

Environmental Assessment

Warren E&P, Inc

Grace Point Sub-Area POD A
8 Proposed Coal-Bed Methane Natural Gas Well
Pads, Access Roads, Pipelines, and Utility Corridors

Carbon County, Wyoming

DOI-BLM-WY-D030-2015-0204-EA
BLM Lease Numbers: WYW-141276, -178191
-174782, -138669, -180282

July 2016

Prepared by:

U.S. Bureau of Land Management
High Desert District
Rawlins Field Office
1300 North Third Street
Rawlins, Wyoming 82301



Mission Statement

To sustain the health, diversity, and productivity of the public lands
for the use and enjoyment of present and future generations.

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Tiered Environmental Analysis
This Environmental Assessment Is Tiered To and References the “Atlantic Rim Natural Gas Development Project Final Environmental Impact Statement.”

ENVIRONMENTAL ASSESSMENT

EA NUMBER: DOI-BLM-WY-D030-2015-0204-EA

BLM Office: Rawlins Field Office

Lease Numbers: WYW-141276, -178191, -174782, -138669, and -180282

Proposed Action Title / Type: 1591 Grace Point Sub-Area POD A/ 8 Coal-Bed Methane Natural Gas Well Pads, Access Roads, Pipelines, and Electrical Corridors

Applicant: Warren E&P Inc. (Warren)

Location of Proposed Action: Carbon County, Wyoming

Table of well names, well numbers, locations, lease numbers, and unit numbers.

Well Name	Well No.	T (N)	R (W)	Sec	Qtr/Quarter	Lease No.	Unit No.	Surface Ownership
GP Federal 1591	9-6	15	91	6	NESE	WYW-141276	WYW-177572X	Federal
GP Federal 1591	1-9	15	91	9	NENE	WYW-178191	WYW-177572X	Federal
GP Federal 1591	8-9	15	91	9	SENE	WYW-178191	WYW-177572X	Federal
GP Federal 1591	3-10	15	91	10	NENW	WYW-174782	WYW-177572X	Federal
GP Federal 1591	5-10	15	91	10	SWNW	WYW-138669	WYW-177572X	Federal
GP Federal 1591	11-10	15	91	10	NESW	WYW-174782	WYW-177572X	Federal
GP Federal 1591	13-10	15	91	10	SWSW	WYW-174782	WYW-177572X	Federal
GP Federal 1591	5-15	15	91	15	SWNW	WYW-180282	WYW-177572X	Federal

INTRODUCTION

Warren proposes to drill eight (8) coal-bed methane natural gas wells, and one (1) produced water injection well along with their accompanying well pads, access roads, pipelines, and utility corridors. The wells are all on federal surface and would be extracting or injecting into federal minerals.

Purpose and Need for the Proposed Action

Purpose:

This site-specific Environmental Assessment (EA) is being prepared in response to the Applications for Permit to Drill (APDs), and discloses information which would allow the Authorized Officer to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The purpose of the action is to allow the lease holder to exercise their right to drill for, extract, remove, and market natural gas products at the above described locations.

Need:

The need for the action is established by the Bureau of Land Management's (BLM) authority under the Minerals Leasing Act of 1920, as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

Decision to be made

The BLM will decide whether or not to issue the APDs and, if so, under what conditions of approval.

Scoping and Issues

External:

Upon receipt of an APD or Notice of Staking (NOS) for a proposed well/location, the APD or NOS is posted in the public room of the Rawlins Field Office (RFO) for a period of 30 days. During that time, the APD or NOS is available for public review and comment. The information required under 43 CFR 3162.3-1(g) for these APDs was posted in the BLM RFO public room on September 1, 2015. The project was entered into the National Environmental Policy Act (NEPA) Register on September 10, 2015 (WY-IM-2009-037). No public comments have been received for this proposal.

Internal:

An on-site was conducted for the proposed locations on September 28, 2015. A BLM interdisciplinary team reviewed the new proposals and the following resources were found to have issues of concern that are addressed in this EA: air quality; cultural and historic resources; wildlife resources including threatened, endangered and sensitive species; range; and noise. Other resources either were not present, or the impacts were adequately addressed in the Atlantic

Rim (AR) Natural Gas Field Development Final Environmental Impact Statement (FEIS) or through the application of Standard Operating Procedures (SOPs), Best Management Practices (BMPs) and/or site-specific design features (see Appendix 1). However, some resources discussed in the impacts section of this EA, while not elevated to a level of concern that might influence a FONSI, are of sufficient concern to the public to warrant mention. These resources are ground water, and health and safety.

Resources considered, but not present or affected in such a manner as requiring site-specific analysis in this EA, include, but are not limited to:

Resource/Resource Use	Approved Rawlins RMP FEIS Reference	AR EIS Reference
Areas of Critical Environmental Concern	3-88 to 3-89; 4-514 to 4-515; Appendix 22	3-150 to 3-153; 4-158 to 4-163
Cultural Resources	3-10 to 3-17; 4-12 to 4-31; Appendix 5	3-122 to 3-132; 4-116 to 4-119; Appendix I
Environmental Justice	3-77; 4-189 to 4-203	3-145; 4-120 to 4-146
Hazardous Materials	Appendix 32	Appendix C
Health and Safety		3-148; 4-153- 4-155
Minerals	3-34 to 3-44; 4-83 to 4-111; 4-501	3-9; 4-2
Noise		3-149; 4-155 to 4-157
Off-Highway Vehicles	3-45; 4-113 to 4-125; Appendix 21	
Paleontology	3-48 to 3-49; 4-126 to 4-140; 4-502; Appendix 30	3-13; 4-2 to 4-5
Reclamation	3-44; Appendix 36	Appendix B
Recreation	3-51 to 3-58; 3-76; 4-141 to 4-188; 4-505; Appendix 37	3-115 to 3-119; 4-98 to 4-105
Socioeconomics	3-59 to 3-85; 4-189 to 4-203; 4-508; Appendix 35	3-132 to 3-145; 4-120 to 4-146
Soils	3-123 to 3-137; 4-408 to 4-438; 4-525	3-22 to 3-33; 4-16 to 4-19
Special Designations and Management Areas	3-86 to 3-98; 4-204 to 4-356; 4- 512	3-150 to 3-153; 4-158 to 4-162
Transportation	3-26; 3-100; 4-356 to 4-367; 4-522; Appendix 21	3-146 to 3-148; 4-146 to 4-152
Vegetation	3-101 to 3-119; 4-369 to 4-389; 4-522; Appendix 19	3-68 to 3-79; 4-50 to 4-60
Visual Resources	3-120 to 3-122; 4-391 to 4-406; 4-524; Appendix 25	3-119; 4-105 to 4-113
Wild Horses	3-139 to 3-142; 4-439 to 4-449; 4-528; Appendix 12	3-149; 4-157
Wilderness Study Areas	3-86 to 3-87; 4-204 to 4-207	

PROPOSED ACTION AND ALTERNATIVES

Proposed Action

Warren is proposing to drill 8 coal-bed methane natural gas (CBNG) wells. The Proposed Action includes the construction of well pads, access roads, and pipeline/utility corridors on federal surface for each of the 8 wells (see Map 1). The maps and illustrations attached to the APDs and master surface use plan (MSUP) display the locations of the proposed wells, access roads, water-gathering pipelines, and power-line (electrical) corridors. Total surface disturbance for the project would be as follows:

Table of acreage of disturbance by well:

Wells	Pad Acres	Access Road Pipeline/Length ft.	Access corridor acres*	Total Initial Disturbance acres	Long term Disturbance acres
GP Fed 1591 9-6	2.5	1832	3.4	5.9	1.6
GP Fed 1591 1-9	2.5	69	0.1	2.6	0.3
GP Fed 1591 8-9	2.5	454	0.8	3.3	0.6
GP Fed 1591 3-10 Road***	2.6	3026	5.6	8.2	2.4
GP Fed 1591 3-10 Pipeline	0	4116	4.7	4.7	0
GP Fed 1591 5-10	2.5	1447	2.7	5.2	1.3
GP Fed 1591 11-10	2.6	1739	3.2	5.8	1.5
GP Fed 1591 13-10	2.6	2117	3.9	6.5	2.5
GP Fed 1591 5-15	2.6	3356	6.2	8.8	2.7
Totals	20.4	18,156	30.5	50.9	12.9

*The disturbance width of the access road and pipeline/utility corridors combined is 80'.

**The combined disturbance width of the pipeline and utility corridors is 50'.

***The 1591 3-10 surface disturbance calculations are broken into two rows because the access road and pipeline would not be located in the same corridor.

Any additional facilities later determined to be necessary would be proposed and applied for via a Sundry Notice.

A discussion of the actions generally associated with drilling a well, including the plan of operations, construction of the access road, drilling pad, and pipeline installation can be found in the AR FEIS (Appendix K: Plan of Development / Detailed Proposed Action).

