

Wildlife Best Management Practices for Oxy's 609-14 Pad

Sensitive Habitat: Greater Sage Grouse

609-14 Pad is existing, originally constructed in 2008

Pre-consultation meeting with CDOW occurred 1/29/10

GREATER SAGE-GROUSE

- Identify seasonal habitats and migratory patterns of sage-grouse. Map all seasonal habitats using CDOW habitat selection models as they become available.
- No surface occupancy within 0.6 mile of any known Gunnison or greater sage-grouse lek.
- After drilling and completions activities reduce visits to well-sites through remote monitoring (i.e. SCADA) and the use of multi-function contractors. Further, schedule as best as possible 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 May 15).
- Establish company guidelines to minimize wildlife mortality from vehicle collisions on roads.
- 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.
- Implement the species appropriate Infrastructure Layout and Drilling and Production Operations Wildlife Protection Measures found in Section II D. of the CDOW Wildlife BMP document.
 - Section II D. **DRILLING AND PRODUCTION OPERATIONS WILDLIFE PROTECTION MEASURES:** *The purpose of these measures is to reduce disturbance on the actual drill site and the surrounding area, to reduce direct conflict with wildlife and hunters, and to prevent wildlife access to equipment.*
 1. Use centralized hydraulic fracturing operations.
 2. Transport water through centralized pipeline systems rather than by trucking.
 3. Where possible, locate pipeline systems under existing roadways, or roadways that are planned for development.
 4. Maximize use of state-of-the-art drilling technology (e.g., high efficiency rigs, coiled-tubing unit rigs, closed-loop or pitless drilling, etc.) to minimize disturbance.
 5. Conduct well completions with drilling operations to limit the number of rig moves and traffic.
 6. Install exclusionary devices to prevent bird and other wildlife access to equipment stacks, vents and openings.
 7. During pipeline installations install trench plugs, earthen ramps, or other means as necessary to ensure that open pipeline trenches do not trap wildlife, and that pipe strings do not impair wildlife movements.
- Minimize surface disturbance and fragmentation of Gunnison or greater sage-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.
- Where applicable design tanks and other facilities with structures such that they do not provide perches or nest substrates for raptors, crows and ravens.
- Where needed, install raptor perch deterrents on equipment, fences, cross arms and pole tops in Gunnison or greater sage-grouse habitat.
- Remove all unnecessary infrastructure.
- Treat waste water pits and any associated pit containing water that provides a suitable 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.
- Implement the species appropriate reclamation guidelines found in Section II G. of the CDOW Wildlife BMP document.
 - Section II G. **RESTORATION, RECLAMATION AND ABANDONMENT:** *The purpose of these measures is to restore disturbed sites to their pre-development conditions, using native vegetation that can be used by the indigenous wildlife. Develop a reclamation plan in consultation with CDOW, NRCS, and the land owner or land management agency that*

incorporates wildlife species-specific goals and that defines reclamation performance standards, including the following components:

1. Seed

- a. Use only certified weed-free native seed in seed mixes, unless use of non-native plant materials is recommended by CDOW.
- b. Use locally adapted seed whenever available, especially for species which have wide geographic ranges and much genetic variation (e.g., big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridentata*), etc.).
- c. Where more than one ecotype of a given species is available and potentially adapted to the site, include more than one ecotype per species in the seed mix.
- d. Use appropriately diverse reclamation seed mixes that mirror an appropriate reference area for the site being reclaimed (see also species-specific recommendations).
- e. Conduct seeding in a manner that ensures that seedbed preparation and planting techniques are targeted toward the varied needs of grasses, forbs and shrubs (e.g., seed forbs and shrubs separately from grasses, broadcast big sagebrush but drill grasses, etc.).
- f. Emphasize bunchgrass over sod-forming grasses in seed mixes in order to provide more effective wildlife cover and to facilitate forb and shrub establishment.
- g. Seed immediately after recontouring and spreading topsoil. Spread topsoil and conduct seeding during optimal periods for seed germination and establishment. Use of the same contractor for re-contouring land as used for seeding is often the most effective approach.
- h. Do not include aggressive, non-native grasses (e.g., intermediate wheatgrass, pubescent wheatgrass, crested wheatgrass, smooth brome, etc.) in reclamation seed mixes. Site specific exceptions may be considered.
- i. Distribute quick germinating site adapted native seed or sterile non-native seed for interim reclamation on cut and fill slopes and topsoil piles.
- j. Plan for reclamation failure and be prepared to repeat seeding as necessary to meet vegetation cover, composition, and diversity standards.

