of Greater prairie chicken leks.
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within 2.2 miles of Greater prairie chicken leks.
- The operator agrees to locate compressor stations no closer than 0.6 mile feet from a Greater prairie chicken lek.
- The operator agrees to use topographical features as recommended by CPW to provide visual concealment of facilities from known lek locations and as a noise suppressant.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within 2.2 miles of Greater prairie chicken leks.
- Operator agrees to limit noise to 10 dBA above pre-development background levels at the margin of leks (0.6 mile) during the lekking and nesting seasons (March 15-July 30).
- The operator agrees to make use of tanks and other facilities designed such that they do not provide perches or nest substrates for raptors, crows and ravens.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in Greater prairie chicken habitat.
- The operator agrees to design and construct wastewater/freshwater pits to curtail retention of stagnant surface water.
- The operator agrees to treat waste water/fresh water pits and any associated pit containing water that provides a medium for breeding mosquitoes 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 from May 1 through September 30 (does not apply to elevations above 7000 ft).

- The operator agrees to replace any permanently impacted, disturbed, or altered Greater prairie chicken seasonal habitats by enhancing CPW-identified marginal sand sagebrush habitat or reclamation of altered or converted habitat within or immediately adjacent to mapped nesting or brood rearing habitat.
- The operator agrees to reclaim/restore Greater prairie chicken habitats with native grasses and forbs identified by CPW that contribute to optimal Greater prairie chicken habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of aggressive non-native grasses or shrubs in Greater prairie chicken habitat reclamation.
- The operator agrees to use one of several approved CP-4D (greater prairie chicken) seed mixes, based on soil type, available from Farm Service Agency or Natural Resources Conservation Service, or other seed mixes approved by CPW.
- The operator agrees to (unless specifically directed to by the landowner) not plant buffalo grass, blue grama and side-oats grama in greater prairie chicken habitat as they will eventually dominate the resulting stand and will not provide greater prairie chicken habitat.
- The operator agrees to reclaim production area habitat with a CPW-identified seed mix containing substantially higher percentage of forbs. Desirable native and non-native forbs, and legumes are a vital component of brood-rearing habitat (including dryland adapted varieties of alfalfa and yellow sweet clover).

GREATER SAGE-GROUSE

- The operator agrees to preclude new oil and gas operations within 0.6 mile of any greater sage grouse lek (COGCC RSO).
- The operator agrees to preclude new oil and gas operations within 4.0 miles of any greater sage grouse lek.
- The operator agrees to preclude new oil and gas operations within CPW-identified nesting, brood-rearing, summer, and winter habitats within 4.0 miles of a greater sage grouse lek.
- The operator agrees to coordinate with CPW on site location for new oil and gas operations within CPW-identified nesting, brood-rearing, summer, and winter habitats outside the 4.0 mile perimeter.
- If oil and gas operations must occur (with documented justification) within 4.0 miles of greater sage grouse leks, the operator agrees to conduct oil and gas operations outside the period between March 1 and June 30.
- If oil and gas operations must occur (with documented justification) within CPW-identified greater sage grouse winter habitat, the operator agrees to conduct construction, drilling and completion activities outside the period between December 1 and March 15.

- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 9:00 a.m. and 4:00 p.m. during the lekking, nesting and early brood rearing seasons (March 1 to June 30) within 4.0 miles of a lek.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within 4.0 miles of greater sage grouse leks).
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within 4.0 miles of greater sage grouse leks.
- The operator agrees to locate compressor stations no closer than 0.6 mile from greater sage grouse leks.
- The operator agrees to use topographical features as recommended by CPW to provide visual concealment of facilities from lek locations and as a noise suppressant.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within 4.0 miles of greater sage grouse leks.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within CPW-identified greater sage grouse winter habitat.
- Operator agrees to limit noise to 10 dBA above pre-development background levels at the margin of leks (0.6 mile) during the lekking and nesting seasons (March 1-June 30).
- The operator agrees to avoid locating oil and gas operations in sagebrush habitat to avoid impacts to greater sage-grouse.
- The operator agrees to use drill mats to prevent habitat loss or disturbance and reduce reclamation costs.
- The operator agrees to make use of tanks and other facilities designed such that they do not provide perches or nest substrates for raptors, crows and ravens.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in greater sage-grouse habitat.
- The operator agrees to design and construct wastewater/freshwater pits to preclude retention of stagnant surface water.
- The operator agrees to treat waste water/fresh water pits and any associated pit containing water that provides a medium for breeding mosquitoes 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 from May1 through September 30 (does not apply to elevations above 7000 ft).
- The operator agrees to replace any permanently impacted, disturbed, or altered greater sage-grouse seasonal habitats by enhancing CPW-identified marginal sagebrush/sagebrush steppe communities (sagebrush and mountain shrub) and grassland/wet meadow within or immediately adjacent to mapped seasonal greater sage-grouse habitat.