Access: The operator proposes to construct 8 new primary access roads to the proposed 8 CBNG well locations. The newly constructed roads would meet BLM specifications for a “Resource Road”, as specified in BLM Manual Section 9113. Proper drainage structures would be constructed/installed along the primary access roads. The width of the roadway (travel surface) would be a minimum of 14 feet within an average 50-foot corridor. Unless prohibited by terrain, excessive surface disturbance, or other such circumstances, the proposed access road corridor would be combined with the pipeline/utility corridor into a road/utility corridor with a total width of 80 feet. To minimize surface disturbance, the majority of the pipeline/utility corridors would be located adjacent to and parallel the proposed or existing access roads and existing pipeline disturbances, except where not feasible or applicable.

The proposed access roads, including utility corridors, would be reclaimed during production operations to the maintenance width of approximately 30 to 40 feet. Utility corridors, upon completion of pipeline/power-line installation, along with any unneeded access roads, would be re-contoured, ripped, seeded, and re-vegetated.

Well Sites: In order to drill and complete the proposed wells, a drill pad would be constructed for each of the 8 well locations. The size of the well pads would be approximately 200 feet by 300 feet, excluding stockpiled topsoil and excess material storage areas (approximately 2.55 acres each).

Following drilling operations, cut and fill portions of the well sites would be brought back to grade and reclaimed, along with any other unneeded portions of the well sites. Soil stockpiles would be re-spread or stabilized, and reseeded with native vegetation. The well pads would be reduced to about 1.4 acres for the duration of operations. Unless otherwise authorized, and in conjunction with interim well pad reclamation, the reserve pits, if used, would be dried and backfilled within 180 days (six months) of well completion, or plugging and abandonment. The entire well pad would be re-contoured, ripped, seeded, and re-vegetated during final reclamation upon final plugging and abandonment.

Pipeline/Utility Corridors: The produced gas and water gathering pipelines and power-lines would be buried upon completion of construction and installation, and the disturbed surface areas reclaimed as soon thereafter as possible, but no later than 6 months. Produced water from the CBNG wells would be gathered and transported via buried water pipelines to water re-injection wells as indicated in the Master Water Management Plan (MWMP) submitted with the APDs. Upon well plugging and abandonment, or pipeline/power-line abandonment, the pipelines/power-lines would be properly abandoned in accordance with BLM procedures for abandonment, and the corridors appropriately reclaimed. Any major crossings of drainages would be engineered to ensure design/construction adequacy and erosion protection.

All channel crossings would comply with current BLM policies and mitigation measures appropriate to the crossings (see “Hydraulic Considerations for Pipelines Crossing Stream Channels,” BLM Technical Note 423, April 2007).

The submitted APDs, with MSUP, MWMP, and standard design features, contain complete descriptions of the proposed wells, well pads, access roads, utility corridors, and pipelines. These documents are considered an integral part of this EA by reference. The APDs are located in the

well/lease files In the Bureau of Land Management, Rawlins Field Office, 1300 North Third Street, Rawlins, Wyoming.

ALTERNATIVES INCLUDING THE NO ACTION ALTERNATIVE

The BLM interdisciplinary team, in review of the Proposed Action (as modified during on-site inspections, internal scoping, and subsequent review), identified no unresolved resource conflicts that would necessitate development of additional alternatives.

No Action Alternative

The “No Action” alternative would be to not approve the APD. Under leasing provisions, the BLM has an obligation to allow mineral development if the environmental consequences are not irreversible or too severe. If the APD is not approved, the applicant is allowed to, and generally would, submit a new APD to correct any flaws in the original. The APD process is designed to overcome the “No Action” alternative situation by not accepting the APD as complete, until all environmental impacts are either resolved or mitigated in the application and approval process.

The AR FEIS analyzed the “No Action Alternative” in detail. The AR FEIS Record of Decision (ROD) approved development of natural gas within the AR FEIS project area. The Proposed Action for this EA is consistent with the AR FEIS ROD, approved March 23, 2007. For the above stated reasons, the “No Action” alternative was considered but eliminated and will not be analyzed further in this EA.

Conformance with the Land Use Plan

This Proposed Action is subject to the Rawlins Resource Management Plan (RMP), FEIS, and ROD, approved on December 24, 2008, as amended. The RMP has been reviewed to determine if the Proposed Action conforms to the land use plan as required by 43 CFR 1610.5-3. Development of natural gas reserves is covered on pages 2-20 to 2-22 of the RMP. The Proposed Action is in conformance with the RMP Management Objectives to provide opportunities for exploration and development of conventional and un-conventional natural gas, while protecting other resource values.

The BLM uses the RMP as a guidance document in its environmental review of leasing, exploration, and development of mineral resources. As a result of initial interdisciplinary environmental review of the Proposed Action, appropriate design features, BMPs, and SOPs were identified and would be applied if the APDs are approved. The federal minerals leased to Warren carry a contractual commitment to allow for development in accordance with the Lease Notice and stipulations of the lease.

The Rawlins RMP can be accessed at:
<http://www.blm.gov/wy/st/en/programs/Planning/rmps/rawlins.html>

The Resource Management Plan was amended by *The Bureau of Land Management Casper, Kemmerer, Newcastle, Pinedale, Rawlins, and Rock Springs Field Offices Approved Resource*

Management Plan Amendment for Greater Sage-Grouse (September 21, 2015) and the proposed action/decision has been analyzed for consistency with this plan.

Consistency with the EIS

The project is located within the area covered by the AR FEIS, which was written to assess natural gas drilling within the Atlantic Rim project area. The ROD for this action was approved on March 23, 2007. The Proposed Action is in conformance with this EIS.

The EIS can be accessed at the following location:

http://www.blm.gov/wy/st/en/info/NEPA/documents/rfo/atlantic_rim.html.

Relationship to Statutes, Regulations, or Other Plans

This EA is prepared in accordance with NEPA procedures, and is in compliance with all applicable laws and regulations passed subsequently, including Council of Environmental Quality (CEQ) regulations (40 CFR, Parts 1500-1508); U.S. Department of Interior (DOI) Regulations for Implementation of the National Environmental Policy Act of 1969 (43 CFR Part 46); DOI BLM NEPA Handbook, H-1790-1 (BLM January 2008); Guidelines for Assessing and Documenting Cumulative Impacts (BLM 1994); and the Departmental Manual (DM) part 516. This EA and the AR FEIS assess the environmental impacts of the Proposed Action and serves to guide the decision-making process.

This EA was also prepared in accordance with the following regulations and guidance policies: Endangered Species Act of 1973, as amended (ESA); Federal Land Policy and Management Act of 1976 (FLPMA); Title 54, U.S.C. 306108 (commonly known as the National Historic Preservation Act of 1966); Wyoming Standards and Guidelines for Healthy Rangelands; Environmental Justice (Executive Order 12898); Mineral Leasing Act of 1920; Clean Air Act, as amended; and the Clean Water Act of 1972, as amended. Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS), in accordance with the ESA, was not required.

Onshore Oil and Gas Order No. 1 (43 CFR 3164.1) requires that an APD provide sufficient detail to permit a complete appraisal of the technical adequacy of and environmental effects associated with the proposed project. The APD must be developed in conformity with the provisions of the lease, including the lease stipulations. The APD must provide for safe operations, adequate protection of surface resources and uses, and other environmental components, and must include adequate measures for reclamation of disturbed lands.

If the APD is inadequate or incomplete, the applicant must modify or amend the APD and/or BLM can set forth design features that are necessary for the protection of the surface resources, uses, and the environment and for the reclamation of the disturbed lands. For the purpose of this analysis, the design features for the APD are considered part of the Proposed Action.

The area was assessed per the Governor's Executive Order EO 2015-4 "*Greater Sage-Grouse Core Area Protection*". The proposed action does not fall within a Priority Habitat Management Area (PHMA), but it does fall within a General Habitat Management Area (GHMA).

Note: This project does not fit any of the specified criteria allowing for Categorical Exclusion from NEPA analysis under Section 390 of the Energy Policy Act of 2005, 43 CFR 46.210, and 516 DM, 11.9, and is therefore being analyzed herein.

AFFECTED ENVIRONMENT and ENVIRONMENTAL EFFECTS:

The site-specific environmental impacts discussed herein are issue-driven and encompass information found during on-site inspections by BLM specialists, and in supporting documentation submitted by the operator as part of the APD with Surface Use Plan (SUP) and by BLM specialists during interdisciplinary review.

Environmental issues during scoping and review of the Proposed Actions that warrant analysis and discussion are as follows:

Air Quality: The basic framework for controlling air pollutants in the United States is mandated by the 1970 Clean Air Act (CAA) and its 1990 amendments, and the 1999 Regional Haze Regulations.

