

Doty Mountain Plan of Development (POD) D

Environmental Assessment

Finding of No Significant Impact

Rawlins Field Office, Wyoming

July 2012



The BLM's multiple-use mission is to sustain the health and productivity of the public lands for the use and enjoyment of present and future generations. The Bureau accomplishes this by managing such activities as outdoor recreation, livestock grazing, mineral development, and energy production, and by conserving natural, historical, cultural, and other resources on public lands.

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ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT

Tiered to and Referencing:
The Atlantic Rim Natural Gas Development Project
Environmental Impact Statement
and
Record of Decision

Lease Numbers: WYW- 116179, WYW-136728

Proposed Action:

Permit Doty Mountain POD D including Right-of-Way Action for Main Access Route: Natural Gas Wells, Access Roads, Pipeline/Utility Corridors, Central Delivery Points and associated Infrastructure

Rawlins Field Office Interdisciplinary Team

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Applicant/Proponent: Anadarko E & P Company L.P.

Introduction

Background

Anadarko E & P Company, L.P. (Anadarko) has submitted a Plan of Development (POD) within the Atlantic Rim Project (ARP). It is entitled Doty Mountain POD D. The Bureau of Land Management (BLM) Rawlins Field Office (RFO) has combined the right-of-way (ROW) and POD proposals into this environmental analysis, the Doty Mountain POD D Environmental Assessment (EA).

There were 11 coal bed natural gas wells in the POD. In addition, roads, pipelines, well pads and other associated developments are proposed for the project and detailed in the “*Proposed Action*” section below. The number of wells was reduced to 9 due to complications with the construction of the access roads in section 30. The proposal includes lands of the National System of Public Lands managed by the BLM and is approximately 1,779 acres in overall extent (see Figure 1). The ARP was analyzed through the Atlantic Rim Natural Gas Development Project Environmental Impact Statement (AREIS) and approved by the Atlantic Rim Record of Decision (ROD), signed in 2007.

Domestic natural gas production is an integral part of the U.S. energy development program and economy. Domestic production reduces immediate dependence upon foreign sources of energy and maintains a stable supply of fuel to maintain the economic well-being of the U.S., efficient industrial production and national security. The environmental advantages of burning natural gas are emphasized in the Clean Air Act amendments of 1990. The action would allow Anadarko, as leaseholder, to obtain reasonable access and exercise lease rights to explore and develop oil and gas resources within the project lease areas.

Purpose and Need for Action

The need for the action is established by the BLM’s 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. In addition, this site-specific EA 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 Decision to be made

The BLM will decide whether to approve Anadarko’s proposed action, as submitted.

Relationship to Statutes, Regulations, or Other Plans

This proposed action is subject to the Rawlins Resource Management Plan (RMP), approved on December 24, 2008. 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 oil and gas reserves is discussed on pages 2-20 to 2-22 of the RMP. The proposed action is in conformance with the RMP Management Objective to provide opportunity for exploration and development of conventional and un-conventional oil and gas while protecting other resource values.

The project is located within the area evaluated for natural gas development activities by the AREIS and is in conformance with the ROD. The ROD for this action was approved in May, 2007. The Doty Mountain POD D Proposed Action is located outside of the "Category A" area as identified in the AREIS ROD and thus is subject to a "disturbance goal" of 6.5 acres per well. The Doty Mountain POD D Proposed Action meets the disturbance goal.

The AREIS ROD can be found at:

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

The BLM consulted with the United States Fish and Wildlife Service (USFWS) regarding the effects of water depletions, sedimentation and threatened and endangered fishes in the Colorado River. In their Biological opinion response, dated August 9, 2006 they stated that there would be about a 10-acre foot per year depletion from the project and waived the depletion fee. In addition, the USFWS concurred with the BLM's determinations for the various threatened and endangered species found in the area and downstream in the Colorado River (ROD, Appendix D; Formal and Informal Consultation for the Atlantic Rim Natural Gas Development Project).

These species include:

- Colorado River fishes
- Bald eagle
- Black-footed ferret
- Blowout penstemon
- Ute-ladies tresses
- Canada lynx
- Preble's meadow jumping mouse
- Wyoming toad
- Colorado butterfly plant
- Platte River species

This EA is prepared in accordance with National Environmental Policy Act (NEPA) procedures including Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508); U.S. Department of the Interior (DOI) Regulations for Implementation of the NEPA 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 AREIS assess the environmental impacts of the proposed action and serves to guide the decision-making process.

Onshore Oil and Gas Order No. 1 (43 CFR 3164.1) requires that an Application for Permit to Drill (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 must include adequate measures for reclamation of disturbed lands. If the APDs are inadequate or incomplete, the applicant must modify or amend the APDs. The 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 these APDs are considered part of the Proposed Action.

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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, 516 DM2 Appendix 1 and 516 DM, 11.9, and is therefore being analyzed herein.

The area was assessed as per the Wyoming Instruction Memorandum (IM) WY-IM-2010-012 (Greater Sage-Grouse Habitat Management Policy on Wyoming BLM Administered Lands including the Federal Mineral Estate). The IM directs the BLM to analyze Greater Sage-Grouse habitat out to a minimum of four miles from the project location. This analysis is to occur within the Greater Sage-Grouse core areas (core areas as designated by the Wyoming Governor's Executive Order EO 2010-4). This project does not fall within a Greater Sage-Grouse core area and conforms to the guidance above.

Scoping, Public Involvement and Issues

The AREIS received extensive external scoping and public involvement, including formal scoping comments and comments to the Draft and Final AREIS. More than 53,000 comments were received to the ARP Draft EIS of which about 120 were substantive. The BLM reviewed and responded to the comments. The comments and responses are detailed in "Appendix O" of the AREIS. The Appendix is 396 pages in length. The Doty Mountain POD D tiers to the AREIS and ROD, as directed by policy and regulation.

Upon receipt of the NOSs or APDs included in the proposed action, the information required under 43 CFR 3162.3-1(g) was posted for review for a period of 30 days. Nine of the proposed wells were received as NOSs and were posted beginning August 27, 2008, in the RFO Information Access Center (Public Room). Two additional wells were received as APDs and were posted on April 8, 2010. During the posting period APDs are available for public review and comment. Notification of preparation of this EA was also provided on the Wyoming BLM internet NEPA register (<http://www.wy.blm.gov/nepa/search/index.php>) on February 13, 2012. No public comments have been received on the project to date.

The BLM interdisciplinary team (IDT) visited the POD D project area on numerous occasions prior to the initiation of this EA. During the on-sites, all areas of proposed surface disturbance for POD D were inspected to ensure that potential impacts to resources would be identified and appropriate design features, Best Management Practices (BMPs) and mitigation measures were prescribed to reduce or avoid adverse environmental impacts. In some cases, access roads were re-routed and well locations, pipelines and other facilities were moved, modified, or dropped from further consideration to alleviate or reduce environmental impacts. The BLM IDT on-site changes, implementation of proponent-committed mitigation measures contained in the Master Surface Use Plan, Drilling Program and Water Management Plan, Standard Operating Procedures (SOPs) and BMPs are incorporated and are analyzed as part of the Proposed Action Alternative.

Other issues of concern identified by the BLM IDT, either generated through IDT review or from significant resources identified in the AREIS, include; transportation, cultural/historic resources, livestock grazing, recreation/visual resources, soils and vegetation/weeds, water quality/hydrologic function, wildlife (including shrub nesting sensitive and non-sensitive migratory birds, Greater Sage-Grouse and Muddy Creek sensitive fishes.

Additional resources considered, that were found not to be present in the Doty Mountain POD D project area, that involve issues adequately addressed by design features, SOPs, BMPs and/or mitigation measures, or that were not elevated to a level of concern requiring further consideration in this EA (beyond the level of analysis in the AREIS) include: air quality (AREIS, Chapter 3.2, p. 3-14, RMP, p. 2-10); fire and fuels management (RMP, p. 2-13 and Appendix

19); forest management (RMP, p. 2-14 and Appendix 19); lands and realty (RMP, p. 2-16, Appendices 1, 6, 7 and 34); off-highway vehicles (RMP, p. 2-22 and Appendix 21); paleontology (AREIS, Chapter 3.1, p. 3-2, RMP, p.2-24); wild horses (AREIS, Chapter 3.16, p. 3-149, RMP, p. 2-51 and Appendix 12); hazardous materials (AREIS, Chapter 3.14, p. 3-148, RMP Appendix 32) and wildlife (includes; general wildlife (AREIS, Chapter 3.7.1, p. 3-84), elk Crucial Winter Range (CWR) (AREIS, Chapter 3.7.1.2, p. 3-91), other upland game birds (AREIS, Chapter 3.7.1.3, p. 3-97), raptors (AREIS, Chapter 3.7.1.4, p. 3-97), other non-sensitive fish species (AREIS, Chapter 3.7.2, p. 3-98), non-shrub nesting migratory bird species, threatened and endangered wildlife and plants (AREIS, Chapter 3.8.1, p. 3-102) and other sensitive wildlife and plants (AREIS, Chapter 3.8.2, p. 3-108).

Proposed Action and Alternatives

Proposed Action

APD Component of the Proposed Action

The operator had proposed to develop 11 wells, (Table 1 and Figure 2 Proposed Action). This was reduced to nine due to complications in construction of the access roads in section 30 so two wells and associated roads and utility corridors were eliminated through the NEPA process. Well depths range from approximately 1730 feet to 3050 feet. The wells would be completed to underground coal deposits where removal of water pressure would allow natural gas trapped within the coal to dissociate and move to the well bores where it can be captured and transported for use. The well bores would transport “produced water” and natural gas from the coal seams.

