DECISION RECORD AND FINDING OF NO SIGNIFICANT IMPACT
Anadarko Exploration and Production Company
Atlantic Rim Natural Gas Project
Red Rim Pod Environmental Assessment
No. WY-030-04-EA-055

INTRODUCTION

Anadarko Exploration and Production Company (AEPC) has proposed to explore and develop coalbed natural gas wells in the Red Rim Pod Project Area (RRPA) within the boundaries of the Atlantic Rim Natural Gas Project Area (ARPA) located in Carbon County, Wyoming. The RRPA is located, partly on federal surface estate with federal mineral estate administered by the Bureau of Land Management (BLM), Rawlins Field Office (RFO), and partly on private surface with private mineral estate. The proposed project is part of the exploratory drilling activities under consideration for the acquisition of data necessary to prepare the ARPA Environmental Impact Statement (EIS).

The Red Rim Pod project consists of the drilling, completing, and producing of a total of 16 exploratory coalbed natural gas wells, the use of two deep injection wells, construction, maintenance, and use of appurtenant access roads, pipeline and utility corridors, and a compressor station. Of the 16 wells, 8 have already been drilled on private lands within the RRPA. The RRPA encompasses approximately 3,200 acres. The life of the project is estimated to be from 10 to 20 years. The RRPA is located in Township 20 North, Range 89 West, in Carbon County, Wyoming. Access to the RRPA is provided by Carbon County Road 605 (Sixteen Mile Road), from Rawlins, Wyoming. The RRPA is located approximately 8 miles south of Rawlins.

ALTERNATIVES CONSIDERED

The Environmental Assessment (EA) for the Red Rim Pod assessed three alternatives. For the proposed action and alternative 2, drilling within the Red Rim area would develop over a 6- to 12-month period. Wells would be tested when completed; however, an estimated 6 to 12 months of continuous producing status in the Red Rim area would be needed to fully evaluate the economics of any additional development. The life of the project is estimated at between 10 and 20 years. The productive life of a shallow gas well completed in coals in the Mesaverde Group is estimated to be 15 years.

Proposed Action

This alternative is described in detail in Chapter 2 of the Red Rim Environmental Assessment, beginning on page 2-1, section 2.1. Of the eight proposed well locations, five wells would be located on surface ownership lands administered by the BLM, RFO, and would develop federal minerals. One proposed well would be located on surface ownership lands administered by the RFO and would develop minerals owned by the State of Wyoming. The remaining two proposed wells would be located on fee lands and would develop fee minerals. The proposed water injection wells, zeolite water conditioning facilities, surface discharge outfalls, and compressor station all would be located on fee lands. Associated gas and water pipelines would be located on both federal and private lands.

Alternative 2 - Injection of Produced Water from Federal Wells with Limited Beneficial Use

This alternative is described in detail in Chapter 2 of the Red Rim Environmental Assessment, beginning on page 2-27, section 2.2. Alternative 2 was developed to respond to the effects of surface discharge of produced water on surface resources and uses. The BLM formulated this alternative for federal wells to assess the disposal of produced water by injection instead of surface discharge. Other than the differences described below, Alternative 2 is the same as the Proposed Action. Under Alternative 2, almost all the produced water from the proposed federal wells in

sections 20 and 28 within the Project area would be injected. A small portion of the water produced from gas wells (about 5 gallons per minute at each location identified on **Figure 2-1**) would be dispensed for use by livestock. Water would be piped into self-contained tire tanks that would not discharge produced water into drainages. A water management plan that would apply to Alternative 2 is included as **Appendix E** in the EA.

Produced water from non-federal gas wells in sections 16, 21, and 29 would be discharged to ephemeral draws on fee lands in compliance with an NPDES permit approved by WDEQ. Gathering lines would carry produced water from non-federal wells to a water conditioning facility and two outfalls located on fee lands in the NE¼ of section 21. Two outfalls would be used in order to dissipate the energy of flows and reduce potential erosion of the channel by spreading out the volume of water entering the drainage over two locations. Alternatively, produced water would also be disposed of by re-injection along with water from federal wells. Injection wells would be located in sections 21 and 29 (AR Fee 21I in the NE¼ of section 21, and AR Fee 29I in the NE¼ of section 29) to dispose of the waste stream from the conditioning facility, and to inject any other produced water from private wells and all produced water from the federal wells.

No Action Alternative

The "No Action" alternative assessed the effects of not implementing any portion of the proposal. Under the No Action Alternative, the BLM would consider additional APDs and ROW actions for federal lands on a case-by-case basis, consistent with the scope of existing environmental analysis. Additional gas development may occur on state and private land under APDs approved by the Wyoming Oil and Gas Conservation Commission.

Alternatives Considered But Not Analyzed in Detail

There is a detailed discussion of alternatives considered but not analyzed in detail in the EA at section 2.4, page 2-29. Basically several alternative pipeline routes were considered and assessed preliminarily, however only one route was assessed in the EA under any of the alternatives. Within the scope and purpose and need for this project, no other unresolved conflicts involving alternative uses of available resources were identified for assessment.

DECISION

Based upon the analysis of the potential environmental impacts described in the EA and in consideration of the public, agency, and industry comments received for the environmental assessment, the Authorized Officer has selected for implementation Alternative 2, modified for no surface discharge of produced water. A small portion of the water produced could be dispensed through closed watering systems for livestock and wildlife use, as detailed in the EA. All other produced water would be disposed of through the water injection wells. The decision incorporates the following:

1. Master Surface Use Plan (Appendix C of this Decision Record) - The master Surface Use Plan attached to this Decision Record has been modified by removing any reference to surface discharge.

2. Project-Wide Mitigation Measures and Procedures (part of Appendix C of this Decision Record)

3. Master Drilling Plan and its exhibits (Appendix C of this Decision Record)

4. Conditions of Approval (Appendix D of this Decision Record)

The Water Management Plan is not included in this decision.

APPROVED PROJECT COMPONENTS

- Development of eight exploratory coalbed natural gas wells within the RRPA
- Completion of two deep water injection wells
- Construction of new access roads and facilities associated with coalbed natural gas development, including water and gas gathering pipelines, and power lines buried parallel and adjacent (where possible) to access roads *
- Discharge of produced water to closed livestock and wildlife watering systems
- Construction of gas compression and sales pipeline facilities *

* The Master Surface Use Plan, Appendix C of this Decision Record, states, "This MSUP is intended to serve as the ROW pre-application for the gas lines, water lines, access roads to well locations, and electric lines in the pod. A more detailed Plan of Development will be submitted with each application" (page 38) this requirement also applies to the gas compressor.

RATIONALE FOR DECISION

The decision to approve the operator's proposed development was based upon the following factors:

1. Consistency with the Great Divide Resource Management Plan
2. National policy
3. Agency statutory requirements
4. Relevant resource and economic considerations
5. Application of measures to avoid or minimize environmental harm
6. Public comments
7. Consistency with the purpose and need for action

1. Consistency with Resource Management Plans

The proposed action is in conformance with the planning direction developed for this area. The objective for oil and gas management decisions described in the Great Divide Resource Management Plan (1990) is to "provide for leasing, exploration, and development of oil and gas while protecting other resource values."

2. National Policy

Private exploration and development of federal oil and gas leases is an integral part of the Bureau of Land Management's oil and gas leasing program, under the authority of the Mineral Leasing Act of 1920 and the Federal Land Policy and Management Act of 1976. The United States continues to rely heavily upon foreign energy sources. Oil and gas development reduces the United States' dependence upon foreign energy supplies. The decision is consistent with national policy.

3. Agency Statutory Requirements

The decision is consistent with all federal, state, and county authorizing actions required to implement the proposed action. All pertinent statutory requirements applicable to this proposal were considered.

4. Relevant Resource and Economic Considerations

Environmental impacts from the pilot project to resources as identified in the EA are minor and deemed acceptable. Positive economic benefits are expected from this proposal. This project will allow increased knowledge of geologic, natural gas, and environmental conditions.

5. Application of Measures to Avoid or Minimize Environmental Harm

Federal environmental protection laws such as the Clean Air Act, the Clean Water Act, and the Historic Preservation Act, apply to all lands and are included as part of the standard oil and gas lease terms. Adoption of mitigations, conditions of approval, and other protections are included as part of the effort of complying with oil and gas lease terms. The mitigation and monitoring measures identified in the project EA and its appendices represent the best means to avoid or minimize environmental impacts.

6. Public Comments

The BLM requested comments on this EA from the public, local landowners; and federal, state, county, and local agencies. The BLM issued a news release with a brief summary of the proposed action, location of the project, and information about how the public could comment. A total of 32 copies of the EA were mailed out in response to requests by public, industries, or agencies via mail, phone, and walk-in visits. In addition, the EA and its appendices and reference documents were posted on the BLM Wyoming internet site for review and downloading. The comment period ran from December 23, 2003, to January 26, 2004. A total of seven comments were received by the BLM. The summarized comments and BLM's responses are found in Appendix B of this document. Corrections and supplemental data for the EA are found in Appendix A.

7. Consistency with the Purpose and Need for Action

The need for this proposal is to allow the Applicant to drill and test for commercial natural gas resources in coal bearing formations within their lease holdings. Determination of production potential would allow the Applicant to decide how and if to develop natural gas resources within the area. Developing natural gas is an important element of the nation's energy program and is used through out the country's economy including for heating, electrical generation, plastics, and fertilizer production. The Secretary of the Interior has entered into a contract (lease) with the Applicant that gives them the "exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas" within the lease.

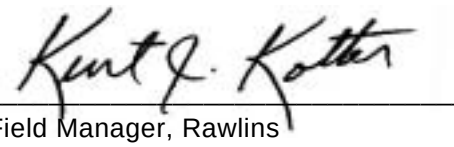
FINDING OF NO SIGNIFICANT IMPACT

Based on the analysis of potential environmental impacts contained in the Red Rim Pod EA, with implementation of the protective measures found in its appendices, and comments received from public review, I have determined that the impacts from this project will not be significant and an environmental impact statement is not required.