Following drilling and completion activities, emissions from production activities would exist throughout the life of the proposed wells. The first would be air pollutants resulting from the venting and flaring of natural gas from the proposed wells themselves. The venting and flaring of natural gas is limited to what is allowed by Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases (NTL-4A). These emissions generally become greater and more frequent as the need to purge the wells of produced fluids increases towards the end of a well's life.

The Wyoming Department of Environmental Quality (DEQ) has air quality permitting requirements for existing, new, and modified oil and gas production units under the Wyoming Air Quality Standards and Regulations, Chapter 6, Section 2 (WAQSR). However, the proposed project is unlikely to trigger permitting requirements based on the quantity of emissions from each well. Since the project is located in the Concentrated Development Area (CDA) identified by the DEQ in Chapter 6, Section 2, *Permitting Guidance for Oil and Gas Production Facilities*, the operator is encouraged to apply presumptive Best Available Control Technology (BACT) for all sources of emissions associated with the proposed project. Application of BACT can include controls for flaring, completions, dehydration units, pneumatic pumps and controllers, and flashing emissions. Application of BACT would minimize both short-term and long-term impacts in the project vicinity since previous development has occurred and other active, producing wells are present in the immediate area.

The Wyoming Department of Environmental Quality (WDEQ) released the 2015 Annual Summary for the Wamsutter air quality monitoring site (<http://www.wyvisnet.com/Data/Reports.aspx>). Within this report, WDEQ identified zero days that exceeded the ambient air quality standards; all monitored values were within or below air quality standard limits. This is the most recent and available information the BLM has regarding air quality impacts within the RFO at this time. Further discussion on air quality can be found in the AR FEIS; RMP, p. 2-10 and Appendix 4.

Climate Change: Ongoing scientific research has identified the potential impacts of greenhouse gas (GHG) emissions (including carbon monoxide (CO), methane (CH₄), nitrous oxide (N₂O), water vapor, and several trace gases) on global climate.

In most of the BLM Rawlins Field Office area, mean annual temperatures have warmed 0.4 to 0.8 F° and mean annual precipitation has increased 0.1 to 0.3 inches per decade since 1976. In the western part of the BLM Rawlins Field Office area, mean annual temperatures (AT) have warmed 0.25 to 0.4 F° per decade and mean annual precipitation (PPT) has decreased 0.3 to 0.6 inches per decade since 1976 (NOAA, 2005). For both parameters, varying rates of change have occurred, but overall, there have been increases in both AT and PPT. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHG are likely to accelerate the rate of climate change.

Greenhouse Gas Emissions: The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. The latest report is “Climate Change 2007,” the IPCC Fourth Assessment Report (AR4) (IPCC 2007). In AR4, the IPCC concluded that warming of the climate system is unequivocal and most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations. The IPCC further concluded that, “continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century.”

The GHGs projected to be emitted by the project are CO₂, CH₄ and N₂O. The atmospheric lifetimes for CO₂, CH₄ and N₂O are on the order of years (IPCC, 2007). Emissions of GHGs from any particular source become well-mixed throughout the global atmosphere. GHG emissions from all sources contribute to the global atmospheric burden of GHGs, and it is not possible to attribute a particular climate impact in any given region to GHG emissions from a particular source. It is possible to state only that GHG emissions produced by the Proposed Action and action alternatives would add to the global burden of GHGs and may therefore contribute to climate change impacts to the Affected Environment produced by world-wide emissions; these impacts may include those shown above.

The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net impacts from the Proposed Action on climate. When further information on the impacts to climate change is known, such information will be incorporated into the BLM’s planning and NEPA documents as appropriate.

Cultural and Historic Resources: Cultural resources within the proposed project area include prehistoric lithic scatters, open campsites and historic debris scatters common to the region. One historic trail, the Rawlins to Baggs Road, passes through the immediate area. Class III cultural resource inventories were conducted for the entire project area in order to identify any historic properties that may be affected by the proposed project in conformance with the National Historic Preservation Act (NHPA, 54 U.S.C. 306108) and implementing regulations at 36 CFR 800. A detailed discussion of the affected environment for cultural resources, including the

historic trails, can be found in the AR FEIS Section 3.11 Cultural and Historical Resources, pp. 128–132.

Adverse effects to historic trails and roads were identified in the AR FEIS. A Programmatic Agreement (PA) was executed between the BLM, State Historic Preservation Office, Advisory Council on Historic Preservation, proponents, and other interested parties to develop the necessary mitigation measures to minimize impacts to the settings of any historic trails and roads. As a result, additional general, project, and site specific mitigation measures and design features were developed. These restrictions or stipulations in the form of SOPs, BMPs and design features would be incorporated in the project design features and would be included in the project APDs in order to mitigate any potential impacts.

The historic Rawlins to Baggs Trail is located to the east of the proposed project POD. The GP Federal 1591 5-10 well, the GP Federal 1591 8-9 well, and the GP Federal 1591 3-10 access road would be situated within two mile view shed of contributing segments of the historic trail. Under the terms of the programmatic agreement, projects within two miles of the historic trail are considered an adverse effect. The PA addresses mitigation of adverse effects to the historic trails and mitigation has been completed in regards to these adverse effects. No new or unique impacts were identified from this proposal than those already disclosed in the AR FEIS.

Wildlife: The long-eared myotis, fringed myotis, sage thrasher, loggerhead shrike, Brewer's sparrow, sagebrush sparrow, ferruginous hawk, burrowing owl, Greater Sage-Grouse are the BLM sensitive species with the potential to occur in the habitat surrounding the Proposed Action. All of these species are associated with sagebrush, saltbush, or greasewood habitats, which are found within the proposed project area. Sagebrush provides breeding, nesting, and brood rearing habitat for Brewer's sparrows, sage thrashers, and sagebrush sparrows. The proposed project lies within 2 miles of nesting and brood rearing habitat for the Upper Wild Cow Creek lek and is also within a mapped GHMA. The proposed project lies within pronghorn crucial winter range. No new or unique impacts were identified from this proposal than those already disclosed in the AR FEIS.

Range and Livestock: The proposed well in Section 6 is within the East Muddy Grazing Allotment (#00433) and the remaining seven proposed wells are within the Wild Cow pasture of the Cherokee Grazing Allotment (#00408). The East Muddy Grazing Allotment Contains 5,497 public acres and is permitted for spring cattle use from April 1 to May 31, with 134 cattle using up to 270 Animal Unit Months (AUMs) of forage. The Wild Cow pasture of the Cherokee Grazing Allotment contains 10,603 public acres and is permitted for spring cattle and sheep use, using up to 1,255 AUMs of forage. These AUMs are split into 917 cattle AUMs and 338 sheep AUMs. Both Allotments are used for short duration livestock grazing and are rotated with other grazing allotments to maintain or improve rangeland health. No new or unique impacts were identified from this proposal than those already disclosed in the AR FEIS. For further discussion about range and livestock in general can be found in the AR FEIS (Ch. 3 and Ch. 4).

Water Resources: This watershed was assessed in 2001 and 2011 (Upper Colorado River Basin) for conformance with the Wyoming Standards for Healthy Rangelands. At that time, although the watershed area containing the proposed project was meeting Standards, the drainage below the proposed project area (lower Muddy Creek) was on the State of Wyoming 303(d) list

of impaired water bodies due to oil and gas development and livestock grazing; and therefore, did not meet Standard #5- Water Quality. No new or unique impacts were identified from this proposal than those already disclosed in the AR FEIS.

CUMULATIVE IMPACTS

The AR FEIS area encompasses 270,080 acres. There have been approximately 3000 acres disturbed by oil and gas activity. Approximately 60 acres have been reclaimed and are considered suitable habitat for the GRSG, pronghorn, Brewer's sparrow, loggerhead shrike, sagebrush sparrow and sage thrasher. The reclaimed acreage brings the total disturbed area to 2,940 acres. The current percentage of disturbed and reclaimed habitat (but not considered suitable for sagebrush habitat) is 1%.

In total, the approval of the Proposed Action would add approximately 51 acres of additional surface disturbance, resulting in 2,990 total acres and 1.1% of suitable habitat removed.

Impacts as a result of the Proposed Action, in conjunction with existing and reasonably foreseeable development projects, would continue to contribute to changes in the area, which exhibit increased examples of human intrusion and occupancy. Disturbance may continue to reduce the carrying capacity for livestock grazing and wildlife. Recreational activities may also continue to be reduced as disturbances visually disrupt the landscape and alter wildlife habitat use. Visitors would experience increased sights and sounds of oil and gas development. Noise from oil and gas operations would be more widespread and affect more individuals and wildlife. Increased noise levels could cause recreationists and wildlife to find alternative areas in which to recreate and live. Visual impacts to the historic trails would be slightly increased during construction activities.

