

APPENDIX C

Reclamation Plan

Reclamation Plan

All operators are responsible for the satisfactory and timely reclamation of the land surface disturbed by their operations in accordance with federal regulations and the standards, guidelines, and criteria set forth below. These standards will apply to all surface disturbing activities including but not limited to pads, roads, right-of-way, and all industry associated pipelines.

All surface disturbances will be reclaimed to meet Bureau of Land Management (BLM) standards as described in Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development – The Gold Book, and specific criteria identified in this document. Habitat and livestock grazing reclamation will be initiated to meet criteria standards on all portions of the well pads, access roads, etc not needed for production operations when the last well on the pad is drilled and completed or when no forecasted drilling (based in existing Wyoming Oil and Gas Conservation Commission permitted spacing or depth limitations) or completion activity is expected within two years, but additional well development activity is planned on the pad. Site stabilization including seeding will occur during the first appropriate growing season. BLM will coordinate such requests for expansion and reoccupation with Wyoming Game and Fish Department and/or other appropriate agencies through the Application for Permit to Drill (APD) process. Where practical this coordination would occur through the annual meeting, but could occur on a case-by-case basis throughout the year. These specific requirements are subject to modification through the adaptive management process.

C.1 Reclamation Objectives

The objective of interim reclamation is to achieve healthy, biologically active topsoil; control erosion; and restore habitat, visual, and forage function on those portions of the disturbed area not need for production operations for the life of the well or facilities or until final reclamation is initiated.

Interim reclamation will be considered successful when:

- Disturbed areas not needed for long-term production operations or vehicle travel are recontoured, protected from erosion, and revegetated with a self-sustaining, vigorous, diverse, native (or otherwise approved) plant community sufficient to minimize visual impacts, provide habitat and forage, stabilize soils, and impede the invasion of noxious weeds.

The objective of final reclamation is to achieve habitat, forage, and hydrologic function the functions that existed prior to disturbance. Including restoration of the original landform or creating a landform that approximates and blends in with the surrounding landform. Final reclamation involves restoring natural vegetative community, hydrologic systems, visual resources, agricultural values and wildlife habitats.

Final reclamation will be considered successful when:

- The original landform is restored for individual disturbed areas including well pads, production facility areas, roads, pipelines, and utility corridors.
- A self-sustaining, vigorous, diverse, native (or otherwise approved) plant community is established on the site, with a density or frequency sufficient to control erosion and non-native plant invasion and reestablish wildlife habitat and

forage production. Sites demonstrate productivity approximately equal to or better than pre-disturbance levels.

- Plants are resilient as evidenced by well-developed root systems, flowers, and seed heads. Sites must exhibit sustainability of desired attributes after the removal of external influences for a period of not less than one year.
- Shrubs are well established and in a “young” age class at a minimum (therefore, not comprised of seedlings that may not survive until the following year).
- In agricultural areas, irrigation systems and soil conditions are reestablished in such a way as to ensure successful cultivation and harvesting of crops.
- Erosion control is sufficient so that water naturally infiltrates into the soil and gullyng, headcutting, slumping, and deep or excessive rilling (greater than 3 inches) or excessive sheet erosion is not observed.
- The site is free of federal, state and county-listed noxious weeds, oil field debris, contaminated soil, and equipment.

C.2 Reclamation Plan and Annual Reports

The operators will prepare a detailed Reclamation and Monitoring Plan within 1 year of the signing of this ROD. The Plan will include appropriate quantitative and qualitative reclamation and monitoring standards, as detailed below.

Site-specific reclamation plans will continue to be included with the section 10 of the 13 point Surface Use Plan of Operations for APD-related surface disturbing activity and in the Plan of Development (POD) for right-of-way related actions. The reclamation plan for surface disturbance should reference and be consistent with the overall Reclamation Plan for the SEIS area and should reference the ecological site type when the site type is available, or will reference general vegetation composition if ecological site type data is not available. The plan will address erosion control measures including wind erosion.

Reclamation standards, objectives, and results will be reviewed during the annual planning meetings. Reclaimed sites should be inspected annually (until either interim or final criteria, whichever is applicable for the location, is achieved) and evaluated the first and third growing seasons post seeding to determine if desirable plants are establishing. Operators will provide annual ERRP reports indicating reclamation status of all locations (to include extent of reclamation, vegetative composition, density or frequency, cover, resilience, sustainability, diversity and noxious weed presence, and surface stability). Surface disturbance reports will include “as built” GIS data in acceptable form for inclusion into BLM database.

C.3 Monitoring and Evaluation

The operators will monitor and evaluate reclamation success and shall prepare an annual monitoring and evaluation report to be submitted to BLM and the cooperating agencies a minimum of 3 weeks prior the annual meeting. Sites will be monitored and evaluated by individuals skilled in rangeland or reclamation monitoring (including knowledge of local ecology and plant identification). An interagency–review team will annually review and analyze the annual monitoring results and methods. Annual satellite imagery or other comparable imagery may assist in monitoring and evaluation.