The proposed action includes the construction and operation of well pads and access roads, as well as the construction, operation and reclamation of associated underground gas gathering/sales pipelines, produced water-gathering pipelines, underground power-lines and utility corridors. To minimize surface disturbance, the pipeline/utility corridors are generally located adjacent to, and parallel with, proposed or existing access roads and existing pipeline ROWs, except where not feasible or applicable.

Location of Wells - Proposed Action

(Table 1)

	Well #	T	R	Sec	Aliquot
AR Federal	1791 3-25	17	91	25	NENW
AR Federal	1791 6-25	17	91	25	SENW
AR Federal	1791 12-25	16	91	25	NWSW
AR Federal	1791 14-25	16	91	25	SESW
AR Federal	1791 10-26	16	91	26	NWSE
AR Federal	1791 16-26	16	91	26	SESE
AR Federal	1791 11-28	16	91	28	NESW
AR Federal	1791 13-28	16	91	28	SWSW
AR Federal	1791 15-28	16	91	28	SWSE

Note: All proposed wells are on the BLM-administered lands within Pod D

These wells are within the Doty Mountain Unit, and the right of way access to them will be authorized with this POD package, and not as separate Right(s)-of-Way. Also see POD Master Surface Use Plan and project maps.

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In order to protect shallow fresh water aquifers, only fresh water from a State Engineers Office(SEO) permitted local source may be used in the drilling and setting of surface casing (to a depth of 360 to 880 feet). Fresh water for drilling surface casing would be obtained from an approved local source such as Baggs pond. Should other sources be used, appropriate notification will be given via Sundry Notice. The use of produced water or other unauthorized or unapproved water sources for the surface casing are prohibited. Water for drilling purposes beyond the surface casing would be obtained from production wells in the Doty Mountain unit. All wells in the unit may be used to obtain water thereby reducing the haul distances. The water would be hauled by truck to each drill site over existing roads approved within the Unit and POD and by authorized ROW's. Any changes in the drilling method, water source, route or transportation requires prior written approval by the BLM Authorized Officer.

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

Construction

Access roads, drill pads, pipeline/utility corridors and other facilities would be constructed or re-constructed in order to build the project. Construction activities result in disturbance of soil and surface features, including vegetation. The amount of surface that would be disturbed to drill a well is larger than the area needed for long-term production operations. Surface-disturbing activities fall into two categories, short-term disturbance and long-term disturbance. The area that is initially disturbed in order to access, drill and complete a well is considered short-term disturbance. Those areas that are needed for on-going production operations during the life of the project are considered long-term disturbance. Reclamation of short-term disturbance is started before the first growing season following disturbance with the intent of restoring the productivity of the land, preventing erosion of soil and minimizing the impacts of the overall project. The entire well pad, access roads, pipeline / utility corridors and other disturbance areas would be reclaimed (final reclamation) following the end of the project.

Over-all short-term surface disturbance estimates for POD D, including the well pads and access road/utility/pipeline corridors and Central Delivery Points (CDPs) are presented in the following tables.

Proposed Action
POD D Estimated Surface Disturbance (includes 9 Federal wells)

Project Component	Number	Average Disturbance	Cumulative Acreage
Single CBNG well pads	9	2.05 acres ¹	18.5 acres
Utility Corridor (gas/water/elec.)	19,691 Linear ft.	50ft. width	22.6 acres
Access Roads	11,874 Linear ft.	50 ft. width	13.6 acres
Totals			54.7acres

¹ Individual well pad disturbance areas are approximately equal to 300' x 300' (2.0 acres), including stockpiles and cut & fill slopes for all single-well locations.

Within-Pod Collector and Individual Well Access Roads

The proposed action includes construction and re-construction of access roads to proposed well locations and other facilities within the project area. The access roads would be constructed to meet the BLM specifications for a "Resource Road", as specified in the BLM Manual Section 9113. Drainage structures would be constructed/installed along the access roads to the BLM established standards. The width of the roadway (travel surface) would be a minimum of 14-feet within an average ROW width of 50 feet. To minimize surface disturbance, wherever possible, the access road ROW would be combined with the pipeline/utility ROW into a

road/utility corridor that would be 80 feet or less in width. Some local connector or collector roads between multiple well locations, or where engineering design dictates, would be constructed to a minimum 16-20 feet wide travel width within the 80 feet wide ROW corridor. The access road to the AR Federal 1791 3-25 will be constructed in accordance to the engineering design approved on November 9, 2010.

Well Sites

In order to drill and complete the coal bed natural gas (CBNG) wells, a drill pad (approximately 300 feet by 300 feet (2.0 acres) would be constructed for each well location (including spoil and topsoil stockpiles and cut/fill slopes.) In the event the wells become producers, cut and fill portions of the well sites would be brought back to the approximate original contour and reclaimed along with any other unneeded portions of the well site. Soil stockpiles would be re-spread and reseeded with native vegetation in conformance with the provisions of Appendix A of the ROD. Interim well pad reclamation would reduce long-term disturbance to less than one-half acre for the duration of production operations. Following final well plugging and abandonment, the entire well pad would be reclaimed including re-contouring, ripping, seeding and re-vegetation as per the BLM approved Doty Mountain POD D Reclamation Plans.

Pipeline/Utility Corridors

To minimize surface disturbance, the majority of pipeline/utility corridors would be located adjacent to, and parallel with, the proposed or existing approved access roads and existing pipeline disturbances, except where not feasible or applicable. Utility corridors, upon completion of pipeline/power-line installation, along with any unneeded access roads, would be reclaimed (to include re-contouring, ripping, seeding and re-vegetation as per the BLM approved Doty Mountain POD D Reclamation Plans).

Any pipelines and powerlines would be buried and surface disturbance areas reclaimed upon completion of construction. When the project ends, pipelines/powerlines would be abandoned in accordance with the BLM procedures for abandonment and the corridors appropriately reclaimed as per the BLM approved Doty Mountain POD D Reclamation Plans.

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).

Produced Water Disposal

Underground re-injection into the Haystack Mountains Formation would be the primary method of water disposal proposed in POD D. For the majority of wells, produced water would be gathered and transported via buried pipelines to two CDPs within the POD and then piped to water re-injection wells. Additional re-injection capacity would be available at other permitted re-injection wells in adjacent PODs within the Unit and would be used as needed.

No Action Alternative

The No Action alternative was analyzed and assessed in the AREIS and ROD. The decision in the ARP ROD is to develop 1800 CBNG wells and 200 natural gas wells within the ARP. Under leasing provisions, the BLM has an obligation to allow mineral development if the environmental consequences are not too severe or irreversible. If the APDs are not approved the applicant is allowed to, and generally would, submit new APDs that correct the flaws in the originals. The APD process is designed to overcome the "no action" alternative by not accepting the APD as complete, until all site-specific environmental issues are adequately addressed or mitigated in

either the Proposed Action or alternatives. For these reasons, the “No Action” alternative of not approving the APDs was considered, but will not be analyzed further in this EA.

Affected Environment

A detailed discussion of the affected environment can be found in Chapter 3 of the AREIS for all the resources evaluated in detail.

Environmental Effects

Where appropriate, some site-specific affected environment description is included as a preamble to the impact analyses in this section.

Transportation

Affected Environment

The terrain in this portion of the ARP is generally flat to rolling and the area’s grass and shrub communities easily traversed by motor vehicles. Two-track and other vehicle routes have been established in the past to fit the needs of commercial interests (ranching, utility construction/maintenance) and the public, primarily for hunting. These routes are generally not maintained, rough travelling, suitable for low speed traffic only and, in many cases, require all wheel drive and high clearance vehicles to traverse. Newly constructed roads would intercept and cross these routes, and, in many cases, be built on top of existing routes. This would serve to integrate the existing transportation network into the new, higher speed road network. Casual use by the public and ranchers occurs today and would continue into the future. It is the intent of the BLM to not alter the availability of access for use by ranchers and the public, as appropriate. Travel across the National System of Public Lands by vehicles for commercial purposes must be approved by a ROW. Without a ROW such travel is improper and the company responsible would be trespassing. It is possible for unpermitted vehicles of any company to cross the area and access the ARP under either alternative at the whim of the vehicle operator whether sanctioned by the company or not.

Under the proposed action traffic activity would increase above current conditions. Maximum traffic speed on the new and upgraded roads would increase by 15 to 25 miles per hour (MPH). Normally, traffic on a two-track route runs 10-15 MPH and on improved oil and gas roads 25-40 MPH. Increased access to existing two-track routes from upgraded roads both within and outside of the POD areas would occur.

Vegetation

Affected Environment

General descriptions of the project area vegetation communities, including weeds, are found in the AREIS, (AREIS; Chapter 3 Section 3.5, pg. 3-68 to 3-80, 2007). Invasive weed species were noted during on-site inspections of individual well pads, roads, pipelines and facility locations. Halogeton, alyssum and cheatgrass are common throughout the project area depending upon the soil textures. Additional site specific vegetation inventory data has been collected by the company and submitted as part of the approved Reclamation Plan as per the Wyoming Reclamation Policy (March 2009), the RMP, Appendix 36 (Dec. 2008) and the ROD (March 2007) (p. A-3, Section 1.3.1). The Anadarko Reclamation Plan includes a weed management plan to address weed control.