Cumulative impacts of development in the region of influence--which includes oil and gas development--would increase emissions for all sources of carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO₂), PM₁₀, and PM_{2.5}, but these increases would not cause any exceedance of state or federal ambient air quality standards. Moreover, regional air quality monitoring by federal and state agencies would identify any exceedance of state air quality standards, should they occur.

As described in the analysis, the Proposed Action may contribute to the effects of climate change to some extent through GHG emissions. The lack of scientific tools designed to predict climate change at regional or local scales limits the ability to quantify potential future impacts.

The Chokecherry Sierra Madre Wind Energy Project is a reasonably foreseeable action within the region. The analysis of impacts associated with this development are discussed in the Chokecherry and Sierra Madre Final EIS, available online at: http://www.blm.gov/style/medialib/blm/wy/information/NEPA/rfodocs/chokecherry/feis.Par.72118.File.dat/CCSM_Vol_II-Ch5.pdf.

Further discussion in general regarding cumulative impacts can be found in the AR FEIS, Ch. 5, pp. 5-1 to 5-26.

Standard Operating Procedures (SOPs), Best Management Practices (BMPs), and Mitigation

Site-specific design features, as identified during BLM interdisciplinary review, would be applied to the APDs, in addition to standard design features, SOPs, and BMPs found in the SUP as Conditions of Approval (COAs) (see Appendix 1). After review of the impacts described above, no mitigation measures are proposed or necessary.

RECLAMATION

Interim reclamation would commence within six months (weather and wildlife stipulations permitting) of drilling completion, reducing the well pad size to approximately a two acre production well site. All unneeded portions of the well site would be backfilled, leveled, re-contoured, reclaimed, and re-seeded with native vegetation. This includes pits, cut and fill, and soil stockpile areas. Total (final) reclamation would take place when the well(s) are no longer productive, and are plugged and abandoned. The seed mix is located in the Reclamation Plan submitted by the operator. The goal of reclamation would be to establish species composition, diversity, structure, and total ground cover appropriate for the desired plant community. All reclamation standards and guidelines are located in the Wyoming State Reclamation Policy (IM-WY-2012-032), as well as, in the Rawlins RMP (Appendix 36).

Upon the determination that the wells are not, or no longer, productive and/or are plugged and abandoned, final reclamation of the entire well pad and location, including the access roads, pipeline, and associated ROWs would take place in accordance with the operator's site-specific reclamation plan. Plans for reclamation are included in the well SUP, design features, and the submitted site-specific reclamation plans. Reclamation is discussed in general in the AR FEIS, Appendix B.

Persons/Agencies Consulted

Individual	Title	Organization
Nyle Layton	Natural Resource Specialist (NRS)	BLM
Dave Wyckoff	Realty Specialist	BLM
Sandra Taylor	Wildlife Biologist	BLM
Natasha Keierleber	Archaeologist	BLM
Kay Nation	Legal Instruments Examiner	BLM
Susan Foley	Soil Scientist	BLM
Andy Warren	Rangeland Management Specialist	BLM
Kelly Owens	Hydrologist	BLM
David Hullum	Outdoor Recreation Planner	BLM
Andrew Kauppila	Petroleum Engineer	BLM
Ben Smith	Wild Horse and Burro	BLM
Mark Newman	Geologist	BLM
Ray Ogle	NRS/Reclamation	BLM
Susan Foley	Planning and Environmental Coordinator	BLM
Megan Vasquez	Civil Engineer Technician	BLM
Chris Harold		Warren Resource Co.
Glendon Merrill		Warren Resource Co.

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Map 1

Grace Point Sub Area POD A

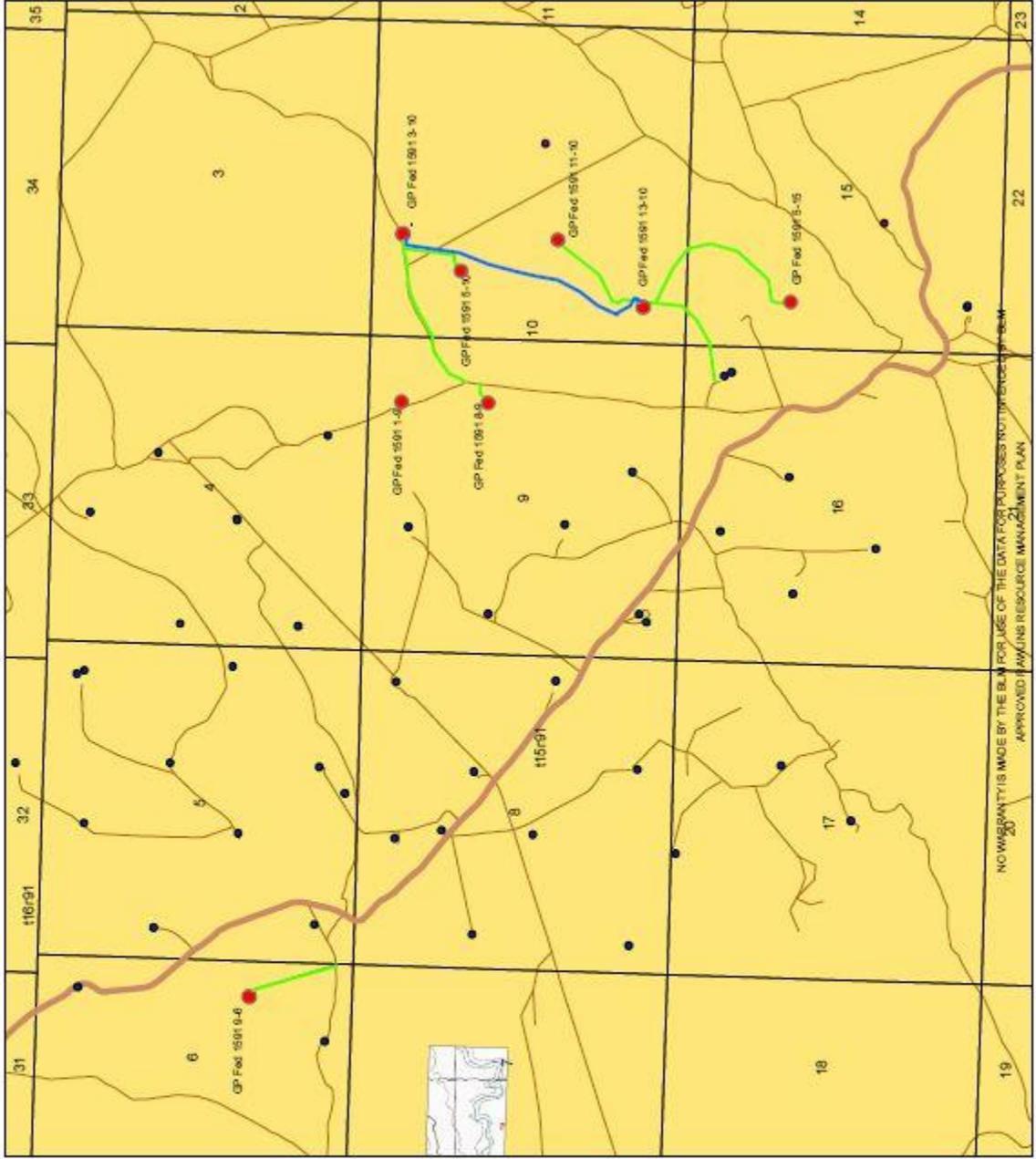


Legend

-  Interstate
-  Proposed Well Pad
-  Proposed Access Road
-  Proposed Pipeline



1:24,000
WYOMING



APPENDIX 1

General Design Features

1. Approval of this Application for Permit to Drill (APD) does not warrant that any party holds equitable or legal title.
2. All lease exploration, development, construction, production, operations, and reclamation activity would be conducted in a manner which conforms to all applicable federal, state, and local laws and regulations.
3. All lease operations are subject to the terms of the lease and its stipulations, the regulations of 43 CFR Part 3100, Onshore Oil and Gas Orders, Notices to Lessees (NTL's), the approved APD, and any written instructions or Orders of the Bureau of Land Management (BLM) Authorized Officer (AO).
4. The approval of this APD does not grant authority to use off-lease federal lands. Facilities approved by this APD and/or Sundry Notices that are no longer included within the lease, due to a change in the lease or unit boundary would be authorized with a right-of-way. Similarly, should unit or lease boundaries change during the life of the project, the Operator would be responsible for acquiring necessary rights-of-way for affected facilities. Failure to do so may cause the operation to be shut-in.
5. This permit would be valid for a period of two years from the date of APD approval or until lease expiration or termination, whichever is sooner. APD extensions may be requested and granted for up to two additional years, but not to exceed a total sum of four years from the initial APD approval date. Should a permit extension be requested, it must be submitted prior to the permit expiration date via a Sundry Notice (Form 3160-5) to the AO for approval. If the permit terminates, any surface disturbance created under the application would be reclaimed in accordance with the approved reclamation plan found herein.
6. The Operator would submit a Sundry Notice (Form 3160-5) to the AO for approval prior to beginning any new surface-disturbing activities or operations that are not specifically addressed and approved by this APD.
7. The Operator may submit to the AO's Representative written requests (including documentation, supporting analysis and an acceptable plan for mitigation of anticipated impacts) for exception, waiver, or modification to this approved APD, associated design features, or other requirements. Such written approval would be obtained prior to commencement of operations that cause any deviation from the approved APD and associated limitations. Emergency approval may be obtained orally, but such approval would not waive the written reporting requirement.
8. **At least 48-hours prior** to beginning any APD related construction (e.g. access road, well pad, pipeline) and/or reclamation activities (e.g. dirt-work, seeding) the operator would

notify the BLM via internet notice.