APPEAL

Under BLM regulation this decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land

Management, P.O. Box 1828, Cheyenne, Wyoming 82003, within 20 business days of the date this Decision Record is posted to the Bureau of Land Management's internet site at: http://www.wy.blm.gov/nepa/nepadocs.htm.



Field Manager, Rawlins

April 30, 2004

Date

Appendix A
ERRATA
Modifications and Corrections To The Atlantic Rim Natural Gas Project, Red Rim Pod Environmental Assessment

Chapter 2 – PROPOSED ACTION AND ALTERNATIVES

Page 2-1, 3rd Paragraph: The first sentence has been changed to read: *The Proposed Action consists of constructing, drilling, completing, testing, and operating eight exploratory gas wells and up to two water injection wells; testing and operating eight existing exploratory wells; and constructing and operating two water conditioning facilities, three surface discharge outfalls, and a compressor station.*

Page 2-23 Special Status Species, #2: has been changed to read: *The occurrence and distribution of one T&E plant (Ute ladies'-tresses orchid) and seven BLM sensitive plants (Laramie columbine, Nelson's millkvetch, Cedar Rim thistle, Weber's scarlet gilia, Gibben's beardtongue, persistent sepal yellowcress, and Laramie false sagebrush) will require specific consideration during the APD process.*

Chapter 3 – AFFECTED ENVIRONMENT

Page 3-7, Table 3-2: has been modified to include:

Assumed background Concentrations and Applicable Ambient Air Quality Standards and PSD Incremental Values (in ug/m3)

Averaging Time	Measured Background Concentration ($\mu g/m^3$)	Percent of Standard		Data Sources
		NAAQS	WAAQS	
Carbon Monoxide				Data collected by Amoco at Ryckman Creek for an 8-month period during 1978-1979, summarized in the Riley Ridge EIS (BLM, 1983)
1-Hour	3,336	8	8	
8-Hour	1,381	14	14	
Nitrogen Dioxide				Data collected at Green River Basin Visibility Study site, Green River, Wyoming during the period January-December 2001 (ARS, 2002)
Annual	3.4	3	3	
Ozone				Data collected at Green River Basin Visibility Study site, Green River, Wyoming during the period June 10, 1998 through December 31, 2001 (ARS, 2002)
1-Hour	169	72	72	
8-Hour	147	94	94	
Particulate Matter (PM^{10})				Data collected by WDEQ at Emerson Building, Cheyenne, Wyoming, Year 2002. (WDEQ)
24-Hour	47	31	31	
Annual	16	32	32	

Particulate Matter ($PM^{2.5}$)				Data collected by WDEQ at Emerson Building, Cheyenne, Wyoming, Year 2002. (WDEQ)
24-Hour	15	23	23	
Annual	5	33	33	
Sulfur Dioxide				Data collected at LaBarge Study Area at the Northwest Pipeline Craven Creek site 1982-1983
3-Hour	132	10	19	
24-Hour	43	12	17	
Annual	9	11	15	

Page 3-23, Threatened and Endangered Species: has been changed to read: *Two federally listed plant species, blowout penstemon (*Penstemon haydenii*), and Ute ladies' tresses orchid (*Spiranthes diluvialis*), have the potential to occur within the Atlantic Rim EIS study area; however, none have the potential to occur within the Project area for the Red Rim POD.*

Chapter 4 – ENVIRONMENTAL CONSEQUENCES

Page 4-4: the following table has been added to section 4.3 Air Quality.

Table4-1: Summary of far-field air quality impacts from the Desolation Flats EIS

Air Quality Component	Comment
1.1.1.1 Potential Air Pollutant Concentrations	
Criteria Air Pollutants	∉ Far-Field total concentrations are in compliance with applicable NAAQS and WAAQS o Particulate matter concentrations 13 - 40% of standards o NO_2 concentration 10% of standard o SO_2 concentrations 4 – 8% of standards ∉ Far-Field project concentrations are well below applicable PSD Class I increments o PM_{10} concentrations .002 - .4% of increments o NO_2 concentration .4% of increment o SO_2 concentration .005 - .07% of increments
1.1.1.2 Visibility	
Days with > 1.0 ΔdV	∉ Potential visibility impacts from the Desolation Flats project were less than the FLAG visibility threshold ∉ Potential cumulative visibility impacts were greater than the FLAG visibility threshold o 7 days in Bridger Wilderness o 2 days in Fitzpatrick Wilderness o 0 days in Popo Agie Wilderness o 1 day in Wind River Roadless Area o 0 – 1 day in Dinosaur National Monument o 1 day in Savage Run Wilderness o 1 day in Mount Zirkel Wilderness o 0 – 1 day in Rawah Wilderness

Days with > .5 ΔdV	∉ Potential visibility impacts from the Desolation Flats project were less than the FS/NPS visibility threshold ∉ Potential cumulative visibility impacts were greater than the FS/NPS visibility threshold o 11 - 16 days in Bridger Wilderness o 2 days in Fitzpatrick Wilderness o 7 – 8 days in Popo Agie Wilderness o 7 days in Wind River Roadless Area o 8 - 10 days in Dinosaur National Monument o 6 - 7 days in Savage Run Wilderness o 3 days in Mount Zirkel Wilderness o 4 - 5 day in Rawah Wilderness
1.1.1.3 Atmospheric Deposition	
Lake Chemistry Level of Acceptable Change (LAC)	∉ Decreases in ANC from the Desolation Flats project alone were less than the lake chemistry LAC (level of acceptable change) ∉ Cumulative decreases in ANC were less than the lake chemistry LAC for sensitive lakes o 6% of LAC for Black Joe Lake o 7% of LAC for Deep Lake o 3% of LAC for Hobbs Lake o 2% of LAC for Ross Lake o 9% of LAC for Lower Saddlebag Lake o 13% of LAC for Seven Lake o 22% of LAC for West Glacier Lake o 5% of LAC for Island Lake o 9% of LAC for Rawah #4 Lake ∉ Cumulative decreases in ANC were less than the lake chemistry LAC for very sensitive lakes o 46% of LAC for Upper Frozen Lake o 32% of LAC for Pothole A-8 o 32% of LAC for Upper Slide Lake

Page 4-9: the second paragraph on the page has been removed and the following paragraph inserted:

> These targeted coal reservoirs are classified as confined because they are bounded by confining layers that consist of impervious layers of shale and siltstone. Hydraulic connection between the coal reservoirs and any aquifer stratigraphically above or below the coal seams is considered nonexistent. The hydrostatic head of the water measured in test wells completed in coal reservoirs in and near the project area are considerably higher than the elevation of the ground level at a specific well location. Confined, or artesian, reservoir conditions of this type signify an effective seal above and below the reservoir.

Page 4-35: the last paragraph of Section 4.16.1.2 Air Quality has been removed.

Appendix B
Summary of EA Comments and BLM Responses

The EA was released for a 30-day public review period on December 23, 2003. A total of seven comment letters were received. The letters have been reviewed to determine whether the information they provided would warrant a determination other than a Finding of No Significant Impact (FONSI). Substantive comments are summarized below, followed by the BLM's responses to the comments in italics. The RFO would like to thank all who commented for taking the time to review the EA and provide comments.

1. Office of State Lands and Investments

This office has no significant concerns regarding the proposed action at this time. Our review of the captioned EA discloses that the proposed action will enhance the desired study of well performance in the Atlantic Rim Project. If the BLM pursues the proposed action, the drilling will allow testing of state resources as well as federal, and the combination, if producing, will convey additional revenues to the Sate of Wyoming.

Thank you for your comment.

2. The State of Wyoming Department of Environmental Quality

There are three Water Quality Divisions permits that may apply to the project.

This information is appreciated. BLM Regulation at 43 CFR Part 3164.1 Onshore Oil and Gas Order No. 1; Approval of Operation's on Onshore Federal and Indian Oil and Gas Leases; section I., Accountability, states in part, "Lessees and operators have the responsibility to see that their exploration, development, production, and construction operations...conforms with applicable federal laws and regulations and with State and local laws and regulations...." The Master Surface Use Plan, Appendix B, of the EA on page 6, states, "All the Companies' operations and those of its contractors will be conducted in accordance with all the BLM and WOGCC rules and regulations."

3. The State of Wyoming Game and Fish Department

Separation Creek flows through the project area but does not contain a fishery. However, within this arid region the riparian habitat along this stream does provide valuable habitat for terrestrial animals and possibly amphibians. Impacts to habitat should be minimized, and any necessary reclamation should include native vegetative species.

It is BLM's goal to keep disturbance to a minimum. BLM's reclamation policy requires the use of native spices.

4. Petroleum Association of Wyoming

a. The applicants have agreed to numerous "Applicant Committed Measures", which go beyond the required protective measures established in the current land management plan...The Applicants have demonstrated their willingness to work with the BLM in protecting the effects on the environment and as a result, PAW believes that the proposed project has provided sufficient mitigation to protect the environment.

We agree that the Companies have shown their willingness in working with the BLM to protect the environment. The Project Wide Mitigation Measures and Procedures, found in Chapter 2, along with the Conditions of Approval that are added to the Decision Record provided sufficient mitigation to protect the environment.

b. The "Applicant Committed Measures" are voluntary actions agreed to by the individual companies and should not establish the precedent for future projects that are similar in nature.

The measures identified under Section 2.1.10, Project Wide Mitigation Measures and Procedures, and referred to as Best Management Practices through out the EA, are actions or features which are included as part of the proposed action that would be taken to avoid or reduce project impacts or reflect standards operating procedures. Once the measures, as described in Chapter 2, become part of the decision, they are considered enforceable actions that will be implemented, if applicable, to reduce impacts to the environment resulting from the project. Regardless if these measures are proposed by the BLM or the applicant, they will be applied if necessary.

c. Page 2-15, Preconstruction Planning, Design, and Compliance Measures, #1: "The Companies would designate a qualified Representative to serve as compliance coordinator." The BLM must recognize that individual contact persons may be required when site-specific operations occur that affect only one company's operation.