2. Vegetative Cover Standard

- a. Choose reference areas as goals for reclamation that have high wildlife value, with attributes such as a diverse and productive understory of vegetation, productive and palatable shrubs, and a high prevalence of native species.
- b. Establish vegetation with total perennial non-invasive plant cover of at least eighty (80) percent of pre-disturbance or reference area levels.
- c. Establish vegetation with plant diversity of non-invasive species which is at least half that of pre-disturbance or reference area levels. Quantify diversity of vegetation using a metric that considers only species with at least 3 percent relative plant cover.
- d. Establish permanent and monumented photo points and vegetation measurement plots or transects; monitor at least annually until plant cover, composition, and diversity standards have been met.
- e. Observe and maintain a performance standard for reclamation success characterized by the establishment of a self-sustaining, vigorous, diverse, locally appropriate plant community on the site, with a density sufficient to control erosion and non-native plant invasion and diversity sufficient to allow for normal plant community development.

3. Timing

- a. Use early and effective reclamation techniques, including interim reclamation to accelerate return of disturbed areas for use by wildlife.
- b. Remove all unnecessary infrastructure.
- c. Close and reclaim roads not necessary for development immediately, including removing all bridges and culverts and recontouring/reclaiming all stream crossings.
- d. Reclaim reserve pits as quickly as possible after drilling and ensure that pit contents do not contaminate soil.
- e. Remediate hydrocarbon spills on disturbed areas prior to reclamation.
- f. Reclaim sites during optimum seasons (e.g. late fall/early winter or early spring).

- g. Complete final reclamation activities so that seeding occurs during the first optimal season following plugging and abandonment of oil and gas wells.
 - 4. Interim reclamation
 - a. Use a variety of native grasses and forbs to establish effective, interim reclamation on all disturbed areas (e.g., road shoulders and borrow areas), including disturbed areas where additional future ground disturbance is expected to occur.
 - b. Perform interim reclamation to final reclamation species composition and establishment standards.
 - c. Perform "interim" reclamation on all disturbed areas not needed for active support of production operations.
 - 5. Riparian areas (none associated with this pad or associated access roads and pipelines)
 - a. Replace all riparian vegetation removed during development at a rate of at least 3:1.
 - b. Restore both form and function of impacted wetlands and riparian areas and mitigate erosion.
 - 6. Disposal
 - a. Remove well pad and road surface materials that are incompatible with post-production land use and re-vegetation requirements.
 - b. Remove and properly dispose of degraded silt fencing and erosion control materials after their utility has expired.
 - c. Remove and properly dispose of pit contents where contamination of surface water, groundwater, or soil by pit contents cannot be effectively prevented.
 - 7. Establishing reclaimed areas
 - a. Apply certified weed free mulch and crimp or tacify to remain in place to reclaim areas for seed preservation and moisture retention.
 - b. Utilize staked soil retention blankets for erosion control and reclamation of large surface areas with 3:1 or steeper slopes. Avoid use of plastic blanket materials, known to cause mortality of snakes.
 - c. Control weeds in areas surrounding reclamation areas in order to reduce weed competition.
 - d. Educate employees and contractors about weed issues.
- Use early and effective reclamation techniques, including an aggressive interim reclamation program, to return habitat to use by Gunnison or greater sage-grouse as quickly as possible.
 - Reclaim/restore Gunnison or greater sage-grouse habitats with native grasses, forbs, and shrubs conducive to optimal Gunnison or greater sage-grouse habitat and other wildlife appropriate to the ecological site.
 - Use high diversity (10 species or more) reclamation seed mixes in Gunnison or greater sage-grouse habitat.
 - Use approved CP-4D (Gunnison or greater sage-grouse) seed mixes, based on soil type, precipitation, and elevation, available from Farm Service Agency or Natural Resources Conservation Service, or other seed mixes approved by CDOW.
 - Avoid aggressive non-native grasses in Gunnison or greater sage-grouse habitat reclamation.
 - Restore disturbed sagebrush sites with the appropriate sagebrush species or subspecies on disturbed sagebrush sites. Use locally collected seed for reseeding where possible.
 - Reclaim mapped summer habitat with a substantially higher percentage of forbs (> 15 percent cover post establishment) than used in other areas.
 - Utilize native and select non-native forbs and legumes in seed mixes as they are a vital component of brood-rearing habitat.