9. All construction of the well pad, flare pit, reserve pit, roads, flow lines, production facilities, and all associated infrastructure on federal lands would be monitored onsite by a licensed professional engineer OR designated qualified inspector (to be named at the time of construction notification) who would serve as the Operator's Compliance Coordinator to ensure construction meets the BLM-approved plans.
10. Within **24-hours** of spudding the well, the spud date would be submitted to the BLM via internet notice. A follow up report on Form 3160-5 confirming the date and time of the actual spud would be submitted to this office within 5 working days from date of spud.
11. At **least 24-hours in advance** of all BOP tests, running and cementing all casing strings (other than conductor casing), pluggings, DSTs and/or other formation tests, and drilling over lease expiration dates, notification would be submitted to the BLM via internet notice.
12. The operator would submit a production facility layout (Onshore Order 1, Section III. D.4.d. and D.4.i., or Section VIII. A.) for approval (prior to construction) which includes permitted location boundaries, production facility placement, access road inlet, and cut/fill slopes.
13. A site facility diagram (Onshore Order 3, Section III. I. and 43 CFR 3162.7-5(d)) for the purpose of a site security plan (Onshore Order 3, Section III. H. and 43 CFR 3162.7-5(c)) would be filed no later than 60 calendar days following first production.
14. Use of any tank heater/burners in production storage tanks must be approved prior to installation and/or use by the AO. Failure to obtain approval for installation/use of tank heater/burners in any production storage tanks may result in a Written Order (WO), Incidence of Non-compliance (INC), assessments and potentially a Shut-In Order.
15. No below or partially below ground fluid storage/containment tanks or vessels are to be used without prior approval of the AO. Below or partially below ground fluid storage/containment tanks or vessels would require systems for the prevention, containment, detection, and monitoring of any below ground leakage (e.g. secondary containment and leak detection/monitoring systems, etc.) A production facility layout depicting the proposed vessel construction and installation/location must be submitted for prior approval via APD or Sundry. As applicable, all subsurface vessels must comply with the Wyoming Storage Tank Act of 2007 (W.S. 35-11-14-29) and/or the Wyoming DEQ Underground Injection Control (UIC) Program.

Operations

Upon request, Operator must be prepared to provide copies of applications for, and approved copies of, federal, state, and local operating permits.

1. All survey monuments found in the area of operations would be protected. Survey monuments include, but are not limited to: General Land Office and BLM Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and

triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the Operator would immediately report the incident, in writing, to the AO and the respective installing authority if known. Where General Land Office or BLM Right-of-Way monuments or references are obliterated during operations, the Operator would secure the services of a registered land surveyor or a BLM cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the "Manual of Surveying Instructions for the Survey of the Public Lands in the United States," latest edition. The Operator would record such survey in the appropriate county and send a copy to the AO. If the Bureau cadastral surveyors or other federal surveyors are used to restore the disturbed survey monument, the Operator would be responsible for the survey cost.

2. If any cultural values [sites, artifacts, human remains] are observed during operation of this lease/permit/right-of-way, they would be left intact and the AO notified. The AO would conduct an evaluation of the cultural values to establish appropriate mitigation, salvage or treatment. The Operator would be responsible for informing all persons in the area who are associated with this project that they would be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the Operator would immediately stop work that might further disturb such materials, and contact the AO. Within seven (7) days after the operator contacted the BLM, the AO would inform the Operator as to: whether the materials appear eligible for the National Register of Historic Places; the mitigation measures the Operator would likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and, a time-frame for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate. The AO would provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the Operator would then be allowed to resume construction measures.

The Operator would be responsible for informing all persons associated with this project that they would be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site. If archaeological, historical, or vertebrate fossil materials are discovered, the Operator would suspend all operations that further disturb such materials and immediately contact the AO. Operations would not resume until written authorization to proceed is issued by the AO.

The Operator would be responsible for the cost of any mitigation required by the AO. The AO would provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the Operator would be allowed to resume operations.

3. If paleontological resources, either large or conspicuous, and/or of a significant scientific value are discovered during construction, the find would be reported to the AO immediately. Construction would be suspended within 250 feet of said find. An evaluation of the paleontological discovery would be made by a BLM-approved professional paleontologist within five (5) working days, weather permitting, to determine the appropriate action(s) to

prevent the potential loss of any significant paleontological values. Operations within 250 feet of such a discovery would not be resumed until written authorization to proceed is issued by the AO. The Operator would bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operation.

The Operator would be responsible for informing all persons associated with this project that they would be subject to prosecution for damaging, altering, excavating or removing any archaeological, historical, or vertebrate fossil objects or site. If archaeological, historical, or vertebrate fossil materials are discovered, the Operator would suspend all operations that further disturb such materials and immediately contact the AO. Operations would not resume until written authorization to proceed is issued by the AO.

Within five (5) working days, the AO would evaluate the discovery and inform the Operator of actions that would be necessary to prevent loss of significant cultural or scientific values.

The Operator would be responsible for the cost of any mitigation required by the AO. The AO would provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the Operator would be allowed to resume operations.

4. If any dead or injured threatened, endangered, proposed, or candidate animal species is located during construction or operation, the U.S. Fish and Wildlife Service's Wyoming Field Office (307-772-2374), its law enforcement office (307-261-6365), and the BLM Rawlins Field Office (307-328-4200) would be notified within 24 hours. If any dead or injured sensitive species is located during construction or operation, the Rawlins Field Office would also be notified within 24 hours.
5. Operators and Operator's sub-contracted personnel would not intentionally harm or harass wild horses, other wildlife, or domestic livestock.
6. ROW, mineral lease, mining claim, and permit holders would monitor and control noxious and invasive weeds, according to an approved weed management plan, on project-disturbed areas and native areas infested as a direct result of the project. The control methods would be in accordance with guidelines established by the EPA, BLM, state and local authorities. Prior to the use of pesticides, the Operator will obtain written approval from the AO - meaning an approved Pesticide Use Proposal form - showing the type and quantity of material(s) to be used, pest(s) to be controlled, and method of application. Copies of daily Pesticide Application Records (required by the State of Wyoming) and Summary Herbicide Use Reports are due monthly to the BLM AO-Weed Coordinator.
7. The Operator would be responsible for the prevention and suppression of fires on public lands caused by its employees, contractors, or its subcontractors. During conditions of extreme fire danger, surface use operations may be either limited or suspended in specific areas, or additional measures may be required by the AO. Should a fire occur, it would be immediately reported to this office by calling 307-328-4200, and notifying the Fluid Minerals staff.

8. Emissions of particulate matter from well pad, road, and other facility construction, operation, and reclamation activities would be minimized by application of water or other dust suppressants. Dust inhibitors (surfacing materials, dust suppressants, and water) would be used as necessary on locations that present a fugitive dust problem. The use of chemical dust suppressants on public surface would require prior approval from the AO.
9. If groundwater or permeable/porous subsoil or bedrock is encountered upon construction of the pad or pits, or upon drilling and completing shallow holes for surface conductor, rat/mouse holes, or water supply well, the Operator must immediately notify the AO's Representative before proceeding.
10. The Operator would comply with the Hazardous Materials Management Plan/Summary in the RMP ROD (Appendix 32) and/or the appropriate EIS ROD, including requirements to transport, store, utilize, and dispose of hazardous substances. The Operator would maintain a hazardous substances release contingency plan that would include, among other things, provision to notify the AO in the event of any release of hazardous substances associated with project operations. Treatment chemicals may require additional storage and containment measures and facilities depending on chemical classification and hazard.
11. If a portable sewage treatment facility is moved onto location, the well/lease Operator would provide the BLM AO a copy of the facility Operator's notification letter to the Wyoming Department of Environmental Quality. Facility operations would comply with BLM requirements, including unauthorized discharge notification and reclamation of disturbed surfaces.
12. Only those hazardous wastes that qualify as exempt, under the Resource Conservation and Recovery Act (RCRA), Oil and Gas Exemption, may be disposed of in the reserve pit. Generally, oil or gas wastes are exempt if they 1) have been sent down hole and then returned to the surface during oil/gas operations involving exploration, development, or production, or 2) have been generated during the removal of produced water or other contaminants from the oil/gas production stream. The term hazardous waste, as referred to above, is defined as a listed (40 CFR 261.31-33) or characteristic (40 CFR 261.20-24) hazardous waste under RCRA.
13. Any spilled or leaked oil, produced water or treatment chemicals must be reported in accordance with NTL-3A and immediately cleaned up in accordance with BLM requirements. This includes clean-up and proper disposition of soils contaminated as a result of such spills/leaks. The Operator would segregate, treat, and/or bio-remediate contaminated soil materials as authorized via Sundry Notice (Form 3160-5) or dispose of contaminated soils at a permitted waste facility. Treatment chemicals may require additional storage and containment measures and facilities depending on chemical classification and hazard.
14. The Operator would install an identification sign consistent with the requirements of 43 CFR 3162.6 immediately upon completion of the well pad/location construction operations.