- The operator agrees to reclaim/restore greater sage-grouse habitats with native shrubs, grasses and forbs identified by CPW that contribute to optimal greater sage-grouse habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of aggressive non-native grasses in greater sage-grouse habitat reclamation.

GUNNISON SAGE-GROUSE

The Gunnison sage-grouse is listed as a threatened species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS critical habitat for Gunnison sage-grouse, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in Gunnison sage-grouse habitat.

- Due to oil and gas operations being proposed within proximity of known Gunnison sage-grouse locations or habitat, the operator agrees to consult with USFWS.
- The operator agrees to preclude new oil and gas operations within 0.6 mile of any Gunnison sage grouse lek (COGCC RSO).
- The operator agrees to preclude new oil and gas operations within 4.0 miles of any Gunnison sage grouse lek.
- The operator agrees to preclude new oil and gas operations within CPW-identified nesting, brood-rearing, summer, and winter habitats within 4.0 miles of a Gunnison sage grouse lek.
- The operator agrees to coordinate with CPW on site location for new oil and gas operations within CPW-identified nesting, brood-rearing, summer, and winter habitats outside the 4.0 mile perimeter.
- If oil and gas operations must occur (with documented justification) within 4.0 miles of Gunnison sage grouse leks, the operator agrees to conduct oil and gas operations outside the period between March 1 and June 30.
- If oil and gas operations must occur (with documented justification) within CPW-identified Gunnison sage grouse winter habitat, the operator agrees to conduct construction, drilling and completion activities outside the period between December 1 and March 15.
- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 9:00 a.m. and 4:00 p.m. during the leking, nesting and early brood rearing seasons (March 1 to June 30) within 4.0 miles of a lek.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within 4.0 miles of Gunnison sage grouse leks).

- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within 4.0 miles of Gunnison sage grouse leks.
- The operator agrees to locate compressor stations no closer than 0.6 mile from Gunnison sage grouse leks.
- The operator agrees to use topographical features as recommended by CPW to provide visual concealment of facilities from lek locations and as a noise suppressant.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within 4.0 miles of Gunnison sage grouse leks.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within CPW-identified Gunnison sage grouse winter habitat.
- Operator agrees to limit noise to 10 dBA above pre-development background levels at the margin of leks (0.6 mile) during the lekking and nesting seasons (March 1-June 30).
- The operator agrees to avoid locating oil and gas operations in sagebrush habitat to avoid impacts to Gunnison sage-grouse.
- The operator agrees to make use of tanks and other facilities designed such that they do not provide perches or nest substrates for raptors, crows and ravens.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in Gunnison sage-grouse habitat.
- The operator agrees to design and construct wastewater/freshwater pits to preclude retention of stagnant surface water.
- The operator agrees to treat waste water/fresh water pits and any associated pit containing water that provides a medium for breeding mosquitoes 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 from May 1 through September 30 (does not apply to elevations above 7000 ft).
- The operator agrees to replace any permanently impacted, disturbed, or altered Gunnison sage-grouse seasonal habitats by enhancing CPW-identified marginal sagebrush/sagebrush steppe communities (sagebrush and mountain shrub) and grassland/wet meadow within or immediately adjacent to mapped seasonal Gunnison sage-grouse habitat.
- The operator agrees to reclaim/restore Gunnison sage-grouse habitats with native shrubs, grasses and forbs identified by CPW that contribute to optimal Gunnison sage-grouse habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of aggressive non-native grasses in Gunnison sage-grouse habitat reclamation.

HUMPBACK CHUB

The humpback chub is listed as an Endangered Species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species.

In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for humpback chub locations or habitat, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in Colorado humpback chub habitat.

- Due to oil and gas operations being proposed within proximity of known humpback chub locations or habitat, the operator agrees to consult with USFWS.
- The operator will preclude new oil and gas operations within 300 feet from CPW-identified potential humpback chub habitat.
- The operator agrees to postpone stream disturbances during the spawning season for humpback chub (April 1 to June 30) to avoid impacts to spawning fish.