This comment is appreciated.

d. Page 2-18, Water Resources: As development continues in the Atlantic Rim area the BLM must continue to remain flexible regarding other disposal methods such as surface discharge into off-channel reservoirs for beneficial use or re-injection of produced water into deep aquifers.

Refer to Appendix A of the EA, INTERIM DRILLING POLICY, page A-3. This explains BLM policy for water disposal while the Atlantic Rim Coalbed Natural gas project is being written.

e. Page 2-22, Vegetation, Wetlands, and Noxious Weeds, #1: PAW believes that consultation between the operator, BLM, and County Weed and pest agencies should be encourages to identify noxious weed outbreaks. Once identified, the appropriate control measures should be implemented.

This comment is appreciated, the process discribed is basicly the process the BLM uses.

f. Page 2-24, Cultural Resources, #3: Adverse effects to cultural or historical properties that cannot be avoided would be mitigated by preparing and implementing a cultural resources mitigation plan.

Mitigation plans are only required on those cultural or historical sites that cannot be avoided. As explained on page 2-24, Cultural Resources, #2, "Avoidance is the preferred method for mitigating adverse effects to a property that is considered eligible for the NRHP." A mitigation plan is only required if an eligible site can not be avoided.

g. Page 2-24, Transportation, #2: Roads that are not required for routine operation and maintenance of producing wells and ancillary facilities or field production would be permanently blocked, reclaimed, and revegetated." Operators have no authority over roads that they do not construct. Only those roads constructed pertinent to this project should be subject to this mitigation measure. The BLM should consult the County before blocking and reclaiming roads.

We have a process for closing roads on public land. This process includes coordination with land owners, other users, and other government agencies. As stated on page 20 of the Master Use Plan (Appendix B, "roads, culverts, cattle guards, pipelines, stock water facilities, or other structures could be left in place at the end of the project for any beneficial use...." The BLM does not have the unilateral authority to close County roads.

h. Page 2-24, Socioeconomics: PAW recognizes that the social and economic opportunities generated from the project would continue to benefit the residents of Wyoming and the participating counties by directly creating new jobs and producing additional revenues. Socio-economics are an important component to this cumulative analysis and were appropriately incorporated into the EA.

This comment is appreciated.

i. Page 2-27, Noise, #3: "In addition to other restrictions on activities near leks, the BLM may require that noise levels be limited to no more than 10 decibels on the A-weighted (dBA) above background levels...." There is an ongoing effort with the BLM and Wyoming Game and Fish to monitor the possible effects noise may have on the species during seasonal times of the year. PAW recommends that the BLM insert language into the EA that recognizes the agency should remain flexible with noise mitigation while those studies are being conducted and the mitigation may be adjusted based on the results from those studies.

Research on noise levels affecting greater sage-grouse is presently ongoing. The 10 dBA standard was established as mitigation in the Pinedale Anticline EIS. The analysis presented in the noise technical analysis report, prepared for the EIS, indicated that an oil and gas rig would have to be located a minimum of 800 feet away from a greater sage-grouse lek and a typically-sized (26,000 horsepower) compressor station would have to be located approximately 2,500 feet away from the lek, unless mitigation is applied.

We are currently trying to obtain the latest research information available on this subject, but until further studies are complete, we will use the results from the studies conducted for the Pinedale EIS as a guide and will mitigate noise levels of authorized actions to increases to no more than 10 dBA above background levels at the edge of sage-grouse leks. Furthermore, the requirement that no construction activities would occur within 0.25 miles of a greater sage-grouse lek, would help to reduce noise levels resulting from gas development at lek locations.

j. The BLM must recognize that requirements on private surface need to be subject to the private landowners unless mandated by federal law. While the BLM has the mandate under NEPA to analyze for impacts regardless of land ownership, it does not give the BLM the authority to manage private property. Outside of the Endangered Species Act or any other laws, the BLM must manage the surface resources at the discretion of the landowner. This needs to be consistently reflected in the document.

The BLM has long recognized the rights of the land owner and requires the input of the land owner whenever private lands are involved in a federal action. Table 2-1 on page 2-3 lists which wells and facilities are on private and which are on public land. The last sentence on page 2-4 states, "Although the entire project is described in the pod, the proposed federal action is limited to the anticipated activities that would require a decision or authorization from the BLM to proceed."

k. In a time of uncertainty and with the projection of natural gas production being unable to meet demand during certain times of the year, Wyoming has the opportunity to provide much needed natural resources to markets throughout the nation and this proposal has the potential to assist in that effort. At the same time, industry recognizes the importance of protecting the environment and will work to adequately address those concerns during the appropriate level of NEPA analysis.

This comment is appreciated.

5. U.S. Fish & Wildlife Service

a. The Service understands that the Bureau will prepare a separate EA for each pod proposed under the Atlantic Rim Coal Bed Natural Gas Project to collect information for use in preparing an EIS. The Service believes that, in order to fully analyze cumulative effects pursuant to NEPA, the effects of full field development of the Atlantic Rim Coal Bed Natural Gas Project should be analyzed under one document rather than through individual EAs that tier to the Interim Drilling Policy.

The Red Rim Pod, along with other Pods associated with the Atlantic Rim project, is intended to provide exploratory information in support of development of the Atlantic Rim Environmental Impact Statement. The Atlantic Rim Pods have been proposed in order to develop information on the impacts of various actions that are envisioned occurring and to obtain baseline information on geologic and biologic conditions. There is no library where this information may be "checked out"; it must be obtained by exploration in the field. In addition, the productivity of the coal formations targeted in producing natural gas is a critical piece of information. Experience has shown that there are a certain minimum number of wells necessary to successfully obtain such information. The Red Rim Pod is proposed for just such reasons. All the elements of a coal bed methane operation must be in place (production wells, plumbing, disposal wells, roads, gas lines and compressor stations) in order to adequately develop this information. The Atlantic Rim EIS, concurrently in the process of development with the Atlantic Rim Pods, will provide the broad level of analysis you have requested, including cumulative effects within and around the Atlantic Rim area. An example of the utility of this process is the recent revision of the proposed action from 3,880 wells to 2,000 wells, based on the results obtained from exploratory drilling.

b. Page I-I, Description and Location: Page I-I of the EA describes the production of eight exploratory wells and two injection wells and the testing of eight existing wells. However, page 2-1 states that the proposed action consists of nine exploratory wells and two injections wells and the testing of seven existing wells. Please clarify how many new wells are included in the Red Rim Pod as well as any past and present actions that should be included in a cumulative effects analysis pursuant to 40 CFR § 1508.7.

Page 2-1, third paragraph, the first sentence has been changed to read, "The Proposed Action consists of constructing, drilling, completing, testing, and operating eight exploratory gas wells and up to two water injection wells; testing and operating eight existing exploratory wells; and constructing and operating two water conditioning facilities, three surface discharge outfalls, and a compressor station."

c. Page 2-8, Power Generation: The Red Rim compressor station is within two miles of three sage grouse leks. We are concerned that noise from the engines may influence nearby lek activity especially if the topography between the compressor station and the leks is flat. The Service recommends relocating the compressor station so that it is outside of the two-mile buffer. In the event that the compressor can not be moved, we recommend that noise be minimized by the use of muffling systems. If topographic features such as hills are present and serve to greatly reduce noise influence to adjacent leks please clarify this.

In Section 2.1.10 Project-Wide Mitigation Measures and Procedures of the RRPEA, the "Companies" agree to use and comply with measures and procedures to avoid or mitigate potential impacts to resources. These measures and procedures are referred to as Best Management Practices. As found under Noise on page 2-26, the Companies would muffle and maintain all motorized equipment according to Best Management Practices. And in addition to other restrictions on activities near leks, the BLM will require that noise levels be limited to no more than 10 decibels on the A-weighted scale (dBA) above background levels for greater sage-grouse leks that are located on public lands. This scale simulates human hearing by placing less emphasis on lower frequency noise. The BLM will require that compressor engines located on public lands be enclosed in a building and located at least 600 feet away from sensitive receptors or sensitive resource areas to comply with these limits on noise levels.

The Great Divide Resource Management Plan (RMP), in Appendix I, lists sage grouse in several areas of the Wildlife Mitigation Guidelines, including 2b and 2c. Item 2c provides for the prohibition of surface activities or use within important habitat areas for the purpose of protecting sage grouse breeding grounds and or habitat where timing stipulations are not appropriate. The purpose of the Guidelines are 1) to reserve for the BLM, the right to modify the operations of all surface and other human presence disturbance activities as part of the statutory requirements for environmental protection, and 2) to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. The Guidelines in the RMP are not specific as to the distance an action must be moved to mitigate impacts of a proposal on sage grouse. Literature reviews indicate that spacing requirements from a lek generally run in the 0.25 to 2 mile range; 0.25 miles is a minimum distance for spacing.

d. Page 2-22, Wildlife, Item #1: The EA states that the Companies will establish a variety of forage species that would return the land to a condition that approximates or is equal to its state before disturbance. We recommend that native species be used during reclamation and that sage brush habitat be reclaimed as well to a condition that is equal to or better than its state prior to disturbance.

Page 20 of the Master Surface Use Program (appendix B); table B-3 gives the seed mixed that will be used for reclamation. All species listed are native species. The linear nature of the disturbance from road and pipeline disturbance and the small size of the disturbance from pad construction allow sage brush to come back naturally once the grasses and forb, that were seeded, have created the needed microclimate. Chapter 4,

page 4-13 and 4-17, of the RRPEA, analyze the loss of sage brush and the effect on sage dependent species.

e. Page 2-22, Wildlife, Items 8 and 10, and Page 3-26, Greater Sage Grouse: *The Service believes that the timing stipulation may protect the sage grouse nesting period but may not be protective of the brood rearing period. We recommend that you contact the local Wyoming Game and Fish Biologist to determine local site specific dates for leking and hatching and brood rearing period, and then modify the timing stipulation to reflect a period of more thorough protection*

The BLM normally consults with and receives input from field biologists of the Wyoming Game and Fish Department when considering exception requests and in spring monitoring of greater sage-grouse lek activity (breeding).

f. We also feel that a 0.25-mile NSO will not protect leking, nesting or brood rearing activity and should not be considered a mitigation measure.