15. The Operator would contain and remove all debris, unused equipment, and other waste materials not needed for production. Waste materials would be disposed of at an approved disposal facility.
16. Upon APD expiration, it is the responsibility of the Applicant/Operator to see that all stakes, flagging, posts or other materials placed on the locations and/or access roads, pipelines and associated rights-of-way are removed. Operator must immediately cease all operations associated with preparing to drill the well and begin final reclamation activities of all APD related disturbance, pursuant to the approved APD design features and to be completed within 6 months of the APD expiration date.

Site Specific Design Features

1. For GP Federal 1591 1-9, 5-10, 5-15, 8-9, 13-10, 3-10 and 11-10, avoid surface disturbing activities and disruptive activities, geophysical surveys, and organized recreational activities (events) that require a special use permit in suitable Greater Sage-Grouse and early brood rearing habitat within 2 miles of the perimeter of an occupied lek, or within identified nesting and early brood rearing habitat, from March 15 – June 30.
2. For GP Federal 1591 9-6, surface disturbing and disruptive activities are prohibited within 0.75 miles during the period of February 1-July 31 for the protection of the American kestrel.
3. For GP Federal 1591 1-9, 5-10, 5-15, 13-10, 3-10 and 11-10, surface disturbing and disruptive activities are prohibited within 0.75 miles during the period of April 1-September 15 for the protection of burrowing owl.
4. For GP Federal 1591 1-9, 9-6, 8-9 and 3-10, surface disturbing and disruptive activities potentially disruptive to nesting raptors are prohibited within 1 mile during the period of March 1 to July 31 for the protection of ferruginous hawk.
5. For GP Federal 1591 9-6, surface disturbing and disruptive activities are prohibited within 1 mile during the period of February 1-July 15 for the protection of Golden eagle.
6. For GP Federal 1591 9-6, surface disturbing and disruptive activities are prohibited within 0.75 miles during the period of February 1-July 15 for the protection of great horned owl.
7. For GP Federal 1591 9-6, surface disturbing and disruptive activities are prohibited within 0.75 miles during the period of February 1-July 15 for the protection of unknown raptors.
8. For GP Federal 1591 5-10, 5-15, 9-6, 13-10, 3-10 and 11-10, surface disturbing and disruptive activities are prohibited during the period of April 10 to July 10 of each year to protect neo-tropical and other migratory bird species and their habitats.
9. For GP Federal 1591 9-6, surface disturbing and disruptive activities within big game crucial winter range (pronghorn) will not be allowed during the period of November 15 to April 30.

10. Above-ground structures, production equipment, tanks, transformers, and insulators not subject to coloring requirements for safety shall be painted the color of “Covert Green” (5Y 4/2).
11. If production facilities are needed, facilities will be placed as close to the entrance of the well pad (where access road ties into the well pad) and will be placed on grade or cut portions of the pad.
12. For GP Federal 1591 9-6, 8-9, and 3-10 access road, the Operator will select (with BLM Authorized Officer approval) and use a seed mix most applicable to each disturbed location, with the goal of restoring individual disturbed sites to closely resemble the pre-disturbance native plant communities, as provided in Appendix A of the ROD, “Project Reclamation Plan.”
13. Unless otherwise authorized, for GP Federal 1591 8-9, 9-17, and 11-17, the pipelines/utilities will be plowed or ripped into the un-bladed surface (using technology that does not require trenching). If such techniques are infeasible due to terrain or geology, the surface shall be brush-hogged and the utilities placed no farther than the outside edge of the ditch slope unless otherwise authorized. When trenching is required, to every extent possible, the intact vegetation root base shall not be disturbed during spoil replacement.
14. For GP Federal 1591 8-9, and 9-6, no blading will be allowed outside the staked well location for placement or removal of the topsoil stockpile.
15. For GP Federal 1591 8-9, the access road will be surfaced with material compatible in color with the local environment.
16. The Potential Fossil Yield Classification (PFYC) system has identified the area as having a moderate to high potential to yield scientifically significant paleontological resources. A pre-construction survey will be performed by a consulting paleontologist holding a valid BLM Resources Use Permit. Submission of reports will be done directly to the BLM by the paleontologist. A recommendation for mitigation including no further mitigation, on site monitoring, spot checking or testing will be made in the report.

Construction

1. All facilities on location that have the potential to leak/spill oil, glycol, methanol, produced water, condensate, or other fluids which may constitute a hazard to the environment, public health or safety (including, but not limited to, drain sumps, sludge holdings, and chemical containers), would be within secondary containment, impervious to those fluids, exclusive of wildlife and livestock, with animal/bird escape capability, and able to contain a minimum of 110% of the volume of the largest storage vessel, respective to content, or 100% with at least one foot of freeboard, whichever is greater, so that any spill or leakage would not drain, infiltrate, or otherwise escape to ground water, surface water, or navigable waters before cleanup can be completed (within 72 hours).

2. Construction over and/or immediately adjacent to existing pipelines would be coordinated, and in accordance with, the relevant pipeline companies' policy.
3. Fencing would be installed around produced water, oil, and condensate tank batteries in order to help maintain the integrity of the surrounding containment structure and to prevent livestock and wildlife from entering the area in case of a leak or spill.
4. All open vent stack equipment would be designed and constructed to prevent entry by birds and bats and to discourage perching.
5. The immediate repair/replacement (to BLM standards) of any range infrastructure breached, altered, or damaged by construction, drilling, or operation activities related to this APD would be the responsibility of the Operator. All fence relocations would be in accordance with BLM approval.
6. Construction, maintenance, and reclamation operations with frozen material or during periods when the soil material is saturated is expressly prohibited. If equipment, including licensed highway vehicles, creates ruts in excess of four (4) inches deep, the soil would be deemed too wet to adequately support maintenance and/or heavy equipment.
7. Accumulated snow present on the ground at the outset of construction, maintenance, or reclamation activities would be removed before the soil is disturbed and piled downhill and/or downwind from the disturbed area. Equipment used for any non-construction snow removal operations would be equipped with 6" shoes to ensure blades do not remove topsoil or vegetation. Written approval must be obtained before snow removal related to a federal action but outside of designated disturbance areas is undertaken. When blading/removing snow, drifts/berms would be constructed with a gap of 20-30 yards every ¼ mile, to allow unobstructed movement of wildlife, livestock and human activities.
8. Clearly remove, segregate, and delineate from all other spoils, all available topsoil from constructed locations and surface disturbances including areas of cut and fill. Stockpile and clearly identify topsoil at the site for use in reclamation on all areas of surface disturbance (well pads/locations, roads, pipelines, etc.).
9. Plugs or embankments providing wildlife with access out of and across open pipeline trenches would be installed, at minimum, every 1320 linear feet along open pipeline trenches.
10. No construction and/or reclamation would block or change the natural course of any drainage, nor would topsoil, waste, or fill material be deposited below high water lines in riparian areas, flood plains, or in natural drainage ways. The lower edge of soil or other material stockpiles would be located outside active floodplains. All spoils would be placed where they can be retrieved without creating additional surface disturbance and where they do not impede and/or contribute sediment to watershed and drainage flows. The Operator would also reconstruct and stabilize stream channels, drainages, and ephemeral draws to exhibit similar hydrologic characteristics that were found in stable, naturally occurring and functioning systems.