The impacts anticipated with the construction of this project, and already realized on previously implemented projects, are the same as those identified in the AREIS: “*Direct impacts to existing*

native shrub/grassland communities in the ARP resulting from project implementation include a short-term reduction of herbaceous vegetation and a long-term loss of shrub cover". No new impacts were identified.

Construction activities will disturb soils and remove vegetation including grass and shrubs. Following disturbance and completion of construction activities portions of the disturbed sites would be reclaimed. Short term disturbance such as pipelines and excess areas of well pads not needed for natural gas production activities would be reclaimed and vegetation established. Long term disturbance areas include roads, portions of well pads, central delivery points and ancillary facilities would remain un-reclaimed during the duration of the project.

Soils

Affected environment

A general description of the project area soils and their limitations are found in the AREIS (Chapter 3 Section 3.3, pg. 3-22 to 3-33). Soil properties were noted during onsite inspections of individual well pad, road, pipeline and facility locations. Additional site-specific soil parameters have been collected by the company and submitted in their Site-Specific Reclamation Plans per the Wyoming Reclamation Policy (March 2009), the (RMP) Appendix 36 (Dec. 2008) and the ROD, (March 2007) (p. A-3, Section 1.3.1). With application of SOP's, BMP's, and mitigation measures identified for the soils present within the Proposed Action area of influence, runoff and erosion would be reduced to an acceptable level.

Potential impacts to soil resources are discussed in the AREIS (Ch. 4 Section 4.3, p. 4-16 to 4-19). The impacts anticipated with the construction of this project, and already realized on previously implemented projects, are the same as those identified in that document:

"Removal/damage of existing native vegetation and surface litter would increase wind erosion potential, increasing raindrop impacts to exposed soils, water borne erosion potential and increasing soil surface temperature; removal/damage of biological soil crusts; removal/damage of topsoil and sub-soil fauna (macro- and microorganisms); compaction of soils; mixing of topsoil horizons, especially when mixed with sub-soils of high salt content; thus increasing topsoil salinity content; increasing potential for undesirable (invasive / noxious / poisonous) plant invasion and establishment; increasing potential for sedimentation / salt loads to the watershed, including stock ponds; and decreasing topsoil productivity" (AREIS p. 4-17).

Hydrology

Affected Environment

Doty Mountain POD D is drained by Muddy Creek, which is located in the Colorado River Basin. Ephemeral tributaries to Muddy Creek located in the project include Dry Cow Creek and Cow Creek, as well as numerous unnamed drainages. A large headcut stabilization structure divides Muddy Creek into two major segments: Lower Muddy Creek and Upper Muddy Creek. The project area is located within the Upper Muddy Creek segment. Lower Muddy Creek is highly erosional, has abundant channel incisions and contains channel substrates that consist of predominantly very fine-grained sediments (Beatty 2005). Streamflow in Muddy Creek and its tributaries is predominantly snowmelt dominated with rainfall contributions from late season thunderstorms and varies with location along the drainage. Losses to irrigation, seepage and evapotranspiration deplete the flows such that Lower Muddy Creek flows intermittently and is prone to periodic flash events (BLM, 2006). Further discussion of the affected environment for water resources including surface water and groundwater can be found in the AREIS Chapter 3, Affected Environment Section 3.4 Water Resources, pg. 3-33. Groundwater in the project area is predominantly located in the Almond Formations of the Mesaverde Group (AREIS Section 3.4.5.1 Groundwater Location and Quantity pg. 3-60). Quality of groundwater in the Project Area

is variable and depends on aquifer depth, rock type, flow between aquifers and length of time the groundwater has contact with surrounding bedrock. A more detailed analysis of groundwater quality can be found in the AREIS Section 3.4.5.2 Groundwater Quality, pg. 3-63.

Surface Water Impacts

Impacts to water resources from well pad, roads, and ancillary feature construction will include increased surface water runoff, wind erosion, water erosion and off site sedimentation of drainages due to vegetation removal and soil disturbance (AREIS Chapter 4 Section 4.4.1.1 Surface Water Impacts, pg. 4-21). Increased runoff, erosion and sedimentation would lead to changes in channel geometry, gradient and undesirable aggradation and/or degradation of drainages. Changes in stream flow and water quality would result from increased loads of sediment and salts. Impacts related to disturbance are likely to last through the construction and production phases of the project and into the reclamation phase. Interim and final reclamation would be essential to reducing soil erosion and associated impacts.

The AREIS determined that within the ARPA area, indirect impacts to surface water resources would be significant and included changes in water quality, channel stability and salt and sediment transport. Additionally, impacts would be considered significant to the reach of Muddy Creek located adjacent to State Highway 789 that is currently on the EPA's 303(d) list of Impaired and Threatened Water bodies (AREIS Section 4.4.3.5 Alternative D pg. 4-48; see also AREIS Map M-17). As Doty Mountain POD D is located entirely within the Muddy Creek drainage, and lies to the northeast of the impaired section of Muddy Creek and several tributaries originating in the Project Area drain directly into Muddy Creek, this development would contribute to the impacts to an already impaired stream reach.

Groundwater Impacts

As detailed in the AREIS, groundwater impacts associated with development in the project area are expected to contribute to significant impacts due to changes in flow volumes and would affect springs, seeps and aquifers in the area (AREIS Chapter 4 Water Resources Section 4.4.4 pg. 4-49). Development of Doty Mountain Pod D is expected to contribute to the significant impacts described in the AREIS (Chapter 4 Water Resources Section 4.4.3.2 pg. 4-42). The primary impacts to groundwater as a result of this development would be the removal of groundwater contained in coal aquifers and the subsequent recharge of aquifers with produced water following re-injection (AREIS Chapter 4 Section 4.4.1.2 Groundwater Impacts, pg. 4-21). Produced water in POD D would originate from the Mesaverde formation. Underground re-injection is the primary method of water disposal in the Doty Mountain Unit and water produced from the development of POD D would be disposed of in existing injection wells located in adjacent Catalina PODs, possibly through approved surface discharge points or additional re-injection wells yet to be drilled. Groundwater quality in the proposed development area meets Class II injection well standards and would be monitored on a regular basis with results sent to the BLM (Anadarko Water Management Plan, Doty Mountain POD D, December 21, 2010).

Roads are a considerable source of sediment even when constructed and maintained adequately. Roads on side-slopes facilitate erosion by concentrating runoff, intercepting runoff and acting as sediment conduits (Martherne 2006). Length, slope and soil features determine the intensity of erosion; proximity to drainages determine water resource impacts. The proposed action access roads would be required to meet the BLM road construction standards as outlined in the BLM Manual 9113 and the Gold Book, as well as requirements from both the Rawlins (RMP) and the AREIS. Road construction that conforms to the BLM requirements includes

crowning, ditching, proper culvert installation and often road surfacing to manage water transport.

The proposed action access roads would result in 3.2 miles of surface disturbance including the construction of a crowned and ditched road and impacts associated with road construction. Disturbance from road construction includes removal of vegetation, fuel and hazardous liquid spills and changes in drainage morphology from culvert installation and interception. In steeper terrain (on grades greater than 8 percent) engineered designs of roadways would be delivered to the BLM and complex drainage crossings (as identified by either the BLM Hydrologist or Civil Engineer on a site specific basis) and those that require multiple culverts would require hydrologic analysis. Appendix H of the AREIS outlines measures to reduce road construction and use impacts on drainages and the surrounding environment. The proposed action access road would be located near to the impaired section of Muddy Creek (please see AREIS Map M-17) and would contribute sediment and salt to ephemeral drainages flowing directly into Muddy Creek and Muddy Creek itself.

Summary of Water Resource Impacts

As outlined in the AREIS, impacts to surface water resources include sediment and salt transport, increased runoff, erosion and off site sedimentation of drainages that would result in channel instability and degradation of water quality and aquatic habitat (AREIS Section 4.4.3.1 Direct and Indirect Impacts Common to All Alternatives pg. 4-25). The action is expected to contribute to the significant impacts anticipated in the AREIS, particularly in an impaired reach of Muddy Creek (see Map M-17, AREIS) located southwest of the Doty Mountain POD D development area. Indirect impacts, including changes in water quality, rainfall-runoff relationships and contributions of salt, are also expected to contribute to significant effects. Significant impacts to groundwater are anticipated in the ARP and the AREIS and include changes in hydrostatic pressure, water quality, the flow of springs, seeps, and wells in the area (AREIS Chapter 4 Water Resources Section 4.4.4 pg. 4-49). However, no new significant impacts to groundwater are anticipated in the development Doty Mountain POD D.

Cultural Resources

Affected Environment

Cultural resources within the project area include prehistoric lithic scatters, open campsites and historic debris scatters common to the region. A detailed discussion of the affected environment for cultural resources, including the historic trails, can be found in the AREIS Section 3.11 Cultural and Historical Resources, page 3-122 – 3-155. Potential impacts to cultural resources are described in the AREIS at Section 4.11 Cultural Resources, page 4-116 – 4-120. Class III cultural resource inventories were conducted for the entire project area in order to identify any cultural properties that might be affected by the proposed project. The inventories included analyses of any physical impacts to cultural properties that might occur from construction activities as well as any visual impacts to properties where the historic setting is an important aspect of integrity.

Environmental Effects

Construction activities have the potential to physically disturb and displace cultural materials within sites located near the proposed developments. A construction barrier fence would be required at the AR Federal 1791 3-25 and 12-25 well locations to prevent disturbance to cultural

resources. Standard cultural resource design features that address buried discoveries apply and would be incorporated in the project's APDs. A BLM permitted archeologist shall monitor construction activities associated with well locations, access roads, and pipeline corridors located in culturally sensitive soils as identified in Appendix 1.