Page 2-22 of the RRPEA provides details that construction and surface occupancy cannot occur at anytime within 0.25 miles of existing leks for greater sage-grouse. In addition, construction, drilling, or other activities that could disrupt nesting greater sage-grouse are prohibited from March 1 through June 30 for the protection of nesting areas for this species. The sage grouse is a BLM sensitive species, listed as such on April 9, 2001. Because of this status, no actions that might jeopardize the future existence or viability of this species may occur.

The Great Divide Resource Management Plan (RMP), in Appendix I, lists sage grouse in several areas of the Wildlife Mitigation Guidelines including 2b and 2c. Item 2c provides for the prohibition of surface activities or use within important habitat areas for the purpose of protecting sage grouse breeding grounds and or habitat where timing stipulations are not appropriate. The purpose of the Guidelines are 1) to reserve for the BLM, the right to modify the operations of all surface and other human presence disturbance activities as part of the statutory requirements for environmental protection, and 2) to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. The Guidelines in the RMP are not specific as to the distance an action must be moved to mitigate impacts of a proposal on sage grouse. Literature reviews indicate that spacing requirements from a lek generally run in the 0.25 to 2 mile range. The minimum distance for spacing is 0.25 miles.

g. Finally, we believe that a two-mile buffer may protect only a portion of sage grouse nests, especially in an area where disturbance is occurring. Lyon et al. (2003) found that disturbance can increase the distance from leks to nest sites and the majority of hens from disturbed leks nested greater than two miles from the lek, while the majority of hens from undisturbed leks nested within two miles of the lek.

See f. above.

h. The Service strongly recommends protection measures as described by Connelly et al. (2000), which based protection measures on whether or not specific sage grouse populations are migratory and whether or not sage brush habitat is uniformly distributed. Connelly et al. (2000), recommends protective measures of between 2 and 11 miles from a lek based on the habitat availability and year-round activities of populations of sage grouse. We strongly recommend that the project

be altered so that these leks and their adjacent nesting and brood-rearing habitat are maintained in a contiguous nature.

See f. above.

i. The Service also encourages the Bureau to use its authority and not grant exceptions to any final protection measures for sage grouse despite mitigation plans for anticipated impacts.

Exceptions are approved only after a thorough, site-specific analysis, including interdisciplinary and interagency consultation leads to the conclusion by the BLM that an unacceptable impact to greater sage-grouse will not occur from the request.

j. As you know, the Forest Service, the Bureau, and the Service signed a Memorandum of Understanding (MOU) in 2001 with the Western Association of Fish and Wildlife Agencies to conserve the greater sage-grouse and its habitat. This MOU outlined the participation of Federal and State wildlife agencies, including the Wyoming Game and Fish Department, in greater sage-grouse conservation, and these commitments should be considered in project planning in sage-grouse habitat.

These commitments were considered in planning for this and other projects.

k. Additionally, unless site-specific information is available, greater sage-grouse habitat should be managed following the guidelines by Connelly et al. 2000.

Please refer to our response to comment f. above.

l. Page 2-23, Special Status Species, Item #2, and Page 3-23, Threatened and Endangered Species: The EA indicates that the western prairie fringed orchid (*Platanthera praeclara*) should be considered within the project area. This species does not occur in Wyoming.

The RRPEA has been changed to comply with the comment, see Appendix A, ERRATA.

m. Ute ladies "tresses" (*Spiranthes diluvialis*) and blowout penstemon (*Penstemon haydenii*) are listed plant species that may potentially occur in the project area. The Service recommends that all suitable habitat for Ute ladies tresses and/or blowout penstemon be avoided or surveyed prior to disturbance and during the appropriate time of year to determine whether it is present or absent within the project area.

Thank you for your recommendation

n. Page 3-18, Surface Water: The EA states that the project area is located within the Great Divide Basin which is a closed basin, yet the pipeline corridor is within the Upper North Platte Basin. If pipeline construction including hydrostatic testing and/or dust abatement will result in depletions to the Platte River, we recommend you contact our office.

If the "Companies" determine that a gas delivery pipeline is necessary, a right-of-way application will be presented to the BLM. It is standard operating procedure, as part of the review for threatened and endangered species, to require a depletion analysis for

projects in the North Platte River System. If the analysis reveals a possible effect on T&E species, we would consult further with USFWS.

o. Page 3-30, Threatened and Endangered Species, and Page 4-21, Black-Footed Ferret: The EA indicates that potential black-footed ferret *(Mustela nigripes)* habitat occurs within the project area. A black-footed ferret survey was conducted on four white-tailed prairie dog *(Cynomys leucurns)* towns in July of 2001 for which no ferrets or their sign were found. The Service currently recommends black-footed ferret surveys be completed by qualified surveyors to assist Federal agencies in making determinations regarding the potential for agency actions to affect black-footed ferrets. The surveys are valid for one year, unless the survey was conducted over the entire complex, which would serve to clear the complex. However, the Service is currently reviewing information about the current and historic status of prairie dog towns throughout Wyoming, as well as the history of black-footed ferret surveys, to determine whether the survey guidelines should continue to be applied across the entire state. It is likely that this review will result in "block-clearance" of certain parts of the state to focus effort and resources on those areas where the likelihood of discovering wild ferrets is greatest. By "block-clearance," we mean that an area is not likely to be inhabited by black-footed ferrets and surveys for ferrets will no longer be recommended. We anticipate completing the initial list of areas included in the "block-clearance" by February 1, 2004. The Service will continue to collect and review information on the remaining areas to determine if they should be added to the block-clearance. Therefore, prior to conducting surveys, you should coordinate with the Service to determine which specific areas have been block-cleared.

Thank you for your comment, the BLM is currently using the information you referenced.

p. Page 3-31, Mountain Plover: The EA states that nearly 700 acres of mountain plover (*Charadrius montanus)* habitat occurs within the project area, although several surveys did not observe them. As you know, the Service has withdrawn the proposal to list the mountain plover and we will no longer be reviewing project impacts to this species under the Act. We do, however, encourage the Bureau and their applicants to continue providing protection for this species as it remains protected under the Migratory Bird Treaty Act (16 U.S.C. 703) and as a sensitive species under Bureau policy (Bureau Manual 6840.06 E. Sensitive Species). Measures to protect the mountain plover from further decline may include: 1) avoidance of suitable habitat during the plover nesting season (April 10 through July 10), 2) prohibition of ground disturbing activities in prairie dog towns, and 3) prohibition of any permanent above-ground structures within plover habitat that may provide perches for avian predators or deter plovers from using preferred habitat.

Thank you for you recommendation. What you suggest is part of the BLM authorization process. Site-Specific Conditions of Approval for Mountain Plover are found on page 22 of the Master Surface Use Program, Item 13, describes mitigating measures to be taken with implementation of specific well approval: Mitigation of impacts is required during April 10 through July 10 for the protection of potential mountain plover habitat. The Mitigation will be added to the Conditions of Approval for each well.

q. Page 4-9, Paragraph 4, and Appendix D, page 7, Overview and Predicted Results of Water Conditioning: The EA states that produced water would be conditioned in a proprietary water conditioning process and then discharged to ephemeral tributaries of Hadsell Draw within the Great Divide Basin. Wastewater from the

conditioning facility would be disposed of in one of the two injection wells. Page 7 of the Water Management Plan describes the plan to condition produced water for use in livestock and wildlife watering and irrigation. Please refer to Attachment A for information regarding potential adverse effects from the proposed water conditioning process for your use in project planning in order to minimize effects to migratory birds.

Thank you for your comment and concern. Your reference as to the use of conditioned water in irrigation is incorrect. The Companies propose to condition the produced water to irrigation-quality water; no mention of using the water for irrigation is mentioned.

r. **Page 4-11, paragraph 3, and Page 4-14, paragraph 2, and Page 4-18, paragraph 2: The EA states that the conditioned water will meet the criteria for irrigation and may be beneficial to riparian areas for grazing. The EA (page 4-14) also states that certain sagebrush species are intolerant to root inundation and may have reduced vigor when surface areas are flooded, possibly resulting in permanent loss of shrub species in ephemeral draws. The EA (page 4-18) states that disturbance of shrub communities would result in long-term loss of these habitats. Ephemeral draws where sage brush species dominate may be important to sage grouse and other sagebrush obligate species for cover and forage. Connelly et al. (2000) recommends that areas of Wyoming big sage brush be maintained for their importance to sage grouse. The Service recommends that water discharge into ephemeral draws be limited so that existing vegetation communities are not permanently degraded.**

Thank you for you comments your recommendation will be taken into consideration.

s. **Page 4-19, Upland Game Birds, and Page 4-20, paragraph 2: The EA states that 4 active leks are within 2 miles of the project area and the market pipeline will pass through 4.4 miles of sage grouse nesting habitat within a 2-mile buffer of 2 active leks. However, the EA further states that the sage grouse population will not be affected, provided that mitigation measures are adhered to. The Service is concerned that habitat fragmentation, long-term loss of nesting and brood rearing habitat, noise disturbance, and abandonment of nearby leks will occur despite mitigation efforts. These effects may be adverse to the local population of sage grouse. We recommend that the Bureau consider alterative actions, such as directional drilling, to reduce the number of well pads and road infrastructures.**

Chapter Four adequately assess the possible impacts to sage grouse *in section 4.8.1.3., thank you for you comment and concern.*