11. Drainage and runoff would be diverted away from all new construction naturally or through the use of spoil material to create berms. All drainage structures would approximate topographic contour lines, have a grade no greater than 0.5 - 1 percent, would release water onto natural undisturbed ground without causing additional accelerated erosion. The use of riprap or other armoring to prevent erosion may be necessary (BLM Manual 9113). Drainage structures would not discharge directly into/onto natural drainages/channels. Water-bars, waddles, hay bales, and/or silt fences would be used as needed to reduce surface runoff velocity and promote upland sediment deposition, thus reducing drainage/channel sedimentation and erosion.
12. Silt fences, if needed, would be installed after topsoil removal and before pad leveling begins and must remain in place until interim reclamation is complete and there is adequate vegetation present to stabilize the soil. Silt fences would be constructed in locations where surface erosion is evident or potential for surface erosion exists such as areas of steep slopes or highly erosive soils. Fences would be installed at the inside edge of disturbance.
13. Silt fences would be constructed using metal posts that are at least 5 feet long with at least 2 feet in the ground (3 feet above ground) with 8 feet spacing if a wire re-enforcement backing is used or 6 feet spacing if no wire backing is used. The fabric is to be toed into the ground at the base of the fence a minimum of 8 inches deep and an 18 inch overlap is required when splicing two fences together. The fabric is to be installed on the uphill side of the metal posts and attached to the posts at least every 6 inches along the length of the post. Silt fences are to be inspected at least once a month or 48 hours after a rain storm event. If holes in the fence or undercutting of the fence are found, repair is required within 48 hours of discovery. When silt accumulates to a height equal to two-thirds the height of the fabric, the silt is to be cleaned out and deposited on the excess spoils pile.
14. Sediment fences, straw wattles, erosion mats, and/or hay bales should be used to minimize erosion and sediment transport on disturbance area.
15. If temporary surface pipelines, as authorized by the AO, are used to transport water, they would be placed/removed when the ground surface is dry. Surface blading prior to line placement is prohibited. The pipelines must be removed within 30 days after well completion (or determination of inactivity).
16. Construction control stakes would be placed as necessary to ensure construction of the well pad, topsoil stockpile, spoil pile, and outer limits of the area to be disturbed in accordance with the specifications outlined in the APD. The Operator would assume full responsibility for protecting all stakes and offsetting any additional stakes or grades which may be necessary.
17. Cathodic protection wells would be drilled on the existing well pad, placed so as not to interfere with re-contouring of cut and fill slopes during interim reclamation, designed and constructed to prevent commingling and contamination of water aquifers. The AO would be notified of any water flows at surface and the problem would be resolved promptly.

Roads

1. All access roads and drainage control structures, whether existing or newly-constructed, would be both constructed to resource road standards and regularly maintained in a safe and usable condition as outlined in BLM Manual, Section 9113. A regular maintenance program may include, but is not limited to, blading, ditching, culvert installation, dust control, and gravel surfacing or other activities as specified by the AO. The Lessee and/or Operator would enter into a maintenance agreement with all other "authorized users" of the common access road(s) to the well site. The costs of road maintenance in dollars, equipment, materials, labor, and other related expenses would be shared proportionally among the "authorized users." Upon request, the AO would be provided copies of any maintenance agreement or agreements.
2. All operators and operator's representative vehicles are restricted to authorized travel routes only and would not use any other access route, e.g.; two-track roads, trails, and pipeline rights-of-way to access the drill/well pad and any ancillary facilities.
3. Two-track roads would not be cut-off as a direct result of construction, maintenance, or reclamation of the well access road or associated well facilities, unless authorized by the BLM.
4. Prior to construction, road(s) would be surveyed and staked with construction control stakes set continuously along the centerline at maximum 100-foot intervals (less where needed to be inter-visible) and at all tangent and curve control points, fence or utility crossings, and culverts. In addition to centerline stakes, slope stakes would be placed at the top of the cut and the bottom of the fill for those portions of the road that are engineered.
5. Before proposed road construction activities begin, the topsoil must be bladed to the side of the road and stockpiled. The topsoil stockpile would be contoured so as to prevent water ponding or flow concentration. Once the borrow ditch and the cut slopes are constructed, cleared vegetative material and topsoil that is windrowed would be spread back onto the cut/fill slopes of the road, removing any windrows or berms remaining at the edge of the road.
6. The minimum travel-way width of the immediate access road would be 14 feet with turnouts at least 10 feet in width. No structure would be allowed to narrow the road top. The inside slope would be 4:1. The bottom of the ditch would be a smooth V with no vertical cut in the bottom. The outside slope would be 2:1 or flatter. After the road is crowned and ditched with a .03 - .05 ft/ft crown the topsoil and windrowed vegetative material would be pulled back down on the cut slope so there is no berm left at the top of the cut slope. Turnouts would be spaced at a maximum distance of 1000 feet and would be inter-visible. If the access road crosses a floodplain, the ditch would be flat-bottomed so as to provide material to raise the road, unless otherwise approved by the AO.
7. If soils along the access road route are dry during road construction, use, and/or maintenance, fresh water would be applied to the road surface to facilitate soil compaction and minimize soil loss as a result of wind erosion.

8. Construction and surfacing of the new access road would be complete prior to moving drilling equipment onto the well pad and the presence of heavy vehicular traffic. Compact the top foot of sub-grade in even six (6) to eight (8) inch lifts to established standards, adding water as needed for compaction. Surface with an appropriate grade of gravel to a minimum depth of four (compacted) inches.
9. All cattle guards would be designed and maintained consistent with BLM standards and would be a minimum of 16 feet wide and 8 feet long; set on either timber, pre-cast concrete, or cast-in-place concrete bases at right angles to the roadway; have an adjacent 16 foot wide bypass gate; not narrow the road surface; and have fence and end panels on either side constructed using 3 posts with braces.
10. All culverts would be a minimum of 18 inches in diameter. Culverts would have a minimum of 12 inches of fill or 1/2 the pipe diameter, whichever is greater, placed on top of the culvert, and would be of length sufficient to allow at least 12 inches of culvert to extend beyond the toe of any slope. The inlet and outlet would be set on grade. No rocks would be used in the bed material and no rocks greater than 2 inches in diameter would be immediately adjacent to the culvert. The entire length of pipe would be bedded on native material before backfilling, which would be completed using unfrozen material and rocks no larger than two inches in diameter; compact the backfill evenly in 6-inch lifts on both sides of the culvert. A permanent marker would be installed at both ends of the culvert to help prevent traffic from damaging the culvert. Additional culverts would be placed in the new access road as the need arises or as directed by the AO.
11. Wing-ditches would be staked and constructed at a slope of .5 to 1.0 percent down slope unless otherwise approved by the AO. All wing/drainage ditches and culverts would be kept clear and free-flowing, and would also be maintained in accordance with the original construction standards. Drainage structures would not discharge directly into/onto natural drainages/channels, and/or use riprap or other armoring to protect from erosion (BLM Manual 9113).
12. Low water crossings would be constructed perpendicular to the channel and at original channel elevation in a manner that would not block or restrict existing channel flow. Excavated material would be stockpiled for use in reclamation of the crossings.

Pits

1. All oil and gas pits that could contain fracture/stimulation fluids, recycled pit fluids, or produced water, except those only containing fresh-water based constituents, are required to be lined with an impermeable (12 mil minimum with a permeability less than or equal to 1×10^7 cm/sec) liner. The liner would be physically and chemically-compatible with all substances which it may contact and would be of sufficient strength and thickness to withstand normal installation and use, and installed so that it would not leak. The liner would be installed over a smooth sub-grade, matting, or fill materials (e.g. sifted dirt, sand, or bentonite) free of pockets, loose rocks, and other objects that could damage the liner.

2. The only fluids/waste materials which are authorized to go into reserve pits are RCRA-exempt exploration and production wastes. Any evidence of RCRA non-exempt wastes being put into the reserve pit may result in the BLM Authorized Officer requiring specific testing and closure requirements.
3. All pits are required to maintain a minimum of 2 feet of freeboard between the liquid level and the top of the liner. If operations cause fluid levels in pits to rise above the required freeboard, immediate notification would be provided to the AO with concurrent steps taken to cease the introduction of additional fluids, until alternative containment methods can be approved.
4. Flaring of gas into the reserve or completion pits would not be allowed without prior approval from the AO.
5. All pits would be kept free of trash, debris, solid wastes, and other unauthorized waste materials including oil and liquid hydrocarbons.
6. For the protection of livestock and wildlife, all pits and open cellars would be fenced on all sides, with corner bracing, immediately upon construction. Reserve, flare, completion, and production pits would be adequately fenced during and after drilling operations until pits are reclaimed so as to effectively keep out wildlife and livestock. Operator would, within ten (10) days of discovery, remove any floating hydrocarbons from pit surface or install netting over the pit. Approved netting (mesh diameter no larger than one inch) is required over any pit that contains or is identified as containing hydrocarbons or hazardous substances (per RCRA 40 CFR Part 261 or CERCLA Section 101(14) (E)).
7. Pits would be dried, backfilled, and closed within six (6) months from well completion (total depth) or well plugging. Pits must be void of all free fluids prior to backfilling. Pit trenching or squeezing is prohibited. Pits may be dewatered/dried in the following manner: natural evaporation, mechanical aeration, chemical and mechanical solidification (e.g. with fly ash, cement kiln dust, etc.) and/or hauled to an approved DEQ disposal site. The installation/operation of any sprinklers, misters, aerators, pumps, hoses, and related equipment would ensure that water spray or mist does not drift outside of the pit. All other dewatering/drying, removal or disposal methods not listed in the APD and or Design features would have prior written approval from the AO.
8. Pits, once dry, would be backfilled and compacted with a minimum cover of at least three (3) feet of soil, void of any topsoil, vegetation, large stones, rocks or foreign objects. The pit area would be mounded to allow for settling and to promote positive surface drainage away from the pit. Before backfilling synthetically lined reserve pits, those liner portions remaining above the "mud line" would be cut off as close to the top of the mud surface as possible and disposed of at an approved solid waste disposal facility. The pit bottom and remaining liner would not be trenched, cut, punctured, or perforated.