The historic Rawlins to Baggs trail is located near the proposed action's east side. Visual analysis shows that portions of the AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 well locations, access roads, and pipeline/utility corridors would be visible from contributing segments of the historic trail. This development would change the character of the historic setting of the Overland Trail and cause an adverse effect to this historic property.

Adverse effects to historic trails and roads were identified in the AREIS. A Programmatic Agreement (PA) was executed between the BLM, the State Historic Preservation Office, the Advisory Council on Historic Preservation, proponents and other interested parties to develop the necessary mitigation to minimize impacts to the setting of the 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 (see Appendix 1).

Recreation and Visual Resources Affected Environment

Recreation opportunities within the POD D project area and within the greater ARP include hunting, camping, hiking, wildlife viewing, off-highway recreational vehicle use and sightseeing. Hunting is the primary recreational use in the ARP and occurs during the fall months. Most other recreational use occurs at a relatively low rate compared to the level of hunting related activity. Additional discussion on the recreational opportunities within the ARP can be found in the AREIS, Chapter 3, page 3-115 – 3-119.

POD D is proposed to be developed in an area that is relatively undisturbed. Current development located in the proposed project area includes a power line, previous seismic projects, livestock fencing and water improvements. The general area is relatively open with rolling hills that support sagebrush shrub communities along the eastern half of the project area and juniper vegetation communities to the west.

The Visual Resource Management (VRM) Class for the project area, as designated in the Rawlins RMP is VRM Class III. Additional discussion of the VRM program and VRM class objectives can be found in the AREIS, Chapter 3 on pages 3-119 – 3-122.

Environmental Effects

The construction of this project would not result in a loss of recreational activity in the area. However, the quality of the recreational experience would be diminished by the physical presence of Doty Mountain POD D CBNG wells and related facilities, CBNG development and operational activities, noise and traffic. A large segment of the recreating public would be adversely impacted by the construction of this project to the point of greatly reduced, or discontinued, use of the area. Additional discussion of impacts to recreation can be found in the AREIS, Recreational Resources, Sections 4.9 and 5.2.9.

This project is located within an area that is beginning to experience major oil and gas development as predicted in the AREIS. The proposed oil and gas facilities would contrast with

the form, line, color and texture of the surrounding landscape. Due to the minimal relief provided by the existing landscape, facilities, or portions thereof, would be visible above the topographic horizon. The structures would be only partially screened by the terrain and therefore, noticeable. The proposed facilities would interrupt the line or flow of the continuous terrain but not dominate the view of the observer. The texture of the road and pad would contrast with the surrounding landscape features primarily due to the absence of vegetation that exists in the surrounding area. Additionally, the generally light tan soil color of the graded surfaces would contrast with the darker colors and shades of vegetation and soils surrounding the pad and road. The scale and quantity of the facilities being placed on the landscape would be noticed by the public. The required paint color would blend the facilities with the background colors of the vegetation. The overall absorption of this project on the landscape would be noticeable due to the size and scale of the structures and variation of the landscape. While the oil and gas facilities decrease the scenic quality of the project area, the contrast is acceptable under VRM III management objectives.

Well locations which required visual modification in order to be consistent with VRM Class III management objectives have been identified. Modifications were made by the BLM during site-specific evaluations and are supported by the Visual Contrast Rating forms completed for the project. Visual Contrast Rating forms are retained in the POD D project files at the BLM RFO.

Range Resources Affected Environment

The entire project area is open to livestock grazing and is within the Doty Mountain Allotment. Range improvements in the area include pasture fences, water pipelines, water wells and reservoirs. There are range water facilities located in T17N, R92W sections 24 and 25. The water facilities include a water pipeline from a well located outside the project area, two tire troughs and a storage tank that provide water to three adjoining pastures. The next nearest reliable water source is approximately one mile to the southeast and only provides water in one of the three pastures. Wire gates are located where pasture fences cross two-track roads.

The Doty Mountain Allotment is grazed as part of a cow/calf operation (650 cow/calf pairs). The livestock in the allotment graze from April 1 to December 31 and rotate through multiple pastures. The allotment contains approximately 56,000 acres and is 67 percent public land. The allotment is allocated 5,643 animal unit months (AUMs) of forage with an average of 8.2 AUMs per acre on the public lands. The project area lies within the north central region of the allotment and encompasses multiple pastures and range improvements.

This allotment was assessed in the "*Upper Colorado River Basin Watershed Standards and Guidelines Assessment*" completed in 2001. The results of the assessment for the Doty Mountain allotment concluded that the allotment met all of the standards for rangeland health.

Environmental Effects

Potential impacts to rangeland resources are discussed in the AREIS Section 4.6.3 Page 4-61. Impacts include direct loss of vegetation and soil disturbance associated with construction activities. Disruptive activities such as site reclamation, weed control, road construction and maintenance (*i.e.*, dust and more frequent animal/vehicle collisions), fence maintenance, water management and increased recreational use by the public would increase stress to wildlife and livestock.

Project construction during the scheduled grazing period (April-December) would temporarily displace livestock. Livestock would likely return to the area after project construction activities cease.

2012

The potential disturbance area represents less than one percent of the total acreage (approximately 66,000 acres) within the grazing allotment. It is not expected that a reduction in permitted AUMs would be necessary due to project construction. There would be a total of approximately 36 AUMs of forage availability directly lost from surface disturbance. Any changes in the amount of permitted AUMs would be based on vegetation and utilization monitoring of the allotment. Revegetation of disturbed areas would be designed on a site-specific basis in consultation with the BLM to maintain or enhance the quantity and quality of livestock forage within the allotment.

In areas with lower reclamation potential soils, such as those soils with a higher salt content layer or elevated Sodium Absorption Ratio (SAR) values, the potential vegetation community that the site would support, may be altered. Changes to the soil chemistry due to the mixing of soil layers would cause disturbed areas to no longer support the same potential vegetation community thereby reducing the overall productivity of the area. This change could result in the area not meeting standards for rangeland health (STANDARD 4 – Wildlife/Threatened and Endangered Species/Fisheries Habitat Health and Weeds) on localized sites. This project would contribute to the significant impacts to range resources described in the AREIS Page 4-66 Section 4.6.4.4

Wildlife Resources Affected Environment

BLM Wyoming Rawlins Field Office Sensitive Species Habitat Presence in POD D

Species	Habitat	Occurrence
Rabbit, Pygmy	Basin-prairie and riparian shrub	Habitat Present
Bat, Townsend's Big-eared	Forests, basin-prairie shrub, caves and mines	Habitat Present
Prairie Dog, White-tailed	Basin-prairie shrub, grasslands	Known to occur
Prairie Dog, Black-tailed	Short-grass prairie	No habitat present
Myotis, Long-eared	Conifer and deciduous forests, caves and mines	Habitat Present
Myotis, Fringed	Conifer forests, woodland-chaparral, caves and mine	Habitat Present
Pocket Gopher, Wyoming	Meadows with loose soil	Habitat Present
Fox, Swift	Grasslands	Habitat Present
Preble's Meadow Jumping Mouse	Heavily vegetated, shrub-dominated riparian (streamside) zones	No habitat present
Goshawk, Northern	Conifer and deciduous forests	No habitat present
Sparrow, Baird's	Grasslands, weedy fields	No habitat present
Sparrow, Sage	Basin-prairie shrub, mountain-foothill shrub	Habitat Present
Owl, Burrowing	Grasslands, basin-prairie shrub	Habitat Present
Hawk, Ferruginous	Basin-prairie shrub, grassland, rock outcrops	Known to occur
Sage-Grouse, Greater	Basin-prairie shrub, mountain-foothill shrub	Known to occur
Plover, Mountain	Short-grass & mixed-grass prairie, openings in shrub ecosystems, prairie dog towns	No habitat present
Cuckoo, Yellow-billed	Open woodlands, streamside	No habitat present

2012

	willow and alder groves	
Swan, Trumpeter	Lakes, ponds, rivers	No habitat present
Falcon, Peregrine	Tall cliffs	No habitat present
Eagle, Bald	Primarily along rivers, streams, lakes and waterways	No habitat present
Shrike, Loggerhead	Basin-prairie shrub, mountain-foothill shrub	Habitat Present
Curlew, Long-billed	Grasslands, plains, foothills, wet meadows	No habitat present
Thrasher, Sage	Basin-prairie shrub, mountain-foothill shrub	Habitat Present
Ibis, White-faced	Marshes, wet meadows	No habitat present
Sparrow, Brewer's	Basin-prairie shrub	Habitat Present
Grouse, Columbian Sharp-tailed	Grasslands and shrub lands	No habitat present
Sucker, Bluehead	Bear, Snake and Green drainages, all waters	No habitat present, habitat off-site may be affected
Sucker, Flannelmouth	CO River drainage, large rivers, streams and lakes	No habitat present, habitat off-site may be affected
Chub, Roundtail	CO River drainage, mostly large rivers, also streams and lakes	No habitat present, habitat off-site may be affected
Chub, Hornyhead	Lower Laramie and North Laramie River Watersheds	No habitat present
Trout, Colorado River Cutthroat	CO River drainage, clear mountain streams	No habitat present, habitat off-site may be affected
Toad, Boreal	Pond margins, wet meadows, riparian areas	No habitat present
Frog, Northern Leopard	Beaver ponds, permanent water in plains and foothills	No habitat present
Spadefoot, Great Basin	Spring seeps, permanent and temporary waters	Known to occur ¹
Laramie Columbine	Crevices of granite boulders & cliffs 6,400-8,000'	No habitat present
Meadow Milkvetch	Sagebrush valleys and closed-basin drainages in moist alkaline meadows at 6500-6620 ft	No habitat present
Cedar Rim Thistle	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shaley draws 6,700-7,200'	No habitat present
Gibbens' Beardtongue	Sparsely vegetated shale or sandy-clay slopes 5,500-7,700'	No habitat present
Limber Pine	Timberline and at lower elevation with sagebrush. Associated species are Rocky Mountain lodgepole pine, Engelmann spruce, whitebark pine, Rocky Mountain Douglas-fir, subalpine fir, Rocky Mountain juniper, Mountain Mahogany, and common juniper	No habitat present
Persistent Sepal Yellowcress	Riverbanks & shorelines, usually on sandy soils near high-water	No habitat present

¹ Surveys conducted after the AREIS ROD was signed have identified existing populations within the AREIS planning area.