KIT FOX

- The operator agrees to survey for kit fox den sites in appropriate habitats before development and avoid surface disturbance within 0.25 mile of den sites while young are den dependent (Feb 1 to May 1).
- The operator agrees to use CPW-identified native seed mix for vegetation reclamation within kit fox overall range.
- The operator agrees to prohibit the use of pest/rodenticides for rodent control in kit fox overall range to prevent reduction of kit fox food supplies and secondary toxicity.
- The operator agrees to preclude the development of open fresh water sources within kit fox overall range to prevent the spread of competitive predators into kit fox habitat.

LEAST TERN

- The operator agrees to preclude new oil and gas operations within 300 feet of the high water mark of CPW-identified least tern nesting habitat/production areas (usually occurring on bare sandy shorelines of reservoirs, islands in reservoirs, or sand bars along major rivers in eastern Colorado).
- The operator agrees to preclude new oil and gas operations in CPW-identified least tern foraging areas during the nesting season (April 1 to July 31) to include shallow water areas in lakes, ponds, and river backwater areas within 0.5 mile of CPW-identified least tern production areas.

LESSER PRAIRIE CHICKEN

- The State of Colorado is a partner in the WAFWA Lesser Prairie Chicken Rangewide Conservation Plan. The operator agrees to adhere to the best management practices and mitigation approach outlined in that Plan.
- The operator agrees to preclude new oil and gas operations within 0.6 mile of any lesser prairie chicken lek (COGCC RSO).
- The operator agrees to preclude new oil and gas operations within 2.2 miles of any lesser prairie chicken lek (COGCC SWH).
- The operator agrees to preclude new oil and gas operations within CPW-identified nesting and brood-rearing within 2.2 miles of a lesser prairie chicken lek.
- The operator agrees to consult with CPW on site location for new oil and gas operations within CPW-identified lesser prairie chicken habitats outside the 2.2 mile perimeter.
- If oil and gas operations must occur (with documented justification) within 2.2 miles of lesser prairie chicken leks, the operator agrees to conduct oil and gas operations outside the period between March 15 and June 15.
- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 9:00 a.m. and 4:00 p.m. during the lekking, nesting and brood rearing seasons (March 15 to June 15) within 2.2 miles of a lek.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within 2.2 miles of lesser prairie chicken leks.
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within 2.2 miles of lesser prairie chicken leks.
- The operator agrees to locate compressor stations no closer than 0.6 mile from a lesser prairie chicken lek.
- The operator agrees to use topographical features as recommended by CPW to provide visual concealment of facilities from known lek locations and as a noise suppressant.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within 2.2 miles of lesser prairie chicken leks.
- Operator agrees to limit noise to 10 dBA above pre-development background levels at the margin of leks (0.6 mile) during the lekking and nesting seasons (March 15-June 15).
- The operator agrees to make use of tanks and other facilities designed such that they do not provide perches or nest substrates for raptors, crows and ravens.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in lesser prairie chicken habitat.
- The operator agrees to design and construct wastewater/freshwater pits to curtail retention of stagnant surface water.
- The operator agrees to treat waste water/fresh water pits and any associated pit containing water that provides a medium for breeding mosquitoes 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 from May through September (does not apply to elevations above 7000 ft).

- The operator agrees to replace any permanently impacted, disturbed, or altered lesser prairie chicken seasonal habitats by enhancing CPW-identified marginal sand sagebrush habitat or reclamation of altered or converted habitat within or immediately adjacent to mapped nesting or brood rearing habitat.
- The operator agrees to reclaim/restore lesser prairie chicken habitats with native shrubs, grasses, and forbs identified by CPW that contribute to optimal lesser prairie chicken habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of aggressive non-native grasses or shrubs in lesser prairie chicken habitat reclamation.
- The operator agrees to (unless specifically directed to by the landowner) not plant buffalo grass, blue grama and side-oats grama in lesser prairie chicken habitat as they will eventually dominate the resulting stand and will not provide lesser prairie chicken habitat.
- The operator agrees to reclaim production area habitat with a CPW-identified seed mix containing substantially higher percentage of forbs. Desirable native and non-native forbs, and legumes are a vital component of brood-rearing habitat (including dryland adapted varieties of alfalfa and yellow sweet clover).
- The operator agrees to reclaim lesser prairie chicken habitats outside of production areas with native grasses including switchgrass, big bluestem, little bluestem, sand bluestem, yellow Indian grass, and prairie sandreed.