Directional drilling is not considered to be economically feasible due to a number of factors. The primary factor is the shallow depth of the formation does not allow sufficient room to directionally place the wellbore in the established reserve recovery pattern without excessively high angles and the attendant costs. The coal zones are thin and scattered over a long interval so that an "S" type directional well (directional and then vertical though the productive zone) is absolutely not feasible due the shallow depth and the attendant extremely high angles required to place the well in the established reserve recovery pattern. An angled directional well (directional through the pay zone) is also not feasible because again the shallow depths would not allow sufficient distance to place the angled hole within the reserve recovery pattern. In this case, the reserve recovery would be marginal for the upper zones due to interference by the closely spaced high angle wellbores and could also be marginal for the lower zones due to lower drawdown of the

widely spaced high angle wellbores. In addition, cementing casing in an angled directional well can be very difficult and this would be extremely detrimental to the required isolation of the coal reservoirs. Horizontal drilling is not feasible because the zones are thin and would not economically support single horizontal completions.

t. Page 4-33, Cumulative Impacts: The EA states that cumulative impacts are incremental impacts from the Red Rim Pod added to past, present, and reasonably foreseeable future actions. The EA further states that the only major development proposed are the pods under the Interim Drilling Policy which includes 200 wells. Full field development is not discussed in the EA and, because of this, the Service is concerned that full field development of the Atlantic Rim Project may have cumulative effects not analyzed in each EA. We received a scoping notice for the Atlantic Rim Project EIS on June 18, 2001, which stated that 3,880 coal bed methane wells may be drilled within the Atlantic Rim Project Area. More importantly, the scoping notice stated that the Bureau had determined that the full field development could potentially result in significant impacts and that an EIS would be necessary. The Service encourages the Bureau to expedite the analysis of full field development of the Atlantic Rim Coal Bed Natural Gas Project and submit an EIS rather than a segmented analysis via individual EAs in order to adequately address the cumulative impacts of each pod.

The Red Rim Pod, along with other pods associated with the Atlantic Rim project, is intended to provide exploratory information in support of development of the Atlantic Rim Environmental Impact Statement. The Atlantic Rim Pods have been proposed in order to develop information on the impacts of various actions that are envisioned occurring and to obtain baseline information on geologic and biologic conditions. There is no library where this information may be "checked out," it must be obtained by exploration in the field. In addition, the productivity of the coal formations targeted in producing natural gas is a critical piece of information. Experience has shown that there are a certain minimum number of wells necessary to successfully obtain such information. The Red Rim Pod is proposed for just such reasons. All the elements of a coalbed methane operation must be in place (production wells, plumbing, disposal wells, roads, gas lines and compressor stations) in order to adequately develop this information. The Atlantic Rim EIS, concurrently in the process of development with the Atlantic Rim Pods, will provide the broad level of analysis you have requested, including cumulative effects within and around the Atlantic Rim area. An example of the utility of this process is the recent revision of the proposed action from 3,880 wells to 2,000 wells, based on the results obtains from exploratory drilling.

u. Page 4-38. Wildlife: The EA states that reasonably foreseeable future actions under the Interim Drilling Policy are expected to be minimal, as most species would become accustomed to routine operation and maintenance and that the capacity of the area to support wildlife will remain essentially unchanged. It also states that no cumulative effects on listed species or species of concern will occur during development of the pods under the Interim Drilling Policy. However, the EA also states that other reasonably foreseeable future actions would have a minimal effect. The Service again encourages the Bureau to analyze the effects of full field development of the Atlantic Rim Coal Bed Natural Gas Project under one document rather than through individual EAs that tier to an Interim Drilling Policy. Analysis of full field development prior to implementation of portions of the Atlantic Rim Coal Bed Natural Gas Project will ensure an adequate cumulative effects analysis pursuant to 40 CFR §1508. 7.

Please refer to our response to comment t. above.

6. The National Wildlife Federation

a. The environmental assessment for the Red Rim Pod Coalbed Methane Project violates the National Environmental Policy Act because it relies on the BLM's Interim Drilling Policy

1) The IDP should have been subject to NEPA under BLM's rules.

The Council on Environmental Quality (CEQ) regulations found at 40 CFR 1506.1 discuss the requirements that must be met to allow limited activities during the preparation of an EIS. The IDP was prepared to guide exploratory oil and gas activities and to notify the operators what requirements would be necessary to keep activities at a reasonable level during the preparation of the EIS, while allowing the gathering of data necessary for the completion of the environmental analysis. The IDP is neither a decision nor an action. No action will be authorized until a NEPA document and a Finding of No Significant Impact have been completed. The IDP is a policy to guide activity while collecting data to conduct an environmental analysis.

The IDP describes the "conditions and criteria" that will determine what and where exploration activities may be considered. Those exploration activities constitute the action and are subject to NEPA analysis. The IDP itself states, "Prior to initiating interim drilling, and environmental assessment, including a detailed Water Management Plan, will be prepared and approved for each individual pod."

The policy falls under BLM Manual H-1790, Appendix 3, Categorical Exclusions, Part 1.10, which states, "Policies, directives, regulations and guidelines of an administrative, financial, legal, technical, or procedural nature; or the environmental effects of which are too broad, speculative, or conjectural to lend themselves to meaningful analysis and will be subject later to the NEPA process, either collectively or case-by-case." The IDP meets the policy, guidelines, technical, and procedural categorical exclusion criteria.

IDPs have been generated for several exploratory drilling projects within the Rawlins Field Office and other BLM offices in Wyoming. For this reason alone, the Atlantic Rim IDP does not set precedence.

The Great Divide RMP specifically describes, under the section discussing "Management Actions" relating to oil and gas development, "Surface-disturbing activities will be restricted and intensively managed to maintain important resource values in ACECs, the Baggs Elk Crucial Winter Range, and in overlapping crucial winter ranges for the various big game species." The conditions and criteria described in the IDP reflect protective measures described in the RMP that are designed to protect sensitive resources considered by the Interdisciplinary Team as likely to occur in the Atlantic Rim Natural Gas Project Area.

Regulations found at 40 CFR 1506.1 directly state that interim activities, within the limits described, are allowed during preparation of a project EIS. While the IDP document allows the BLM to better manage interim activities to meet CEQ requirements, clearly interim activities could proceed without an IDP.

2) "…the IDP was exempt from categorical exclusion, and at least an EA should have been prepared for the IDP."

The IDP is not precedent-setting, in that it is not a decision which would limit the scope or extent of a proposed action. It is a document which provides guidance to the operators for development of a proposed action which should not result in a significant impact. A proposed action which would not conform to the guidance in the IDP could still be considered by the RFO. However, the RFO will likely develop an alternative consistent with the IDP guidance, analyze each alternative in the EA, and make a decision based upon that analysis of effects and NOT based upon compliance with the IDP. For this reason, the IDP is not precedent-setting and is not exempt from categorical exclusion.

b. "The IDP makes numerous decisions which determine the location and extent of the environmental impacts of CBM drilling in the ARAP [Atlantic Rim Project Area]**"**

The IDP establishes conditions and criteria to keep all activity at an insignificant and reasonable level during completion of the EIS. The basis for the criteria described in the IDP document are decisions, management objectives and actions, and mitigation described for oil and gas operations and other surface-disturbing activities in the Great Divide RMP, oil and gas rules and regulations, and standard operating procedures. There are limitations on exploration drilling and location of activities described in the IDP, but no decisions are made, as it is not meant to be a decision document. The limitations are based on allowing exploration without having an adverse environmental impact or limiting the choice of reasonable alternatives while allowing the gathering of data necessary for the completion of the EIS. The operators are allowed to propose activities under the guidelines given, but can choose how many wells to drill, where to place facilities, locations, roads, and propose alternate methods of water disposal, as long as the activities fall within the conditions and criteria of the IDP. The operators can not exceed the number of wells described in the IDP but are not obligated to drill all 200 wells, nor a total of 24 wells in each pod. No proposal will be approved until an EA has been completed and then reviewed by the public. The BLM will review the EA and the public comments and will then make a decision as to whether the project as described will result in no significant environmental impacts.

1) The IDP sets a maximum of 200 CBM wells "for research and exploratory purposes, during the interim period. How would the impacts have been different if the maximum number of wells were different? Were alternatives to a 200 well maximum even considered?

Yes, other levels of drilling were considered. The first request by the operators was to consider 400 exploratory wells. After the BLM required the operators to propose an exploratory plan located outside of areas of known sensitive wildlife resources, the number of exploratory wells was revised to 228. Based on sound reservoir management principals, BLM determined that 200 wells was an appropriate level of research and exploration to allow during the preparation of the EIS. This was used to develop the proposed action for the Red rim Pod EA.

2) The IDP allows wells "in the nine pods the operators have proposed," IDP, Appendix A to RRPEA at A-2, paragraph 1. Did BLM explore other pod areas or fewer pod locations? Would the impacts have been different had there been fewer or different pod locations?

Again, the level of exploratory activity was based on sound reservoir management principles. The intent of the IDP was to keep exploratory drilling outside of sensitive resources. Placement of the proposed exploratory drilling in different locations may have resulted in greater impacts to sensitive resources.

3) The IDP sets "a maximum of only 24 CBM wells within any pod...." How would the environmental impacts have been different if a lower maximum number of wells in each pod had been used?"

The maximum number of wells per pod was derived based on past experience within the Dixon Field and Drunkards Wash Unit (near Price, Utah). The best comparison to the geologic conditions known to exist in this area is the Dixon Field CBM development of the early 1990s, just south of Atlantic Rim along the Wyoming/Colorado border. The companies believe the Drunkards Wash Unit near Price, Utah, is also a good productive analogy to the situation present within the Atlantic Rim CBM Project Area. The data from these two fields indicate that somewhere between 11 and 30 wells might be needed in a pod to adequately determine its economic viability. The BLM believes the 24-well target would allow the operators to obtain an indication of economic viability in a reasonable period of time. Each pod must be evaluated with an environmental analysis. If, through this analysis, 24 wells were believed to cause significant impacts to the environment or prejudice decisions to be made a result of the Atlantic Rim Natural Gas Project EIS, a lower number of wells would be considered.

4) "The IDP specifies that "required injection and monitoring wells will not count toward the well limit." Drilling and using injection and monitoring wells have environmental impacts; how would the overall assessment of impacts vary if injection and monitoring wells were counted toward the maximum number of wells in a pod?"