2012

	line	
Laramie False Sagebrush	Cushion plant communities on rocky limestone ridges & gentle slopes 7,500-8,600'	No habitat present

Environmental Effects

Shrub nesting birds

Surface disturbance and disruptive activities during POD D construction and operation, such as human presence, dust and noise may displace or preclude wildlife use of disturbed areas. Wildlife sensitivity to these impacts varies considerably with each animal species. Displacement is unavoidable in the short-term and this displacement has the potential to have the most effect on wildlife. The extent of displacement would be related to the duration, magnitude and the visual prominence of the activity, as well as the extent of construction and operational noise levels above existing background levels. This displacement is impossible to predict for most species since the response severity varies from species to species and can even vary between individuals of the same species. After initial avoidance, some wildlife species may acclimate to the activity and begin to re-occupy areas previously avoided. This acclimation and reoccupation would be expected to occur following construction and drilling as the project moves into the production phases when less noise and human activity would take place.

The primary songbirds (common and BLM-sensitive species) that may be displaced by the reduction in habitat and disruptive activities are vesper sparrow, green-tailed towhee, lark sparrow, sage sparrow, sage thrasher, loggerhead shrike and Brewer's sparrow. Although there is no way to accurately quantify these changes, the displacement would be long-term. Birds are highly mobile and would disperse into surrounding areas and use suitable habitats to the extent that they are available. The long-term loss/reduced usability of shrub habitat would lead to an increase in use of remaining habitat by all species. This increase in use of the remaining habitat would then lead to a long-term reduction in shrub nesting bird habitat quality and quantity outside of the immediate project disturbances. Doty Mountain POD D standard design features, SOPs, BMPs and mitigation measures for other species (big game, raptors and Greater Sage-Grouse) would indirectly benefit songbirds during critical time periods. Development of Doty Mountain POD D would contribute to the significant impacts on nesting and foraging habitats disclosed in the AREIS. For further discussion of impacts to shrub dependent songbirds see the AREIS, Chapter 4, Section 4.7.3.1, pps. 4-69 to 4-72.

Big Game

Mule Deer

The project area is not within mule deer Crucial Winter Range (CRW), however, general migration routes pass through the POD D project area (see Figure 3). Radio-collared mule deer migration routes were buffered by 0.25 mile on either side of the actual radio-collar geographic position data points. In years with heavy snow the migration routes could be blocked when roads are plowed. Migration and protection measures that maintain the integrity of migration corridors would allow big game to move to crucial winter range with less stress and/or loss of condition.

The "*Baggs Mule Deer Crucial Winter Range Analysis*", prepared in 1994 concluded that the decline in the Baggs mule deer crucial winter range is not a recent occurrence. Much of the damage to the browse stands on the winter range appears to be the result of historic and

continued overutilization by wildlife, poor range conditions, and the loss or severe reduction in many of the key herbaceous species that can be traced to sheep and cattle use that caused severe range damage at the turn of the century. In many cases, utilization has not yet been adjusted to fit the existing range carrying capacity (Nelson, *et al.*, 1994). Increased levels of energy development across southwest Wyoming have created a variety of concerns for wildlife and the habitats they occupy; impacts include direct and indirect habitat losses that can potentially result in reduced population performance (Sawyer, *et al.*, 2006a). Direct habitat loss occurs when native vegetation is converted to access roads, well pads, pipelines and other project features. Indirect habitat losses occur when wildlife are displaced or avoid areas near infrastructure because of increased levels of human disturbances (*i.e.*, traffic, noise, pollution, human presence) (Sawyer, 2007).

Impacts to big game species from construction and development of POD D would include the removal and modification of habitat, displacement due to increased human activity, increased potential for vehicular collisions due to increased traffic on existing roads and increased potential harvest success due to easier hunter access. The magnitude of disturbance to big game species would depend upon the season the POD D area is used by each species, the ability of a species to habituate to the disturbance, the corresponding drilling schedule and the density of wells in the area. In addition, pronghorn and mule deer may not move to other habitats or other suitable habitats may not be available to them. Therefore, the inability to relocate would result in increased stress from competition for forage and cover.

There is no equivalent migration/transition corridor seasonal timing restriction for the construction/drilling phase of oil and gas operations. Big game animals would be displaced from the source of any construction or drilling activity that might occur within migration/transitional ranges. This displacement would occur both during the fall and spring migration. Big game animals that are in prime condition in the fall as migration begins, may be able to absorb the added stress related to avoidance of construction and drilling activity. However, any additive loss in body condition and fitness that might occur during migration, when added to the rigors of breeding and maintenance requirements during the winter, would jeopardize an animal's chances of survival or successful parturition. Construction during the spring migration period would further exacerbate the additive loss of animal condition and result in higher late winter/early spring mortality or parturition failure. The loss of recruitment into a population and the mortality of adults would eventually result in long-term declines in population numbers.

Project facilities and the associated disruptive activities that occur throughout the operational life of the project would reduce the effectiveness of habitat and lead to long-term displacement of animals. This displacement increases the overall browse use levels on remaining transitional range and results in reduced shrub vigor, increased shrub mortality and a decline in cover of the remaining sagebrush (AREIS, Chapter 4, pg. 4-71).

Project facilities and the associated disruptive activities that occur throughout the operational life of the project would alter migration patterns for mule deer. Several general pronghorn migration routes and several documented mule deer migration routes transverse the project area and the POD D well pads and access roads could block or alter these existing migration routes. Use of these migration corridors and the CWRs that big game relies on to survive the worst winters is imperative for maintenance of viable big game populations. Without the use of these areas, significant winter mortality could take place during severe weather.

Disruptive activities related to the production phase of oil and gas development contribute to increased stress and decreased body condition. Loss of overall condition or fitness can result in reduced reproductive rates of big game animals as they travel farther and may have to use lower-quality range (AREIS, Chapter 4, pgs. 4-73 and 4-74). Possible consequences of such

displacement are lower survival, lower reproductive success, lower population recruitment and ultimately lower carrying capacity with reduced populations (WGFD 2004d).

The location and magnitude of habitat loss and continued human presence of POD D wells and infrastructure would contribute to the exceedance of the significance criteria (criteria numbers 3 and 4) for pronghorn and mule deer as described in the AREIS (Chapter 4, Section 4.7.3.5, p. 4-83). For further discussion of impacts to big game see the AREIS, Chapter 4, Section 4.7.3.1, pps. 4-72-4-75 and Section 4.7.3.5, pps. 4-82-4-83.

Pronghorn

Several general pronghorn migration routes transverse the ARPA, and may cross through POD D, however, it is unknown how critical these routes are. These routes have not been specifically identified and mapped through collaring studies. The development phase of POD D could alter or block pronghorn movements along these routes. Adverse effects of blocking migration routes would be the same as described for mule deer. For further discussion of impacts to big game see the AREIS Chapter 4, p. 4-73 and 4-82.

Upland Game Birds

Greater Sage-Grouse

Doty Mountain POD D is located outside of Greater Sage-Grouse core habitat. It is the BLM RFO policy to analyze potential impacts to grouse habitat only within core habitat. See the Conformance Section of this EA above for a discussion of the analysis required by WY-IM-2010-012. The POD D project would have a direct impact on Greater Sage-Grouse by removing sage-grouse nesting, brood-rearing and wintering habitat. Habitat loss would result in the reduction of available nesting and foraging areas for Greater Sage-Grouse and increase fragmentation of habitat. Habitat fragmentation would affect the movement of broods and the functionality of these fragmented pockets of habitat. Pipeline disturbance associated with the development of POD D, when the pipeline route is not associated with or parallel to an access road, would not fragment habitat. The average width of a pipeline ROWs does not preclude movement of grouse and depending on reclamation success, can lead to beneficial edge habitat where grouse can congregate to feed on insects, green shoots and forbs.

Potential direct impacts to Greater Sage-Grouse from activities associated with POD D would include excessive noise levels proximal to occupied leks, disruptive human activities during sensitive time periods and habitat loss from construction of project facilities (outside of the 0.25 mile lek no surface occupancy restriction). Noise levels interfere with bird communication during mating periods which results in lower bird attendance at leks. Disruptive human activities alter normal bird behavior, increase nest abandonment and may displace birds into less-desirable habitats. Construction of facilities and roads creates a long-term loss of Greater Sage-Grouse habitat and increases fragmentation of remaining habitat. Project facilities such as well houses, compressor stations and above ground power lines serve as perches for raptors and corvids and would result in a long-term increase in predation. Roads may also serve as travel corridors for some predators, such as foxes and coyotes thereby contributing to an increase in potential Greater Sage-Grouse mortality. All combined losses in habitat and loss of Greater Sage-Grouse may lead to lower productivity and long-term declines in the population.