LYNX

- The operator agrees to preclude new oil and gas operations within lynx breeding habitat (spruce-fir forest south of Interstate 70 above 9,000 feet in elevation and with slopes greater than 25%).
- The operator agrees to identify, avoid, and protect vegetation used by snowshoe hare.
- Where over-the-snow access is required, the operator agrees to restrict use to designated routes and minimize snow compaction.
- The operator and its contractors agree to restrict well site visitations to **_X times per day** and to portions of the day between 7:00 a.m. and 3:00 p.m. in CPW-identified occupied lynx habitat.
- The operator and its contractors agree to report all lynx sightings to CPW.
- The operator agrees to restore appropriate CPW-identified native shrub species to disturbed sites in lynx habitat.
- The operator agrees to preclude the use of aggressive non-native grasses or shrubs in lynx habitat reclamation.

MOUNTAIN PLOVER

- The operator agrees to survey CPW-identified suitable nesting habitat within the known range of mountain plover using the USFWS survey protocol (applies March 1 to July 31 on eastern plains, and April 1 to July 31 in South Park).
- Operator agrees to flag active mountain plover nests and preclude new oil and gas operations within 300 feet of active nest sites until young are hatched and independent of nest (applies April 1 to August 15).

PIPING PLOVER

- The operator agrees to preclude new oil and gas operations within 300 feet of the high water mark of mapped piping plover nesting habitat (usually occurring on sandy open shorelines of reservoirs and lakes, or islands in reservoirs or lakes in eastern Colorado).
- The operator agrees to preclude oil and gas operations within CPW-identified piping plover foraging areas during the nesting season (April 1 to July 31). Piping plover foraging areas usually include shallow water areas along exposed beach substrates associated with lakes, ponds, and beaches, and dry, barren sandbars along backwater river areas with abundant macro-invertebrate and insect populations within 0.5 mile of known piping plover production areas.

PLAINS SHARP-TAILED GROUSE

- The operator agrees to preclude new oil and gas operations within 0.4 mile of any plains sharp-tailed grouse lek (COGCC RSO).
- The operator agrees to preclude new oil and gas operations within 1.25 miles of any plains sharp-tailed grouse lek (COGCC SWH).
- The operator agrees to preclude new oil and gas operations within CPW-identified nesting and brood-rearing habitats within 1.25 miles of a plains sharp-tailed grouse lek.
- The operator agrees to consult with CPW on site location for new oil and gas operations within CPW-identified plains sharp-tailed grouse habitats outside the 1.25 mile perimeter.
- If oil and gas operations must occur (with documented justification) within 1.25 miles of plains sharp-tailed grouse leks, the operator agrees to conduct oil and gas operations outside the period between March 1 and June 30.
- The operator and its contractors agree to restrict well site visitations to **_X times per day** and to portions of the day between 9:00 a.m. and 4:00 p.m. during the leking, nesting and brood rearing seasons (March 1 to June 30) within 1.25 miles of a lek.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per square mile within 1.25 miles of plains sharp-tailed grouse leks).
- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within 1.25 miles of plains sharp-tailed grouse leks.

- The operator agrees to locate compressor stations no closer than 0.4 mile from plains sharp-tailed grouse leks.
- The operator agrees to use topographical features as recommended by CPW to provide visual concealment of facilities from lek locations and as a noise suppressant.
- The operator agrees to limit noise emissions from new oil and gas operations to 10dBA above pre-development background levels measured at dawn (based on default pre-development background levels of 20-22 dBA) within 1.25 miles of plains sharp-tailed grouse leks.
- Operator agrees to limit noise to 10 dBA above pre-development background levels at the margin of leks (0.4 mile) during the lekking and nesting seasons (March 1-June 30).
- The operator agrees to make use of tanks and other facilities designed such that they do not provide perches or nest substrates for raptors, crows and ravens.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in plains sharp-tailed grouse habitat.
- The operator agrees to design and construct wastewater/freshwater pits to curtail retention of stagnant surface water.
- The operator agrees to treat waste water/fresh water pits and any associated pit containing water that provides a medium for breeding mosquitoes 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 from May through September (does not apply to elevations above 7000 ft).
- The operator agrees to replace any permanently impacted, disturbed, or altered plains sharp-tailed grouse seasonal habitats by enhancing CPW-identified marginal plains sharp-tailed grouse habitat within or immediately adjacent to CPW-identified seasonal plains sharp-tailed grouse habitat.
- The operator agrees to reclaim/restore plains sharp-tailed grouse habitats with native grasses and forbs identified by CPW that contribute to optimal plains sharp-tailed grouse habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of aggressive non-native grasses in plains Sharp-tailed Grouse habitat reclamation.
- The operator agrees to reclaim production area habitat with a CPW-identified seed mix containing substantially higher percentage of forbs. Desirable native and non-native forbs, and legumes are a vital component of brood-rearing habitat (including dryland adapted varieties of alfalfa and yellow sweet clover).