Only three monitoring wells will be required, and each pod will likely have two re-injection wells (some outside of the Colorado River Basin may have none). There is generally less than one acre of initial disturbance for each of these wells and a life-of-project disturbance of 0.005 acres for each well. This would result in an initial disturbance from all injection and monitoring wells of 23 acres (23 wells x 1 acre) and LOP of 0.115 acres (23 wells x 0.005). Disturbance from the one to three injection wells proposed for the Red rim Pod Project is described in the EA on page 2-8 and in Table 2-2. Even a slight increase in the number of injection or monitoring wells would only result in a minimal increase in disturbance; however, please note that all monitoring and injection wells will be subject to a NEPA analysis.

5) "The IDP specifies that "a ¼-mile buffer is required between surface-disturbing activities and the Overland Trail." How would the impacts vary if this buffer were enlarged?"

The ½-mile corridor is a protection corridor that allows BLM to evaluate effects. It is not a guideline that prohibits surface disturbance within ¼-mile of either side of the trail. Disturbance which is visible and located within ¼-mile of the Trail is considered to be an adverse effect and therefore consultation with the Advisory Council on Historic Preservation is required according to the Wyoming State Protocol and 36 CFR 800.4 (d). In addition, the RFO will conduct and has conducted analyses for any eligible historic trail located within two miles of a proposed action to determine if any adverse effects would occur as defined under 36 CFR 800.4(b). Because each project is unique, impacts vary from case to case and would have to be evaluated on that basis.

The Cherokee Trail is located, according to our records, approximately 12 miles south of the Red Rim Pod and is, therefore, well outside the Area of Potential Effect for this project. The Overland Trail and the Rawlins-Baggs Stage Road are outside but adjacent to the project area. The two-mile area of effect was analyzed and SHPO has been consulted as required."

6) **"The IDP specifies that prior to completion of the ARPA EIS, and with possible exceptions for Double Eagle's existing and proposed wells, water produced from coalbed methane wells located in the Colorado River Basin will be disposed of by re-injection. What are the environmental benefits and costs of this broad disposal decision?"**

The requirement for re-injection for operations located within the Colorado River Basin is intended to allow CBM development without violating the requirements of the Clean Water Act. The environmental benefit would be to meet the objectives set forth by the Colorado River Basin Salinity Forum and the Management Objectives for Soil, Water, and Air described on page 39 of the Great Divide RMP. Re-injection will prevent salt loading in watersheds within the Colorado River Basin. Furthermore, the impacts to groundwater were projected to be minimal because the State of Wyoming requires all formations accepting re-injected water contain water of lower quality than the water placed in the formation as described in the EA.

7) **"The IDP provides that, when a pod contains a prairie dog town, a black-footed ferret survey "will clear the pod for a one-year period." Operators also have the option to complete the survey for the whole EIS area, "which would clear the area for the life of the project. Would there be greater protection if the clearance period were shorter than a year? If the survey is done for the entire EIS area, why should the clearance be for the ten-to-twenty year life of the project, given that ferrets could move into a prairie dog town after the initial survey, but long before disturbance of their new habitat? Why does the IDP not consider the importance of prairie dog towns to other declining species such as the swift fox, mountain plover, and ferruginous hawk, all of which may be impacted by the proposed CBM development on the Atlantic Rim?"**

The IDP states (IDP, Appendix A, Page A-3, #11) that drilling will be allowed in each individual pod containing prairie dog towns upon the completion of black-footed ferrets survey using methods approved by the Fish and Wildlife Service. These surveys will clear the pod for one year per service protocol/requirements (Black-Footed Ferret Survey Guidelines for Compliance with the Endangered Species Act, U.S. Fish and Wildlife Service, Denver, Colorado, and Albuquerque, New Mexico, April 1989).

This requirement meets the USFWS guidance necessary to protect black-footed ferrets on public lands. As part of the project review and analysis, field reviews are conducted to ensure that, wherever possible, the proposed disturbance will avoid prairie dog towns. The current proposed action successfully avoids prairie dog colonies. This being the case, no adverse effect to prairie dogs or other associated obligate species is anticipated from the proposed action.

8) "The IDP precludes drilling or disturbance "in areas where any two or more big game crucial winter ranges overlap." What would be the environmental benefits of precluding disturbance where there was only a single species crucial winter range, particularly since, under any timing stipulations that may apply, disturbance done in crucial winter range prior to the closure date need not be reclaimed before the next closure period?"

On page 30 of the Great Divide RMP, Management Actions, the RMP specifically states that surface-disturbing activities will be restricted and intensively managed to maintain important resource values in overlapping crucial winter ranges for various big game species.

The Rawlins Field Office has determined that the timing stipulations adequately protect big game crucial winter range for a single species. If it was determined, through further analysis, that additional mitigation was necessary to protect single species crucial winter range, the BLM would afford this protection.

There are less than 11 acres of crucial winter/year long pronghorn range in the Red Rim Pod (page 3-25 RRPEA). Effects on big game are expected to be minimal, as the project area represents less than one-tenth of a percent of the winter or year-long range for any species (HWA 2003) Figure 3-1). No long-term loss of habitat is expected once construction is complete and big game species are expected to return to the area (page 4-19 RRPEA).

9) "The IDP provides that the BLM must approve a drilling schedule "to ensure activities are limited within proven big game migration corridors at critical use times during the year." Why did the BLM indicate that it would only limit activities, rather than preclude all activities in the corridors at critical use times?"

The requirement was placed in the IDP to avoid simultaneous drilling in two adjacent pods if proven big game migration corridors were present.

10) "The IDP requires the installation of fish passage structures "for roads which cross drainages with fisheries concerns as identified by BLM." Have these drainages already been identified? What criteria were used? Was the public allowed to evaluate these designations? Was any environmental analysis done on which drainages were designated? Given that "pipelines, power lines, and fiber optic lines will be buried and, where possible, will follow the road rights-of-way," what is to prevent trenching for these lines from destroying fisheries that the passage structures were intended to save?"

The four BLM sensitive fish species do not occur in the great Divide Basin or the Platte River system; therefore, no BLM sensitive fish would occur in or downstream of the project area. No roads within the Red Rim Pod Project area are subject to this requirement.

11) "The IDP's definition of Sensitive Resource Areas, which requires protection with stipulations or by mitigation, does not include areas important for recreational use, areas of important scenic value, areas of solitude and lack of noise, or areas of fragile soils. What would be the environmental benefits of including these other resource values as sensitive areas which must be protected by stipulations or mitigation?"

The project area is managed for multiple uses. There are no areas set aside for special management of sensitive soils within the project area. All of the Atlantic Rim exploratory pods are located in Visual Resource Management Class III. None of the pod areas lie within any area identified in the RMP as a special recreation area or contained in designated recreation sites. The concerns you identify are addressed through project-wide mitigation measures and procedures described in the Red rim Pod EA on pages 2-13 through 2-27.

c. "The Red Rim Pod EA relies heavily on the Interim Drilling Policy."

The IDP is very important in providing guidance to the operators regarding exploration activities. The IDP identifies protective measures to meet 40 CFR 1506.1, but other authorities, rules, regulations, mitigation in the RMP, in addition to the IDP, played a role in determining where and what exploration activities would occur within the Red Rim Pod Project .

Most of your discussion in this section appears to emphasize that the IDP restricts alternative formulation. According to the H-1790-1, BLM NEPA Handbook, Chapter IV, Preparing Environmental Assessments, page IV-3, alternatives to the proposed action must be considered and assessed whenever there are unresolved conflicts involving alternative uses of available resources. Public controversy or concern about a proposal does not necessarily mean that alternatives must be analyzed. The Handbook raises the question on whether there are reasonable alternatives for satisfying the need for the proposed action and will these alternatives have meaningful differences in environmental effects.

The Red Rim Pod Project consists of the drilling of 16 CBM wells and associated facilities. As stated in response b.3) above, BLM believes the 16-well target is consistent with other CBNG fields with similar geologic conditions, and would allow the operators to obtain an indication of economic viability in a reasonable period of time. Because the impacts from implementing this project were minimal and no unresolved conflicts were apparent, no other reasonable alternatives were considered.

d. "The Red rim Pod EA violates the Federal Land Policy Management Act."

1) "The Great Divide RMP does not contemplate CBM development or its associated environmental consequences."

The RMP states that the entire planning area is open to oil and gas leasing and does not make a distinction as to whether oil and gas development is conventional or otherwise. The minerals management program policy and goals described in the RMP are to provide the opportunity for leasing, exploration, and development of oil and gas while protecting other resource values. CBM-related activity is not unanticipated just because the RMP does not use the specific words "coalbed methane." "Methane" and "natural gas" are used interchangeably, regardless of the source. No specific formation, bed, or seam was identified in the RMP as being suitable or unsuitable for oil and gas development. Natural gas production operations are very similar and CBM development is no exception. Development and production sequence described in the Oil and Gas Appendix in the Draft Environmental Impact Statement for the Medicine Bow-Divide Resource Management Plan (later the Great Divide RMP), describes typical development operations, even to the point that water may need to be removed during natural gas production. Therefore, even if coalbed methane has not been specifically mentioned, the activity is clearly consistent

with the terms, conditions, and decisions of the approved plan [43 CFR 1610.0-5(b)].

In the Interior Board of Land Appeals' (IBLA) order denying the request for stay by the Wyoming Outdoor Council (IBLA 2003-358), the IBLA stated that "We have scrutinized the Great Divide RMP/EIS and conclude that its analysis of oil and gas impacts adequately analyzed impacts associated with potential CBM exploration and development in the RFO area, which is located outside the Powder River Basin. Although the BLM did not flag CBM as a discrete topic in the draft and final EISs, those documents did address the issues typically associated with natural gas production in general and CBM production in particular [e.g., water volume, quality, discharge/disposal, contamination of surface and groundwater, sodium adsorption ratio (SAR), and the uses to which produced water can be put]."