Should the success criteria stated below not be met, the operators will be responsible for implementing additional measures as directed by BLM. Wyoming Game and Fish Department (WGFD), Wyoming Department of Environmental Quality (WDEQ) and/or other appropriate agencies may provide guidance and suggestions to BLM what the additional measures could

include, such as: soil amendments, reseeding, inter-seeding, providing precipitation, fencing to isolate plantings from ungulates, and creating snow fences to increase local snow depth.

C.4 Interim or Final Reclamation Criteria

A sample representation of the vegetative population will be used to collect the vegetative data on the reclamation and reference site. The reference site location will represent the ecological characteristics of the well pad prior to disturbance.

Successful reclamation to facilitate restoration of habitat function will be measured in stages as follows:

- Within 1 year of initiation of interim or final reclamation sites will demonstrate the establishment of a viable desirable seedling density or frequency. Desirable seedling density or frequency, compared to reference site, shall consist of a vigorous, diverse, native (or otherwise approved) plant community or ecologically comparable species as approved by BLM Authorizing Officer (AO).

C.4.1 Vegetative Criteria for Interim Reclamation

1. **Native Forbs:** The average density or frequency of desirable forbs must be a minimum of 75% of the reference site within 5 years. Diversity of forbs on a reclaimed site must be equal to or greater than the reference site within 5 years.
2. **Native Shrubs:** The average density or frequency of the shrub component must be at least 50 % of the reference site within 5 years. This includes both shrubs and half shrubs (e.g. winterfat, fringed sage, etc.). At least 15% density or frequency of the shrub component must be by the dominant species from reference site. The diversity of shrubs must be equal to or greater than the reference site.
3. **Native Grasses:** Reclaimed sites must have a minimum of three native perennial grass species present, two of which must be bunch grass species. These are to be planted at rates appropriate to achieve abundance and diversity characteristics similar to those found on the reference site.
4. **Non-Native Weeds:** Sites must be free from all species listed on the Wyoming and federal noxious weed lists. All state and federal laws regarding noxious weeds must be followed. Other highly competitive invasive species such as cheatgrass and other weedy brome will be actively treated if found in the reclaimed areas,
5. **Plant Vigor:** Plants must be resilient as evidenced by well-developed root systems, flowers, and seed heads. All sites must exhibit the sustainability of the above desired attributes after the removal of external influences. A minimum of one growing season without external influences (irrigation, mat pads, fences, etc.) may satisfy this requirement.

C.4.2 Full Site Final Reclamation Criteria

1. Ground Cover & Ecological Function

To ensure soil stability and nutrient cycling, ground cover must be equal to or greater than the reference site and vegetative litter must be decomposing into the soil.

2. Vegetative Criteria

- a. **Native Forbs:** The average density or frequency and total diversity of forbs must be equal to or greater than the reference site within 8 years
- b. **Native Shrubs:** The average density or frequency of the shrub component must be at least 80% of the reference site within 8 years. This includes both shrubs and half shrubs (e.g. winterfat, fringed sage, etc.). At least 25% density or frequency of the shrub component must be the dominant species from the reference site. The diversity of shrubs must be equal to or greater than the reference site.
- c. **Native Grasses:** Reclaimed sites must exhibit grass production equal to the reference site. A minimum of 3 native perennial species must be included with at least 2 bunch grass species.
- d. **Non-Native Weeds:** Sites must be free from all species listed on the Wyoming and Federal noxious weed list. All state and federal laws regarding noxious weeds must be followed. Other highly competitive invasive species such as cheatgrass and other weedy brome grasses are also prohibited.
- e. **Plant Vigor:** Plants must be resilient as evidenced by well-developed root systems and flowers. Shrubs will be well established and in a “young” age class at a minimum (e.g. not comprised of seedlings that may not survive until the following year).

C.4.3 Other Requirements

All seed must be native (or otherwise approved) ecologically suitable species and site-specific. Should available seed mixtures, techniques or other applications be available to enhance the productivity and diversity of the reclaimed area used by wildlife or livestock, these methods should be pursued as approved by the BLM AO.

All topsoil from disturbed sites should be salvaged and stockpiled for later use in reclamation. Stockpiled topsoil will be seeded with native perennial grasses or an appropriate cover crop and soil should be reapplied to a reclaimed area while the topsoil is still viable – usually within 2-5 years.

Any mulch used would be reasonably free from mold, fungi, or noxious weed seeds. Mulch may include native hay, small grain straw, wood fiber, live mulch, cotton, jute, biodegradable netting, and rock or otherwise approved media. Straw mulch should contain fibers long enough to facilitate crimping and provide the greatest cover. The grantee or lessee would be responsible for the control of all noxious weed infestations on surface disturbances.