Long-term loss of shrubs combined with the indirect impacts on the habitat, such as dust, noise and continued human presence during the drilling and production phase of POD D, would result in habitat loss and disturbance levels which contribute to the exceedance of the significance

criteria in the AREIS, Chapter 4, p.4-83). For further discussion of impacts to Greater Sage-Grouse see the AREIS, Chapter 4, pps. 4-75 to 4-76).

Special Status Plant, Wildlife and Fish Species

BLM Sensitive Fish Species

Although BLM sensitive fish habitat does not occur within the project area, potential downstream impacts could occur from Doty Mountain POD D project development and are considered in this analysis. Well specific BMPs identified in Appendix 2 and 4 would decrease erosion from the project and reduce, but not eliminate, impacts to the BLM sensitive fish and their habitat. The primary impacts to BLM sensitive fish species (roundtail chub, bluehead sucker and flannel mouth sucker) include sedimentation of aquatic habitats and alteration of hydrologic conditions. As outlined in the AREIS (AREIS; Chapter 4, Section 4.8.3.2 Sensitive Fish Species, pg. 4-90 to 4-94), this project would contribute to the significant impact on the BLM sensitive fish habitat.

The spatial heterogeneity and connectivity of the stream systems can necessitate the movement of fishes among different habitat types in order to complete their life cycles (Schlosser 1995). Both rock substrates and deep pools have been identified as preferred habitat of sub-adult and adult roundtail chubs, bluehead suckers and flannelmouth suckers (Bower, 2005). Impacts from the proposed action include: (1) sedimentation from new construction and project-related land disturbance (*i.e.*, roads and well pads) resulting in decreased availability of rock substrates and (2) alteration of local hydrologic conditions by new road construction that could lead to sedimentation and channel adjustments which result in a loss of deep pool habitats and has the potential to lead to population declines.

Though the biological effects of sedimentation include a variety of ecological interactions (Waters 1995), sedimentation can act to shift habitat structure such as channel depth, pool-to-riffle ratio, percent fines in substrates and cover availability (Angermeyer, *et al.*, 2004). This sediment can extend miles downstream of the construction site and persist in stream channels for years (Angermeyer, *et al.*, 2004).

The Doty Mountain POD D related development of new roads and other facilities would contribute to the significant impacts to habitat features found to be important to roundtail chubs, bluehead sucker and flannelmouth sucker within the upper Muddy Creek watershed as outlined in the AREIS (AREIS; Chapter 4, Section 4.8.3.2 Sensitive Fish Species, pg. 4-94). In addition, project development may preclude improvement of species populations and their status as prescribed in the Range-wide Conservation Agreement for Bluehead Suckers, Flannelmouth Suckers and Roundtail Chubs (criterion 4) (UDNR 2006).
Proposed Action (access by the northwest route)

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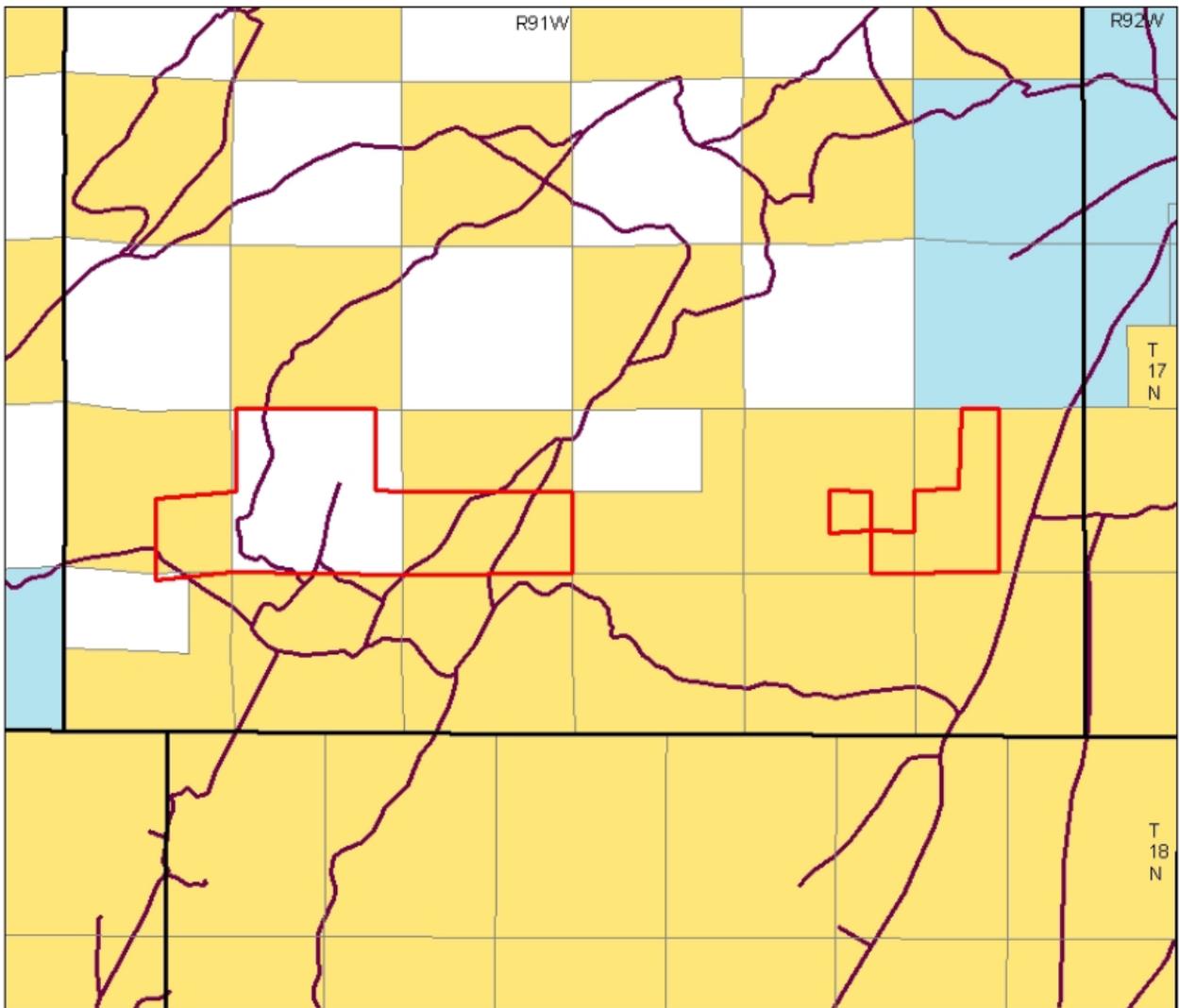
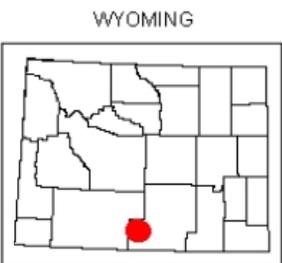
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Other Persons/Agencies Contacted or Consulted

Lynn McCarthy	GIS Coordinator	BLM, High Desert District
Tim Novotny	Supervisory Wildlife Biologist	BLM, Rawlins Field Office
Jerry Gregson	Wildlife Biologist	Wyoming Game and Fish Dept.
Travis Sanderson	Wildlife Biologist	U.S. Fish and Wildlife Service