2) "The RRPEA exceeds the reasonably foreseeable development scenario for the Great Divide Resource Area."

The GDRMP recognizes development of oil and gas resources on two levels: 1) number of wells drilled, and 2) amount of surface disturbance from the development of these resources. The DEIS analysis assumed that 40 acres of disturbance would occur from the development of each gas well brought into production (including ancillary facilities). Efficiencies within the oil and gas industry have resulted in the amount of surface disturbance necessary to development oil and gas operations. The Continental Divide DEIS re-examined the amount of long-term disturbance associated with natural gas development and estimated it to be approximately nine acres (CD/WII DEIS at 1-8). It is estimated that the surface disturbance associated with developing the Red Rim Pod would be much less per well, with an estimated short-term disturbance of 3.23 acres/well (12 wells requiring 38.82 acres) and long-term disturbance of 0.63 acres/well.

As elaborated upon in the Desolation Flats DEIS (Page 1-13, released April 2003) there are over 7,000 acres of long-term disturbance acreage available for future projects. Therefore, the reasonably foreseeable development estimate of the future oil and gas wells and associated long-term disturbance within the RFO would not be exceeded by this project.

3) "The RRPEA departs from the Great Divide RMP in other respects that violate FLPMA." The GDRMP states that "surface disturbance from oil and gas exploration and development would be restricted in certain areas with sage grouse leks and high priority habitat," yet Figure 3-1 of the RRPEA shows pronghorn crucial winter range, potential mountain plover habitat, sage-grouse lek, and several lek buffers within the Red Rim Pod Project Area. This is not consistent with the GDRMP and is, therefore, in violation of FLPMA.

The "Companies" have committed to the requirements found in the GDRMP/FEIS. See Page 2-22 of the RRPEA, 2.1.10., Wildlife, Project-Wide Mitigation Measures and Procedures.

Page 3-25 of the RRPEA, 3.8.1.1.1. Pronghorn Antelope, states, "Crucial winter/year-long range exists in the extreme northwestern corner of section 16 and 20 (less than 11 acres)." No project facilities are planed in these areas.

Figure 3-1, the "Wildlife and Sensitive areas Map" shows the spatial representations of pronghorn crucial winter range in relation to the project.

e. The Red Rim Pod Environmental Assessment violates NEPA by failing to consider other reasonable alternatives, failing to adequately analyze reasonably foreseeable future actions, and failing to adequately disclose impacts of the proposed action

1) The RRPEA violates NEPA by failing to consider other reasonable alternatives.

The CEQ states in its Forty Questions and Answers about NEPA Regulations (1981) that there are two distinct interpretations of the No Action Alternative. The first is that there is no change from the existing situation. This interpretation generally applies to planning decisions. The second interpretation is that the proposed activity (i.e., as described under the Proposed Action) would not take place. This does not mean, however, that activity associated with oil and gas development would never be allowed to occur in this area. Under the Mineral Leasing Act of 1920, as amended, the BLM cannot deny the lessee the right to develop somewhere within the leasehold. This right is supported by national mineral leasing policies and the regulations, by which they are enforced, which recognize the statutory rights of lease holders to develop federal mineral resources to meet continuing national needs and economic demands as long as undue environmental degradation is not incurred.

However, this does not mean the "No Action Alternative" cannot be chosen by the decision-maker. If the components of the project described under the Proposed Action were such that the decision was made that environmental impacts were significant, either an environmental impact statement could be prepared, the project components could be changed, or additional mitigation proposed that would allow a determination of no significant impacts, or the decision-maker could choose the No Action Alternative and the project would not go forward as described.

2) The RRPEA violates NEPA by failing to consider directional drilling.

This alternative is not considered to be economically feasible due to a number of factors. The primary factor is the shallow depth of the formation does not allow sufficient room to directionally place the wellbore in the established reserve recovery pattern without excessively high angles and the attendant costs. The coal zones are thin and scattered over a long interval so that an "S" type directional well (directional and then vertical though the productive zone) is absolutely not feasible due the shallow depth and the attendant extremely high angles required to place the well in the established reserve recovery pattern. An angled directional well (directional through the pay zone) is also not feasible because again the shallow depths would not allow sufficient distance to place the angled hole within the reserve recovery pattern. In this case the reserve recovery would be marginal for the upper zones due to interference by the closely spaced high angle wellbores and could also be marginal for the lower zones due to lower drawdown of the widely spaced high angle wellbores. In addition, cementing casing in an angled directional well can be very difficult and this would be extremely detrimental to the required isolation of the coal reservoirs. Horizontal drilling is not feasible because the zones are thin and would not economically support single horizontal completions.

3) The RRPEA violates NEPA because its analysis of cumulative impacts fails to thoroughly consider reasonably foreseeable future actions.

At this point, the proposal to develop a 3,880 well field is not reasonably foreseeable. In general, two main factors determine whether other actions should be included as part of the cumulative impact analysis—location and timing of actions. The cumulative impact analysis must take into account the past, present, and future actions that overlap in time and location with the proposed action. At this time, there is no data available to confirm that CBM resources can be developed and produced in the entire ARPA. Implementation of the 200-well interim drilling program was designed to identify where areas of CBM drilling may be economic and the number of wells at which the program becomes economic. The only reasonably foreseeable activity at this time, other than conventional uses of oil and gas drilling and ranching, is the 200-well proposal.

4) The RRPEA fails to acknowledge limits on BLM's ability to impose post-leasing mitigation measures

All applicant-committed mitigation measures will be enforced, as will the Conditions of Approval. The mitigation measures, though proposed by the operator, are not negotiable in compliance. The operator shall follow those Project-Wide Mitigation Measures and Procedures as well as the Conditions of Approval, with requisite enforcement by the RFO.

As described in other portions of this Appendix, routine maintenance and production operations will not be subject to these restrictions, as these activities are similar to other casual uses which occur on public lands.

Applicant-committed mitigation measures are, in fact, mitigation measures which the operator has volunteered, and is compelled, to comply with. The BLM will enforce such mitigation measures in the same manner as those prescribed by the BLM in authorizing the APDs. The applicant-committed mitigation measures are considered part of the Master Surface Use Plan which is part of the APD for each well

5) Other Specific Problems in the RRPEA

a) The RRPEA acknowledges that many adverse effects on soils and vegetation, including reduced soil permeability, disruption of plant osmotic capabilities, and ion toxicity, are likely to occur as a result of discharge of conditioned water into the Hadsell Draw drainage, RRPEA at 4-6.

The last paragraph on page 4-6 (right after the referenced statements) explains how these issues are dealt with.

b) In addition, "impairment to surface water quality" is also listed as a potential impact of the project, RRPEA at 4-10. Exactly what will be the chemical composition of the "conditioned" water? Is this water not supposed to meet or exceed standards for irrigation? *See* RRPEA at 4-11, 4-14.

The potential impacts addressed on page 4-10 would be from the affects of the additional water in the system, not from the quality and chemical composition of the water.

c) **If produced water discharged into Hadsell Draw has a negative affect on soils and vegetation in the riparian zone or elsewhere and would "require many years to recover" (RRPEA at 4-7), then the impacts of the Proposed Action are unacceptably high and the BLM should *at least* mandate Alternative 2, which requires almost all of the produced water to be re-injected, and more optimally require *all* produced water to be re-injected.**

Thank you for you comment

d) **In addition, there is no discussion in the RRPEA of the impacts of increased cattle aggregation in riparian habitats where permanent water flows are newly available due to conditioned water outfalls. The RRPEA has not taken the needed "hard look" at this reasonably foreseeable outcome of the Proposed Action and, therefore, fails to satisfy NEPA requirements to take a hard look at direct and cumulative impacts of the project on riparian plants and wildlife.**

These impacts are adequately covered on page 4-15 and 4-16 of Chapter 4 of the RRPEA. Appendix D the Water Management Plan-Red Rim Proposed Action also covers these concerns, including monitoring and mitigation.

e) **The RRPEA describes direct impacts to the grazing capacity of the Sixteen Mile Allotment as representing a loss of less than 1% of its capacity for livestock, RRPEA at 4-16. However, the RRPEA must also note the loss of grazing if the full 3,880 wells are drilled under the Atlantic Rim CBM Project, which is not only reasonably foreseeable but also currently under review in preparation for a DEIS to be released in two months. This failure to analyze cumulative impacts violates NEPA.**

At this point, the proposal to develop a 3,880 well field is not reasonably foreseeable. In general, two main factors determine whether other actions should be included as part of the cumulative impact analysis—location and timing of actions. The cumulative impact analysis must take into account the past, present, and future actions that overlap in time and location with the proposed action. At this time, there is no data available to confirm that CBM resources can be developed and produced in the entire ARPA. Implementation of the 200-well interim drilling program was designed to identify where areas of CBM drilling may be economic and the number of wells at which the program becomes economic. The only reasonably foreseeable activity at this time, other than conventional uses of oil and gas drilling and ranching, is the 200-well proposal.

f) **The RRPEA notes that due to confining beds above and below the coal layer, hydraulic connection between the target coals and surrounding aquifers is "limited," RRPEA at 4-9. However, the confining layers are "impervious and semi-pervious," indicating that some cross-contamination may occur, and hydraulic connections are "limited" but not absent. While leakage between aquifers is asserted by BLM to be "minimal," the fact that "slight leakage" is expected to occur indicates a strong possibility of contamination of neighboring aquifers by migrating methane gas**

and/or toxic wastewater once head pressure is removed from the target aquifer, see RRPEA at 4-9.