PRAIRIE DOGS

- The operator agrees to preclude new oil and gas operations on or in active prairie dog colonies unless it is demonstrated it is technically and economically unfeasible.
- If oil and gas operations must occur (with documented justification) on or in prairie dog colonies, the operator agrees to conduct these activities outside the period between March 1 and June 15.
- The operator agrees to limit surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) to one facility per

square mile in White-tailed and Gunnison's Prairie Dog Management Emphasis Areas described in the Colorado Gunnison's and White-tailed Prairie Dog Conservation Strategy (July 2010).

<http://cpw.state.co.us/learn/Pages/PrairieDogConservationStrategy.aspx>

- Operator agrees to compensatory mitigation due to surface facility density (well pads, compressor stations, equipment yards, water injection stations, processing plants, etc.) exceeding one facility per square mile within White-tailed and Gunnison's Prairie Dog Management Emphasis Areas described in the Colorado Gunnison's and White-tailed Prairie Dog Conservation Strategy (July 2010).

<http://cpw.state.co.us/learn/Pages/PrairieDogConservationStrategy.aspx>

- The operator agrees to reclaim/restore prairie dog habitats with native grasses and forbs identified by CPW that contribute to optimal prairie dog habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of CPW-identified aggressive non-native grasses and actively manage invasive weeds, particularly cheatgrass, in reclamation areas within prairie dog habitat.
- The operator agrees to install raptor perch deterrents on equipment, fences, cross arms and pole tops in prairie dog habitat.
- The operator agrees to follow the recommendations for prairie dog control described in the Colorado Gunnison's and White-tailed Prairie Dog Conservation Strategy (July 2010) and select chemicals for control that don't have secondary toxicity effects.

<http://cpw.state.co.us/learn/Pages/PrairieDogConservationStrategy.aspx>

PREBLE'S MEADOW JUMPING MOUSE

The Preble's meadow jumping mouse is listed as a Threatened species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for Preble's meadow jumping mouse, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in Preble's meadow jumping mouse habitat.

- Due to oil and gas operations being proposed within proximity of known Preble's meadow jumping mouse locations or habitat, the operator agrees to consult with USFWS.
- Outside of USFWS mapped Critical Habitat, the operator agrees to preclude new oil and gas operations within 300 feet either side of centerline along streams of CPW-identified known or potentially occupied habitat for Preble's meadow jumping mouse.

NEW MEXICO JUMPING MOUSE

The New Mexico jumping mouse is listed as an Endangered species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for New Mexico jumping mouse, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in New Mexico jumping mouse habitat.

- Due to oil and gas operations being proposed within proximity of known New Mexico jumping mouse locations or habitat, the operator agrees to consult with USFWS.
- Outside of USFWS mapped Critical Habitat, the operator agrees to preclude new oil and gas operations within 300 feet either side of centerline along streams of CPW-identified known or potentially occupied habitat for New Mexico jumping mouse.

PRONGHORN ANTELOPE

- The operator agrees to preclude new oil and gas operations within CPW-identified pronghorn winter concentration areas west of I-25 from January 1 through March 31.
- The operator agrees to preclude new fence construction in pronghorn habitat, unless the operator agrees to use CPW-recommended pronghorn fence designs. The designs are found at CPW's website:
<http://cpw.state.co.us/Documents/LandWater/PrivateLandPrograms/FencingWithWildlifeInMind.pdf>
- The operator agrees to reclaim/restore pronghorn habitats with native shrubs, grasses and forbs identified by CPW that contribute to optimal pronghorn habitat and other wildlife appropriate to the ecological site.
- The operator agrees to preclude the use of CPW-identified aggressive non-native grasses and shrubs in pronghorn habitat reclamation.
- The operator agrees to use locally collected seed for reseeding when specified by CPW. Sagebrush is less important in pronghorn reclamation on the eastern plains than it is in western Colorado (west of I-25).

RAPTORS

General Raptor Mitigation Measures

- Prior to commencement of oil and gas operations, the operator agrees to survey suitable nesting habitat (cliffs, large trees, snags, old growth forest, ect) within 1/2 mile of the proposed activity for nests. See CPW Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors (August 2009).

- The operator will provide raptor survey data for incorporation into the CPW raptor database which is used to update COGCC Wildlife Maps.
- In consultation with CPW staff, the operator agrees to bury utility lines and/ or preclude construction of permanent facilities with guy wires in areas with high collision risk for birds.
- The operator will implement the recommendations from both “*Suggested Practices for Avian Protection on Power Lines, the State of the Art in 2006*” and the “*Avian Protection Plan (APP) Guidelines*” (2005 as amended) for proper design and retrofit considerations for powerlines and poles to minimize raptor electrocution. These documents can be ordered at the Edison Electric Institute web site (www.eei.org) or can be downloaded at the Avian Power Line Interaction Committee web site (www.aplic.org).