Doty Mountain POD D Location Map

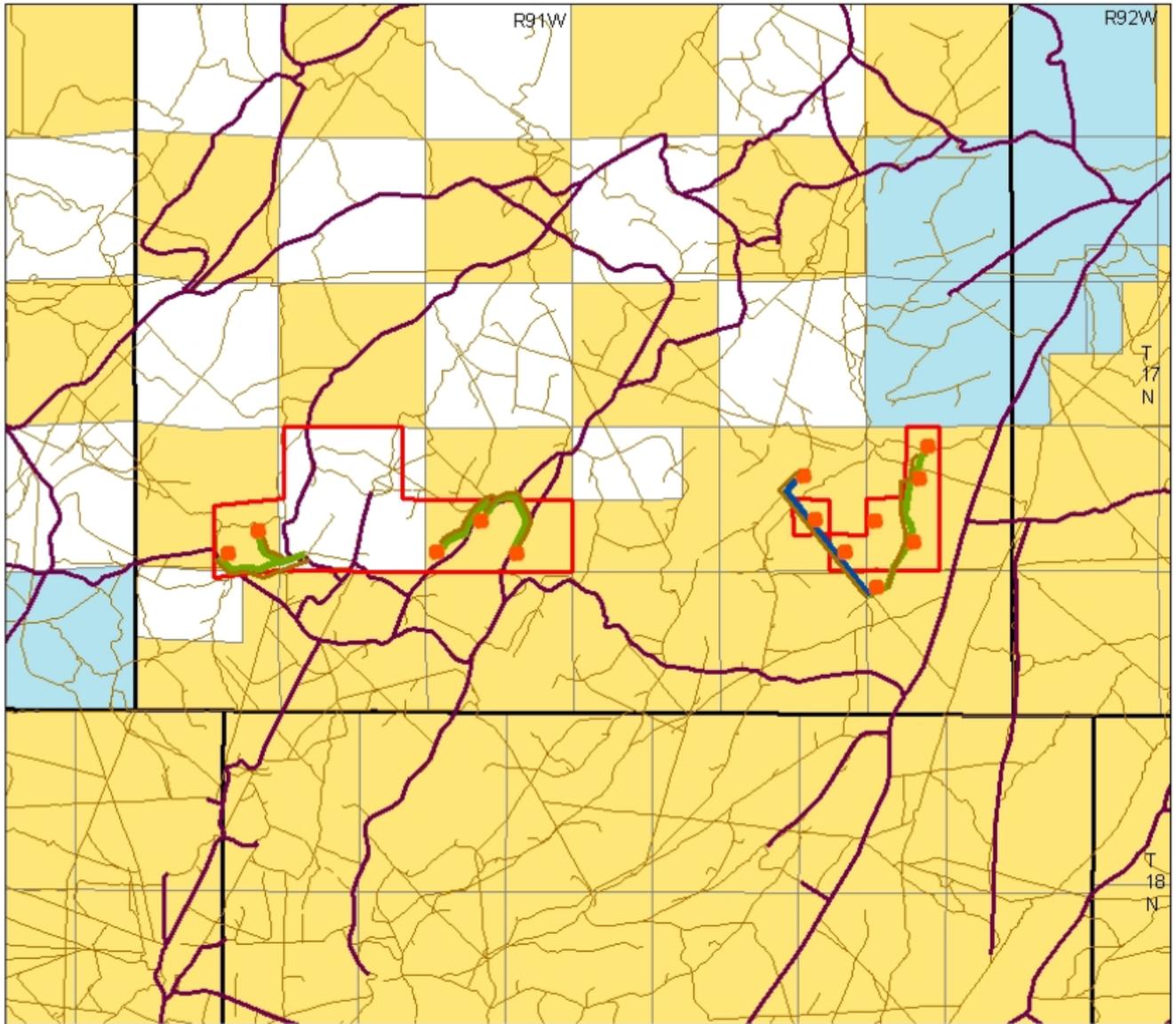
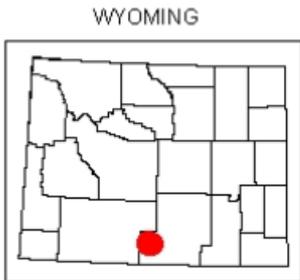
- County Roads
- Doty Mountain Pod D
- Bureau of Land Management
- Private
- State



NO WARRANTY IS MADE BY THE BLM FOR USE OF THE DATA FOR PURPOSES NOT INTENDED BY BLM
APPROVED RAWLINS RESOURCE MANAGEMENT PLAN

Doty Mountain POD D Proposed Action

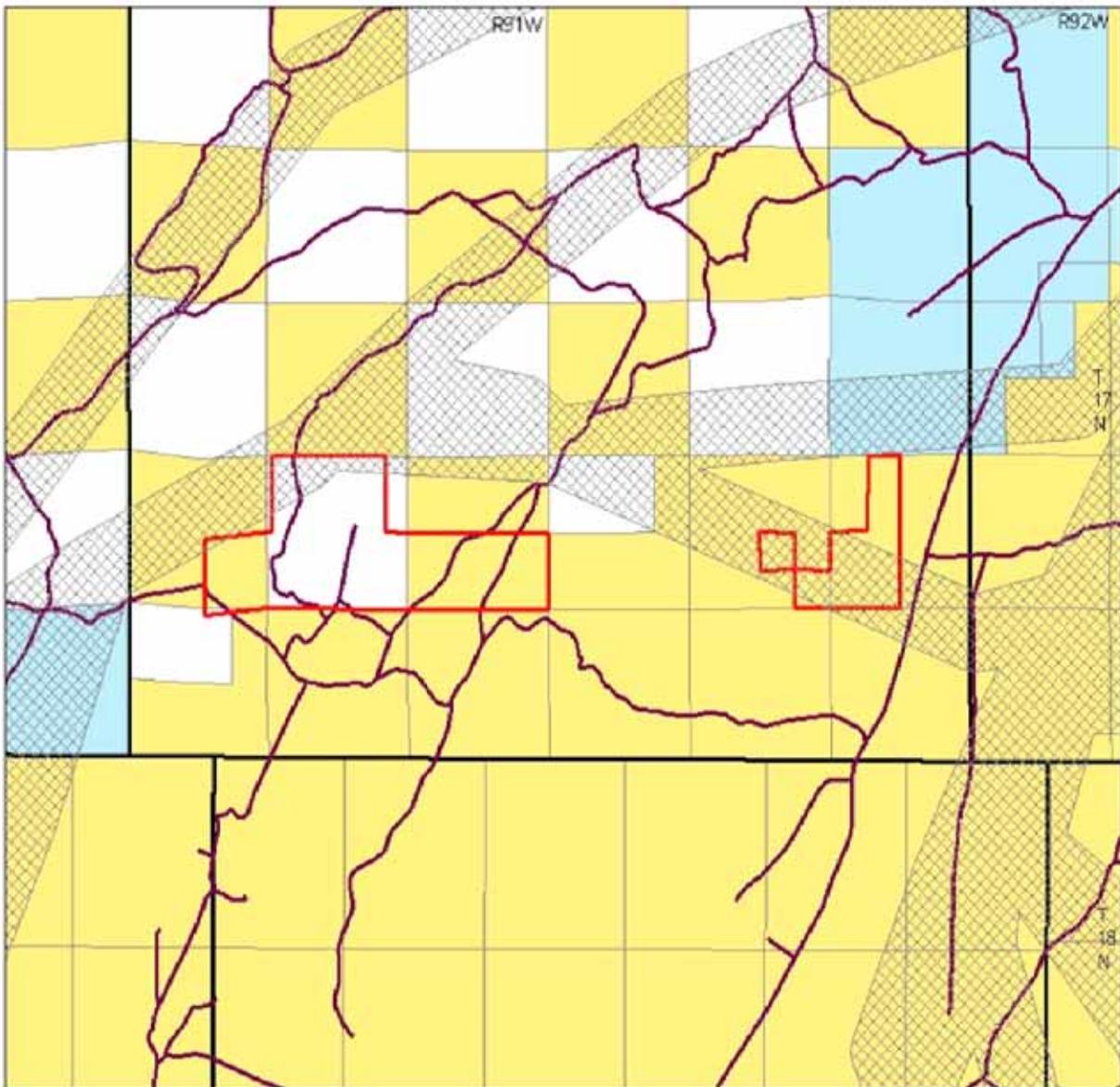
- Proposed Well Pad
- Proposed Access Road
- Proposed Utilities
- RFO_ROADS
- County Roads
- Doty Mountain Pod D
- Bureau of Land Management
- Private
- State



NO WARRANTY IS MADE BY THE BLM FOR USE OF THE DATA FOR PURPOSES NOT INTENDED BY BLM
APPROVED RAWLINS RESOURCE MANAGEMENT PLAN

Doty Mountain POD D Migration Corridor

- County Roads
- Migration Corridor
- Doty Mountain Pod D
- Bureau of Land Management
- Private
- State



NO WARRANTY IS MADE BY THE BLM FOR USE OF THE DATA PROVIDED NOT INTENDED BY BLM
APPROVED FINAL RESOURCE MANAGEMENT PLAN

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 (*i.e.* access road, well pad, pipeline) and/or reclamation activities (*i.e.* 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

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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 Blowout Protection (BOP) tests, running and cementing all casing strings (other than conductor casing), pluggings, Drill String Test (DST's) 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 (*i.e.* 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 Department of Environmental Quality (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 the BLM ROW monuments or references are obliterated during operations, the Operator would secure the services of a

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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.

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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 RFO (307-328-4200) would be notified within 24 hours. If any dead or injured sensitive species is located during construction or operation, the RFO 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 the BLM 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,

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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 DEQ. 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 ROW 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 six months of the APD expiration date.

Site Specific Design Features

1. Construction, drilling, reclamation, and other activities potentially disruptive to nesting raptors would be prohibited during the period of April 1 to July 31 for well pad locations AR Fed 1791 3-25 and 6-25 and from March 1 to July 31 for well pads AR Fed 1791 11-28 and 15-28 for the protection of raptor nesting areas.
2. Construction, drilling, reclamation, and other potentially disruptive activities in suitable Greater Sage-Grouse identified nesting and early-brood rearing habitat within two (2) miles of the perimeter of an occupied Greater Sage-Grouse lek, or in identified Greater Sage-Grouse nesting and early brood rearing habitat, would be prohibited from March 1 to July 15 for all well pad locations.
3. To accommodate big game movements through corridors, gaps in snow berms along road corridors would be required every ¼ mile. Gaps in the snow berms would be at least 100 feet wide.
4. All wells, above-ground structures, production equipment, tanks, transformers, and insulators not subject to coloring requirements for safety would be painted the color of “Shale Green” (5Y 4/2).
5. For AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 an archaeologist with a current BLM permit would monitor construction of the well location and access road due to culturally sensitive soils in accordance with the approved Discovery Plan.
6. For AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 an archaeologist with a current BLM permit would inspect any open pipeline trench due to culturally sensitive soils in accordance with the approved Discovery Plan.
7. A construction barrier fence would be placed on north and east side edges of the well location on AR Federal 1791 3-25 and on the south side of the well location and access road on AR federal 1791 12-25 prior to construction. Fence placement would be monitored by a BLM permitted archeologist, and fence would remain in place until final reclamation is complete.
8. For AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 the Operator would select 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.”
9. For AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 the access road would be surfaced with material compatible in color with the local environment.
10. Unless otherwise authorized, for AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 the pipelines/utilities would 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 would be brush-hogged and the utilities would be placed no farther than the outside edge of the ditch slope.