Reclamation

1. By March 1 of each year the operator would report and submit annual surface disturbance and reclamation data for the previous calendar year, utilizing the BLM Rawlins Field Office Disturbance (As-Built) and Reclamation Database. Monitoring and reporting would be in accordance and consistent with the Wyoming State Reclamation Policy, RFO RMP Record of Decision (ROD) and Appendix 36, and the field/project level EA/EIS, as applicable. The Rawlins Field Office surface disturbance and reclamation database, as well as information on the database and submission of the data, is available at the following web address: http://www.blm.gov/wy/st/en/field_offices/Rawlins/oil_and_gas.html, or by contacting the Rawlins Field Office, Minerals and Lands, Supervisory Natural Resource Specialist at 307-328-4200 for further information.
2. Reclamation earthwork for interim and/or final reclamation would be completed within 6 months of well completion or well plugging (weather permitting) including unnecessary access roads and pipeline right(s)-of-way, and would consist of: 1) backfilling pits, 2) re-contouring and stabilizing the well site, access road, cut/fill slopes, drainage channels, utility and pipeline corridors, and all other disturbed areas, to approximately the original contour, shape, function, and configuration that existed before construction (any compacted backfilling activities would ensure proper spoils placement, settling, and stabilization), 3) surface ripping, prior to topsoil placement, to a depth of 18-24 inches deep on 18-24 inch centers to reduce compaction, 4) final grading and replacement of topsoil, 5) surface-roughening and other techniques such as snow fencing to increase soil moisture retention and reduce compaction (all surface soil material would be pitted or roughened such that the entire reclamation area would be uniformly covered with depressions constructed perpendicular to the natural flow of water and/or prevailing wind), and 6) seeding in accordance with reclamation portions of the APD and these Design features.
3. Temporary fencing of the reclaimed well/facilities locations for the first two to four growing seasons after either interim or final seeding may be required to exclude livestock and wildlife and to help ensure better re-vegetation success. Similarly, off-road vehicle prevention measures would be employed on reclaimed locations.
4. Any subsequent re-disturbance of interim reclamation would be reclaimed within six (6) months by the same means described herein.
5. A Notice of Intent to Abandon (Form 3160-5) must be submitted and approved prior to any well abandonment activities. A joint inspection of the disturbed areas may be required and attended by the BLM and the Operator (or Operator's Designee), the primary purpose of which is to review and agree to the existing (or a new) abandonment and/or final reclamation plan. Earthwork must commence and be completed within six (6) months from the date of plugging and abandonment and seeding no later than the next immediate growing season upon the completion of earthwork. All reclamation should be accomplished as soon as possible after the disturbance occurs, with efforts continuing until the criteria for reclamation success has been met.

6. The Operator would submit a Final Abandonment Notice (FAN), using Form 3160-5, to the AO when the criteria for reclamation success have been met on the surface-disturbed. This FAN indicates that the Operator believes the location is considered ready for final inspection, with adequate vegetation cover and species diversity. Upon receipt of the FAN, the BLM would conduct a field inspection prior to releasing the bond liability for this location.
7. Re-vegetation would consist of species occurring in the surrounding natural vegetation and/or included in the approved seed mix as deemed desirable by the BLM or private surface owner in review and approval of the reclamation plan. Inter-seeding, secondary seeding, or staggered seeding may be required to accomplish re-vegetation objectives. The seed mixture(s) would be planted in the amounts specified in pounds of pure live seed (PLS)/acre. There would be no primary or secondary noxious weed seed in the seed mixture. Seed would be tested and the viability testing of seed would be done in accordance with State law(s) and within 9 months prior to purchase. Commercial seed would be either certified or registered seed. The seed mixture container would be tagged in accordance with State law(s) and available for inspection by the AO. Seed would be broadcast if drilling is not possible. When broadcasting the seed, the pounds per acre are to be doubled. The seeding would be repeated until a satisfactory stand is established as determined by the AO.
8. Evaluation of growth and success would be conducted as per RMP ROD (Appendix 36). The site would also comply with additional management needs, including control of weed infestations. Success criteria as defined by the RMP is: criteria based on pre-disturbance surveys or surveys of adjacent undisturbed natural ground cover and species composition (which the Operator would do prior to disturbance) or eighty percent of pre-disturbance ground cover, ninety percent dominant species, no noxious weeds, and erosion features equal to or less than surrounding area. The AO reserves the right to require a reevaluation of the reclamation success of the disturbances and determine if reseeding is necessary.
9. All practicable measures would be utilized to minimize erosion and stabilize disturbed soils on or adjacent to the disturbed and reclaimed area. There would be no evidence of mass-wasting, head-cutting, large rills or gullies, down cutting or overall slope instability. Should the use or storage of hay, straw, or mulch be necessary, the Operator is required to use certified weed-free hay, straw, and mulch on BLM managed lands.
10. Any topsoil to be stockpiled for longer than one year would be spread in layers not to exceed 2 feet maximum thickness and appropriately identified/signed as topsoil. These soil stockpiles would be seeded with a prescribed seed mixture or sterile cover crop (approved by the AO) and covered with mulch to reduce erosion and discourage weed invasion.

Fluids

1. All storage, removal and disposal of produced water must be in accordance with and comply with Onshore Oil and Gas Order No. 7. Produced water must be disposed of at a permitted off-site commercial disposal facility, unless approved otherwise by the BLM AO. The onsite storage/disposal of produced water, in open pits, tin horns, sumps, etc., is not authorized except as follows: 1) produced water from the well subsequent to drilling may be disposed of in the approved well site reserve pit (for up to 90 days), and/or 2) used for well drilling or

completion, upon prior written approval from the AO via approved APD or Sundry. Produced water may be transported and used for drilling/completion operations from approved fee, state, or federal wells/leases to federal wells/leases within the developed field/unit and/or EIS area, subject to WOGCC and BLM approval.

2. Pit drilling fluids may be transferred from a reserve pit at an approved federal well location to a lined reserve pit at another approved federal well location, for the purpose of drilling the well. Transfer/reuse would only be permitted when transfer is by a lease operator from one or more pits to another pit or pits on the operator's federal lease/unit or adjacent federal lease. Unless approved by this APD, the transfer and reuse of pit drilling fluids would require prior written approval from the AO, via a Sundry Notice (Form 3160-5).
3. The AO may authorize the use of produced water or reuse of pit drilling fluids for drilling when: 1) surface casing has been set with fresh water through any and all possible fresh water zones, 2) use is for drilling/completion only, and 3) the receiving pit is lined.
4. Pit fluids may be transferred by a lease operator from one or more pits to another (lined) pit or pits on the operator's federal lease/unit or adjacent federal lease, for the purpose of fluid consolidation and mechanical/chemical drying and disposal. The 6 month pit closure requirement would apply. Unless approved by this APD, the transfer of pit fluids for consolidation/disposal would require prior written approval from the AO, via a Sundry Notice (Form 3160-5).
5. Initial operator requests for the transport and use/reuse of produced water or pit drilling fluids or the transfer/consolidation of pit fluids would include: 1) the potential locations/leases in which fluids are to be transferred to and from, and 2) the potential quantity to be moved. Requests would be submitted for prior written approval from the AO via APD or Sundry Notice. Upon completion of transport, use/reuse or consolidation, the specific information on leases, units or locations and quantities transferred would be submitted to the AO, via Sundry Subsequent Report. Transportation of fluids would be along approved haul routes and authorized right-of-ways. Temporary surface pipelines may be authorized by the AO for the transfer of fresh water only, and NOT for produced water or pit fluids.
6. Drilling water sources/supplies or any changes to drilling water sources/supplies, the fate of drilling/completion fluids, routes and means of fluid transportation/disposal, and location or method of produced water disposal requires prior written approval from the AO via approved APD, Sundry Notice or Right-of-Way (ROW) as applicable.
7. The drilling of water wells on federal lands would require prior BLM approval via APD, Sundry, or ROW as applicable, in addition to State Engineer Office (SEO) approval.