Bald Eagle

- The operator will preclude new oil and gas operations within 0.25 mile of any CPW-identified active bald eagle nest site (COGCC RSO).
- The operator will preclude new oil and gas operations within 0.25 mile of any CPW-identified inactive bald eagle nest site.
- If oil and gas operations must occur in within 0.5 miles of CPW identified active bald eagle nest (with documented justification), the operator will preclude oil and gas operations from October 15 to July 31 annually.
- The operator will preclude any new oil and gas operations within 0.25 mile of any active bald eagle winter night roost site, where there is no direct line of sight to the roost, and within 0.5 mile of any active bald eagle winter night roost site where there is direct line of sight to the roost.
- The operator will preclude new oil and gas operations (between November 15 and March 15) within 0.25 mile of any active bald eagle winter night roost site, where there is no direct line of sight to the roost, between and within 0.5 mile of any active bald eagle winter night roost site, where there is a direct line of sight to the roost.
- The operator and its contractors agree to restrict well site visitations to X times per day and to portions of the day between 10:00 a.m. and 2:00 p.m. between November 15 to March 15 within 0.5 miles of a CPW-identified bald eagle winter roost (COGCC SWH).
- The operator agrees to preclude any new oil and gas operations within any mapped bald eagle winter concentration areas between November 15 and March 15.

Ferruginous Hawk

- The operator will preclude new oil and gas operations within 0.5 mile of active ferruginous hawk nest sites (COGCC RSO).
- The operator agrees to identify alternate and inactive ferruginous hawk nest sites within 0.5 mile of active ferruginous hawk nest sites.
- The operator will preclude new oil and gas operations within 0.5 mile of inactive or alternate ferruginous hawk nest sites that are identified within 0.25 mile of an active nest.

- If oil and gas operations must occur in within 0.5 miles of CPW identified active or inactive or alternate ferruginous hawk nest site (with documented justification), the operator will preclude oil and gas operations from February 1 to July 15 annually.

Golden Eagle

- The operator will preclude new oil and gas operations within 0.25 mile of any active or inactive golden eagle nest site (COGCC RSO).
- The operator will preclude new oil and gas operations within 0.25 mile of any inactive golden eagle nest site.
- If oil and gas operations must occur in within 0.5 miles of CPW identified active, alternate, or inactive golden eagle nest site (with documented justification), the operator will preclude oil and gas operations from December 15 to July 15 annually.

Mexican Spotted Owl

The Mexican Spotted Owl is listed as a threatened species by the US Fish & Wildlife Service. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish & Wildlife Service.

- The operator will preclude new oil and gas operations within designated Mexican spotted owl protected activity centers (PAC's).
- If oil and gas operations must occur in within PAC (with documented justification), the operator will preclude oil and gas operations from March 1 to August 31 annually.

Osprey

- The operator will avoid new oil and gas operations within 0.25 mile of any active osprey nest site (COGCC RSO).
- If oil and gas operations must occur in within 0.5 miles of CPW identified active or osprey nest site (with documented justification), the operator will avoid oil and gas operations from April 1 to August 31 annually, at active nest sites.

Peregrine Falcon

- The operator will preclude new oil and gas operations within 0.5 mile of any active peregrine falcon nest site (COGCC RSO).
- The operator will preclude new oil and gas operations within 0.5 mile of any active, alternate (cliff faces), or inactive peregrine falcon nest site.
- If oil and gas operations must occur in within 0.5 miles of CPW identified active, alternate (cliff faces), or inactive peregrine falcon nest site (with documented justification), the operator will preclude oil and gas operations from March 15 to July 31 annually.

Prairie Falcon

- The operator will preclude new oil and gas operations within 0.5 mile of any active prairie falcon nest site (COGCC RSO).

- The operator will preclude new oil and gas operations within 0.5 mile of any alternate (cliff faces) or inactive prairie falcon nest site.
- If oil and gas operations must occur in within 0.5 miles of CPW identified active, alternate (cliff faces) or inactive prairie falcon nest site (with documented justification), the operator will preclude oil and gas operations from March 15 to July 15 annually.