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11. For AR Federal 1791 3-25, 6-25, 12-25, 14-25, 10-26, and 16-26 no blading would be allowed outside the staked well location for placement or removal of the topsoil stockpile.
12. If production facilities are needed, the facilities would be placed as close the entrance of the well pad (where the primary access road ties into the well pad) as practical and would be placed on grade or cut portions of the pad.
13. The AR Federal 1791 3-25 access road will be constructed in accordance to the engineering design approved on 11/09/2010.
14. Pesticide Use Proposals would be submitted to and approved by the BLM AO—Weed Coordinator, prior to any application of any herbicide on the BLM lands. Pesticide Use Proposals would be tiered to the approved Reclamation Plan/Weed Management Plan.
15. Copies of daily Pesticide Application Records (required by the State of Wyoming) and Summary Herbicide Use Reports would be due monthly to the BLM AO--Weed Coordinator.
16. The following site specific surface design features establish reclamation requirements as set forth in The Wyoming Bureau of Land Management (BLM) Reclamation Policy, effective March 31, 2009, Rawlins Field Office Reclamation Guidance (IM-WYD-03-2011-002), effective March 1, 2011, and the Rawlins Resource Management Plan (RMP) Record of Decision (ROD) Appendix 36, effective December 28, 2008.
17. Prior to any surface disturbing activities, the Operator would submit to the BLM Authorized Officer, via Sundry Subsequent Report (Form 3160-5), the results of all vegetation inventories and soils surveys and tests
18. Prior to any surface disturbing activities, vegetation inventories would be conducted. At a minimum, vegetation inventories would be conducted for basal cover and vegetative life form type and frequency (including individual invasive and noxious weed species). An inventory of 100 to 400 points (depending on the amount and type of vegetative cover) using transects is highly recommended. Other methods may be used as authorized by the State Reclamation Policy, Rawlins Field Office Reclamation Policy, or BLM AO.
19. Prior to any surface disturbing activities, soil surveys, sampling and testing would be conducted for soil depth, chemical, and physical characteristics. At a minimum, the soil would be tested for texture, electrical conductivity and pH. Soil texture and characteristics as well as depth are an important component, in addition to pre-disturbance vegetation inventories, in determining the soil types and associated plant communities or ecological sites (ES) and appropriate seed mixes. Soil moisture and density are also valuable tests. An agricultural suitability test should be performed if harsh conditions exist (pH over 8.5, sandy or clayey textures, EC >12 mmhos/cm etc.). To determine suitable growth material salvage depth and the ES, soil would be tested at a depth of 4-6 inches. If soil is deeper than 20", another sample would be taken at 10-12 inches. If the soil is shallower, or if test results indicate harsh conditions, then sample at

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shallower depths to determine the suitable salvage depth. At a minimum, one (1) sample for each ES occurring on the site would be taken.

20. Prior to any surface disturbing activities, the proposed seed mix, commensurate with the ecological site(s) present, would be submitted to the Authorized Officer via Sundry Notice of Intent (Form 3160-5) for approval before actual seeding operations begin. If broadcast seeding, the rates specified would be doubled.
21. Prior to the completion of interim reclamation, and prior to seeding, the operator would again sample and test soils for suitable surface and subsurface physical, chemical properties as per pre-disturbance testing. These tests are to be used by the operator for comparison of the pre-reclamation soils with pre-disturbance soils and evaluation of the suitability of the soils or seedbed for seed germination and vegetative success under the proposed reclamation plan.
22. Prior to the completion of final reclamation, and prior to seeding, the operator would again sample and test soils for suitable surface and subsurface physical, chemical properties as per pre-disturbance testing. These tests are to be used by the operator for comparison of the pre-reclamation soils with pre-disturbance soils and evaluation of the suitability of the soils or seedbed for seed germination and vegetative success under the proposed reclamation plan.
23. Prior to the completion of interim and final reclamation and seeding, the Operator would submit to the BLM Authorized Officer, via Sundry Subsequent Report (Form 3160-5), the results of all vegetative and soils surveys and tests. Should pre-disturbance and interim/final reclamation test results differ to the extent that seed mix modifications or soil amendments are required to achieve the desired ecological community, the Operator would then submit a revised reclamation plan via Sundry Notice of Intent (Form 3160-5). The Sundry Notice of intent would outline any proposed soil amendments, treatments, additives or modifications, seed mix changes, and other necessary revisions to the reclamation plan and procedures.
24. Reclamation and restoration efforts including seeding/re-vegetation, invasive plant control/treatment, and soil stabilization and erosion prevention would be monitored (for success or failure) and reported by the Operator to the BLM Authorized Officer. 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 reclamation plan including procedures for seeding/revegetation and weed control (via the weed management plan) would be modified and revised as necessary and required to achieve desired results and requirements.

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

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110 percent of the volume of the largest storage vessel, respective to content, or 100 percent 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 inch 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 topsoils 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

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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 run-on/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 five feet long with at least two feet in the ground (three feet above ground) with eight feet spacing if a wire reinforcement 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 six 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, *i.e.*, two-track roads, trails, and pipeline ROWs 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

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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 three posts with braces.
10. All culverts would be a minimum of 18 inches in diameter. Culverts would have a minimum of 12" 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" 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 two 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 six 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 (*i.e.* 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 Resource Conservation and Recovery Act (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 (*i.e.* 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 RFO Disturbance (As-Built) and Reclamation Database. The RFO 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/Physical Scientist at 307-328-4200 for further information.

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2. Reclamation earthwork for interim and/or final reclamation would be completed within six months of well completion or well plugging (weather permitting), 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. Interim or final reclamation of all surface disturbed areas would commence and be completed within one year of initial disturbance unless needed for well production operations, or otherwise approved by the AO. Interim reclamation for those areas not needed for production operations, including unnecessary access roads and pipeline ROWs, would commence and be completed within six (6) months of well completion. Fill and stockpiled soils would be distributed on disturbed areas and the production pad would be as small as possible to allow for safe and prudent production operations.
4. Temporary fencing of the reclaimed well/facilities locations for the first two 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.
5. Any subsequent re-disturbance of interim reclamation would be reclaimed within six (6) months by the same means described herein.
6. 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 a satisfactory revegetation cover is established and the site is stabilized (3-5 years) (RMP ROD Appendix 13-8).
7. The Operator would submit a Final Abandonment Notice (FAN), using Form 3160-5, to the AO when adequate reclamation of surface-disturbed areas has been completed. 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.

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8. 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 nine 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. Since seeds are of different sizes and require different planting depths, the Operator would use the appropriate equipment to ensure that the seed mixture is correctly and uniformly planted over the disturbed area. 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.
9. 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.
10. 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 lands.
11. Any topsoil to be stockpiled for longer than one year would be spread in layers not to exceed two 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.

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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 six 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 ROWs. 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 ROWs 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.

**U.S. Department of the Interior
Bureau of Land Management
Rawlins Field Office**

June 2012

Finding of No Significant Impact (FONSI)

Anadarko E & P Company L.P.
Doty Mountain POD D

Lease Numbers: WYW-116179, WYW-136728

Environmental Assessment No.: DOI-BLM-WY-030-2012-0093 EA

Finding of No Significant Impact:

Based on the analysis of potential environmental impacts contained in the attached Environmental Assessment (DOI-BLM-WY-030-2012-0093-EA) (EA); dated June, 2012), I have determined that the Proposed Action will contribute to significant impacts previously described in the Atlantic Rim Natural Gas Development Environmental Impact Statement (AREIS). No new significant impacts were disclosed during completion of the environmental analysis for this EA that would necessitate the completion of an environmental impact statement. The Proposed Action, which incorporates the Bureau of Land Management (BLM) required Standard Operating Procedures and Best Management Practices, would not create any additional significant effects above and beyond what was already disclosed in the AREIS, which would have sufficient context and intensity, as defined in section 7.3 of the BLM National Environmental Policy Act Handbook (Manual H-1790-1, page 70), to be considered significant.

The considerations listed in 40 CFR 1508.27(b) (1-10) were used to evaluate the intensity of the effects described in the EA:

1. There would be no new significant effects as a result of approving the proposed action. The proposed action would result in both beneficial and adverse impacts.
2. The public's health and safety would not be adversely affected. There would be no adverse social or economic effects beyond those provided for in the AREIS.
3. Neither the Rawlins Resource Management Plan review nor interdisciplinary review found any new unique characteristics in the geographic area or ecologically critical areas which would be adversely affected.
4. The proposal is within the scope and scale of controversy provided for in the AREIS.

5. The effects of constructing, operating and maintaining the actions proposed, as described in the EA, are well known. There would not be a high uncertainty of the effects, nor any new unique or unknown risks.
6. This proposal does not set a precedent for future actions with significant effects and does not represent a decision in principle about a future consideration.
7. This proposal would contribute to the significant effects disclosed in the AREIS and decided in the ARROD.
8. The proposal will not adversely affect districts, sites, highways, structures or objects listed in the National Register of Historic Places beyond that disclosed in the AREIS.
9. There would be no effects to habitat for threatened or endangered species beyond those disclosed in the AREIS. Construction timing restrictions, design features and additional mitigation measures would minimize or prevent adverse effects to other wildlife species and their habitat.
10. Approving either the Proposed Action or the Alternative would not violate any Federal, State, or local laws or regulations imposed for the protection of the environment.

Authorized Official:

DRAFT

Dennis Carpenter
Rawlins Field Manager

Date