Northern Goshawk

- The operator will preclude new oil and gas operations within 0.5 mile of any active northern goshawk nest site (COGCC RSO).
- The operator will preclude new oil and gas operations within 0.5 mile of any inactive northern goshawk nest site.
- If oil and gas operations must occur in within 0.5 miles of CPW identified active, alternate, or inactive northern goshawk nest site (with documented justification), the operator will preclude oil and gas operations from March 1 to September 15 annually.

Burrowing Owl

- The operator will preclude new oil and gas operations within any active or inactive prairie dog colonies between March 15-October 31.
- If new oil and gas operations must occur within any active or inactive prairie dog colonies (with documented justification), between March 1-October 31, then the operator will survey the prairie dog colonies using CPW's recommended survey protocol and actions to protect nesting Burrowing Owls.
- If during the survey an active burrowing owl nest site is located the operator agrees to conduct surface disturbance a minimum 300 feet from the active nest site.

RAZORBACK SUCKER

The razorback sucker is listed as an Endangered Species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species.

In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for razorback sucker, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in razorback sucker habitat.

- Due to oil and gas operations being proposed within proximity of known razorback sucker locations or habitat, the operator agrees to consult with USFWS.
- The operator will preclude new oil and gas operations within 300 feet from CPW-identified potential razorback sucker habitat.
- The operator agrees to postpone stream disturbances during the spawning season (April 1 to June 30) to avoid impacts to spawning fish.

RIVER OTTER

- The operator will preclude new oil and gas operations adjacent to waterways (within 300ft) of CPW-identified occupied river otter habitat.
- If oil and gas roads must cross CPW-identified occupied river otter habitat, waterway crossings will be designed specifically to allow otter passage during high water events.
- The operator agrees to provide information on sightings of live or dead river otters for incorporation into the CPW river otter sightings database. Sighting forms are located at: <http://wildlife.state.co.us/WildlifeSpecies/SpeciesofConcern/Mammals/RiverOtterObservation.htm>.

SOUTHWEST WILLOW FLYCATCHER

The southwest willow flycatcher is listed as an Endangered Species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a map of Critical Habitat for the species. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for southwest willow flycatcher, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in southwest willow flycatcher habitat.

- Due to oil and gas operations being proposed within proximity of known southwest willow flycatcher locations or habitat, the operator agrees to consult with USFWS.
- The operator will preclude new oil and gas operations within 300 feet from CPW-identified potential southwest willow flycatcher habitat.
- If oil and gas operations must occur within 300 feet from CPW-identified potential southwest willow flycatcher habitat, then the operator agrees to conduct USFWS protocol surveys prior to operations for active flycatcher nesting territories during the breeding season May 15-Aug 1.
- The operator will preclude new oil and gas operations within 300 feet of active southwest willow flycatcher nest territories from May 15 to August 1.

SWIFT FOX

- The operator agrees to survey for swift fox den sites in CPW-identified suitable habitat prior to new oil and gas operations between March 15 and June 15.
- The operator will preclude new oil and gas operations within 0.25 miles of an active swift fox den.
- If oil and gas operations must occur within 0.25 miles of an active swift fox den (with documented justification), the operator agrees to preclude oil and gas operations when

den dependent young are present. The operator agrees to prohibit the use of pest/rodenticides for rodent control in swift fox overall range to prevent reduction of swift fox food supplies and secondary toxicity.

WESTERN BOREAL TOAD

- The operator agrees to preclude new oil and gas operations within 0.5 mile of CPW-identified known breeding sites.
- The operator agrees to preclude new oil and gas operations within 600 feet of any documented western boreal toad field sighting or CPW-identified breeding sites.

WESTERN YELLOW-BILLED CUCKOO

The western yellow-billed cuckoo is listed as a Threatened Species by the US Fish & Wildlife Service. The US Fish & Wildlife Service has produced a draft map of Critical Habitat for the species. In some situations the landowner (and perhaps the operator) may need to consult with the US Fish and Wildlife Service.

- Due to oil and gas operations being proposed within mapped USFWS Critical Habitat for western yellow-billed cuckoo locations or habitat, the operator agrees to consult with USFWS.

In situations where consultation is not required with the US Fish & Wildlife Service the following BMPs may be applicable in western yellow-billed cuckoo habitat.

- Due to oil and gas operations being proposed within proximity of known western yellow-billed cuckoo locations or habitat, the operator agrees to consult with USFWS.
- The operator will avoid new oil and gas operations within 300 feet from riparian vegetation within CPW-identified potential western yellow-billed cuckoo habitat.
- If oil and gas operations must occur within 300ft of riparian vegetation within CPW-identified potential western yellow-billed cuckoo habitat, then the operator agrees to conduct USFWS protocol surveys for active cuckoo nesting territories during the breeding season (June 15 to August 15).
- The operator will avoid new oil and gas operations within 300 feet of western yellow-billed cuckoo nest sites from (April 15 to August 31).

AQUATIC SPECIES/AMPHIBIANS

- The operator agrees to consult with CPW or collect baseline aquatic species and macro-invertebrate inventory data both pre and post development.
- The operator agrees to conduct two pass population estimations for streams potentially affected. Report species composition, length-frequency and individual weights.

- The operator agrees to collect water samples to monitor water quality before, during and after occupation and document data and changes.
- The operator agrees to preclude surface disturbance within 300 feet of any designated Gold Medal water.
- The operator agrees to design stream crossings to minimize the total number of crossings and so that crossings are at or as near to 90 degrees to the direction of stream flow.
- The operator agrees to construct stream crossings “in the dry” and avoid impacts to trout during spawning and hatching periods.
- The operator agrees to curtail trucks from crossing streams and utilize appropriate and effective culverts that don’t preclude upstream movement of fish.
- The operator agrees to curtail using low water crossings.
- The operator agrees to control erosion and sedimentation, and manage storm water runoff; reclaim sites as quickly as possible to restore vegetation.
- The operator agrees to control weeds along riparian corridors and manage livestock grazing to maintain riparian corridor health.
- The operator agrees to fence riparian areas as determined by and in mutual agreement with CPW.
- The operator agrees to avoid changes to water quality and quantity.
- The operator agrees to repair incised channels where excessive erosion and sedimentation is occurring.
- The operator agrees to directional boring of pipeline crossings of perennial streams.
- The operator agrees to replace non-native riparian vegetation such as tamarisk and Russian olive with appropriate native plantings such as cottonwood or willow.
- The operator agrees to protect groundwater, riparian areas and wetlands by installing impermeable barriers beneath fluid pits.
- The operator agrees to, when working in waters of the State of Colorado, disinfect heavy equipment, hand tools, boots and any other equipment that was previously used in a river, stream, lake, pond, or wetland prior to moving the equipment to another water body. The disinfection practice should follow this outline:
 - Remove all mud and debris from equipment and spray/soak equipment in a solution of a quaternary ammonium-based institutional cleaner and clean water (six ounces of Green Solutions High Dilution Disinfectant 256 or Super HDQ Neutral per gallon of water) for at least ten minutes prior to, and after, working in waters of the State of Colorado. Manage the rinsate as a solid waste in accordance with local, county, state, or federal regulations; or
 - Remove all mud and debris from equipment and spray/soak equipment with water greater than 140 degrees Fahrenheit for at least ten minutes prior to, and after, working in waters of the State of Colorado. Manage the rinsate as a solid waste in accordance with local, county, state, or federal regulations.
 - Sanitize water suction hoses and water transportation tanks (using methods described above). Manage the rinsate as a solid waste in accordance with local, county, state, or federal regulations.

- The operator agrees to, when working in waters of the State of Colorado, drain all water and remove all visible mud, plants, and organisms from boats, trailers and equipment followed by a thorough scrubbing with water (140 degrees Fahrenheit); complete drying; and then disinfection using the Green Solutions High Dilution Disinfectant 256 or Super HDQ Neutral for a 30 minute contact time prior to, and after, working in waters of the State of Colorado. Manage the rinsate as a solid waste in accordance with local, county, state, or federal regulations.
- The operator agrees to preclude stream channel disturbances during fish spawning seasons. Fish spawn at specific times of the year. The eggs incubate in the gravel until the yolk sac is absorbed and the larval fish can swim up through the gravel and into the main body of water. Eggs incubating in the redds can be smothered by the excessive deposition of sediment, and further affected by fungal spores carried in the sediment. Adults can be affected by the same fungal species with high mortality rates. Fish spawning dates and incubation times vary by elevation and temperatures, but in general the following intervals will apply in Colorado:
 - Rainbow trout: March 1 - June 30
 - Brown trout: October 1 – April 30
 - Brook trout: August 1 – April 30
 - Cutthroat trout: May 1 – August 31
 - Bluehead sucker: March 15 – July 15
 - Flannelmouth sucker: March 15 – June 30
 - Mountain sucker: May 1 - August 31
 - Roundtail chub: April 15 – July 15
 - Sculpin: May 1 – July 31
 - Speckled dace: May 1 – August 31
 - Mountain whitefish: October 1 – November 30
 - Bonytail chub: April 1 – July 15
 - Colorado pikeminnow: May 1 – July 15
 - Humpback chub: April 1 – June 30
 - Razorback sucker: April 1 – June 30