The slight leakage noted here was from the aquifers to the coal beds not vise versa and, therefore, there is no possibility of contamination of neighboring aquifers (not considering the fact that the leakage is hypothetical and highly improbable). The RRPEA has been changed to reflect this (see ERRATA).

g) Samples from wells in the project area indicate that produced waters will exceed standards for domestic use or irrigation for ammonia and cyanide, as well as Total Dissolved Solids, sodium adsorption ratio (SAR), and residual sodium carbonate, RRPEA at 3-18, Table 3-7. In addition, levels of phenol, iron, petroleum hydrocarbons, and manganese exceed domestic use criteria, RRPEA at 3-18, Table 3-7. Unfortunately, units of measure for these factors have not been provided in surface water quality data, and ambient surface water levels for some pollutants are not presented at all in the EA. See RRPEA at 3-19 to 3-20. In addition, quantities of minerals in "conditioned" waters released at outfalls as a result of project activities have also not been presented in the RRPEA. Thus, direct comparison of produced waters (which will be re-injected, but which may migrate upward and be discharged into surface waters via springs and hyporheic flows), cannot be made using the data presented in the EA.

The explanation of Table 3-7, on page 3-17, of the RRPEA states, "The composite results of samples from three gas wells analyzed indicate water that is generally suitable for livestock use, but is unsuitable for domestic supply or irrigation without treatment or dilution." As stated, on page seven of the Water Management Plan, "In general, the quality of the produced water that the Companies envision under the project meets WDEQ guidelines for livestock and wildlife watering." The Companies propose to condition the produced water to irrigation-quality water, which, when surface discharged, may enhance natural infiltration." Chapter 2 of the RRPEA does not propose any use of water for domestic supply or irrigation.

All drainages in the Red Rim project area are ephemeral. Most water flow would be during a thunderstorm or after snowmelt. These flows would have a high TDS value and would be definitely too high to allow for domestic use.

There is no possibility of upward migration of the injected water due to a thick section of confining shale between the injection zone and the coal reservoirs, in addition to the known fact that the intervening coal reservoirs are already known to be isolated from the surface waters (see previous question).

f) There were no mountain plovers located in the project area during surveys in 2001-2003 (although one mountain plover was sighted two miles east of the project area in 2001). Nonetheless, several tracts of potential plover habitat were identified in the project area, and at least four wells would be built on these potential nesting habitats. See RRPEA at 3-32, Figure 3-1. Well construction should

not be permitted within ¼ mile of this potential mountain plover habitat, in order to maintain its viability as nesting habitat and prevent raptors from perching within sight distance of these lands. The mountain plover was proposed for listing as threatened under the Endangered Species Act [64 C.F.R. 7587-7601 (February 16, 1999)] and a lawsuit was recently filed seeking to compel the U.S. Fish and Wildlife Service to list the species. There is no assessment of the cumulative impacts of roads on mountain plovers (should they be present) and roads are identified as a risk factor for them in the Proposed Rule to list the mountain plover as threatened under the Endangered Species Act [64 C.F.R. 7587, 7596-7597 (February 16, 1999)] as the plovers both nest and forage in the bare ground along road verges.

On September 8, 2003, the USFWS withdrew its proposal to list the mountain plover under the ESA. It is still considered a BLM Wyoming State Sensitive Species and is afforded the same protection stipulations as when it was a candidate to be listed under the ESA. One reason that the USFWS cited as justification to not list the plover was the effectiveness of the mitigation measures applied, as required in the Red Rim Pod Proposed Action.

Potential habitat was noted during BLM onsite investigations and COAs will be placed on the APDs if habitat is found. The BLM has established survey routes through potential mountain plover habitat in the Atlantic Rim project area and has surveyed for the birds on the routes during the past three years, but no birds have yet been observed within the breeding season. Should exploration drilling prove economic reserves exist in the Atlantic Rim area, a wildlife monitoring plan will be prepared as part of the mitigation proposed in the EIS outlining the requirements for wildlife monitoring, including mountain plover

g) Consider that well-site facilities for productive wells are likely to be in place for 20 years or more, RRPEA at 4-13. These facilities will provide perch sites for raptors and corvids and, coupled with a nearby prairie dog colony and sage grouse lek sites, are likely to increase use of the area by raptors and corvids. The RRPEA fails to account for the potential impacts of creating new raptor perches near the crucial habitat of sensitive prey species.

Production facilities may serve as perches for raptors which may increase predation on sage grouse and prairie dogs within the Red Rim Pod. Facilities for CBM are relatively low (~4' in height) as compared to conventional oil and gas structures. The Red Rim Pod contains many sandstone rock features in the area that currently serve as potential perches and nest sites in the area. Raptors in this area do not seem to be perch-limited in regards to predation upon small mammals. The BLM predicts that the increase of CBM facilities would have an insignificant impact with regards to increasing predation on sage grouse and prairie dog within the Red Rim Pod. No well facilities will be placed within ¼-mile of an active lek, and facilities will be placed outside of prairie dog towns; this will minimize impacts to these species. If a raptor perch is discovered during the course of operations, the situation would be reviewed, and appropriate mitigation measures applied, as necessary, using the best-available science. Mitigation measures applied will be

based upon the specific conditions and circumstances for each location and resource.

h) On the subject of the Wyoming big sagebrush community, BLM states that "short-term or long-term loss in acreage described above would not alter the overall abundance and quality of the vegetation community," RRPEA at 4-13. This is an unsupported and unsupportable statement, as habitat fragmentation and direct disturbance will most certainly have negative impacts on the quality of this habitat type within the project area. Fragmentation of sagebrush steppe habitats is known to have deleterious effects on sagebrush obligate species such as sage sparrow, Brewer's sparrow, and sage thrasher. All three of these species are on the BLM Sensitive Species List and occur within the project area, RRPEA at 3-31. Oil and gas development has specifically been shown to negatively impact these species in Wyoming.

Page 4-38 of the EA states, "Some wildlife species may be temporarily displaced by construction at well sites, access roads, and pipeline routes, but should return once construction is complete. Extensive suitable habitats for many species exist on adjacent lands and would support individual animals that may be temporarily displaced during RFFAs. Cumulative long-term effects on wildlife are also expected to be minimal, as most species would become accustomed to routine operation and maintenance. Only a very small proportion of the amount of available wildlife habitats within the Atlantic Rim EIS study area would be affected. As a result, the capacity of the area to support various wildlife populations should remain essentially unchanged from current conditions." The CIA area varies with species, as indicated in the analyses. Disturbance of wildlife habitat that results from RFFAs, including the interim drilling program, would reduce the availability and effectiveness of habitat for a variety of common mammals, birds, and their predators. Initial phases of surface disturbance would result in some direct mortality to small mammals, would displace songbirds, and cause a slight increase in mortality from increased use of vehicles. However, populations of small mammals and songbirds would quickly rebound to pre-disturbance levels after reclamation is complete because of the relatively high production potential of these species and the relatively small amount of habitat disturbed (0.006 percent of the Atlantic Rim EIS study area). Therefore, no long-term impacts to these populations are expected. Because of the small amount of disturbance associated with the project (141.5 acres), their inherent mobility, and the availability of suitable habitats on undisturbed land, the effects on these species should be minimal.

i) There is no discussion of the cumulative impacts of roads within and presumably connecting the nine exploratory pods to such species. The BLM has asserted that "populations of small mammals and songbirds would quickly rebound to pre-disturbance levels," RRPEA at 4-18. There is no scientific basis for these claims with regard to sagebrush obligate songbirds, which have been shown to be sensitive not only to construction activities but also to the ongoing disturbance of roads and activity that remains during the production phase of oil and gas operations. Moreover,

if the pods are connected, then there will be a greater likelihood that after the CBM project ends (after roughly 20 years), ORV enthusiasts, hunters, and other recreational users will use the roads. Although several sagebrush obligates on the BLM Sensitive Species List are noted for the project area, the potential impact on sagebrush obligate species of public use after the project has not been evaluated. *See* RRPEA at 4-18, 4-21.

Transportation planning will be an integral part of the development of the Atlantic Rim project and also a means of looking at access into pod areas. Currently all of the interim drilling pods, except the Doty Mountain Pod, can be reached by using existing legal access, so the proliferation of several through roads as a result of these CBM exploration projects is not anticipated

j) The Red Rim project area is in an area of extremely high lek density for sage grouse. According to the BLM's own analysis, "the area provides excellent year-round range," RRPEA at 3-27. Oil and gas development has been shown to reduce the nesting rates of sage grouse and its impacts include direct habitat loss from new construction, increased human activity and pumping noise causing displacement, increased legal and illegal harvest, direct mortality associated with reserve pits, and lowered water tables resulting in herbaceous vegetation loss. Experts agree that oil and gas facilities should be sited farther than 3.2 km (2 miles) from sage grouse leks to protect nesting that occurs on the lands surrounding the lek. All eight of the proposed wells are scheduled to be constructed within two miles of a sage grouse lek, RRPEA at Figure 3-1. But the mitigation measures proposed for the project prohibit construction and surface occupancy only within ¼ mile of lek sites, and exceptions to this meager standard will be made available by the BLM, RRPEA at 2-22. While there is a seasonal prohibition on construction activities throughout the project area from March 1 to June 30 to reduce disturbance to sage grouse, these measures fail to address the disturbance to nesting sage grouse from routine production-related traffic and activities that will continue throughout the life of the project along roads and well sites within the project area, as well as along the sole access route to the project area, RRPEA at 2-21. As discussed above, the applicable leases prevent enforcement of this mitigation measure during the twenty-year production phase of development.

The EA describes the mitigation measures that will be followed to protect sage grouse populations (see EA, Page 2-22) and analyzes potential impacts (see EA, Pages 4-19, 4-38).

k) The BLM states that exceptions could be granted to this restriction if the operator and BLM agree on an "acceptable plan" for mitigating the impacts, RRPEA at 2-23. There is no "acceptable plan" for siting an oil and gas well or road within ¼-mile of a sage grouse lek; such a plan would contradict the best available science on sage grouse and the recommendations of all credible experts in the field. Exceptions may also be granted for seasonal stipulations on construction activities if they occur in "unsuitable habitat," RRPEA at 2-22. And yet the BLM fails to identify criteria by which

lands within two miles of a sage grouse lek would be classified as unsuitable for nesting. Until the BLM provides hard criteria for determining what constitutes suitable and unsuitable sage grouse nesting habitat, the agency is in no position to meet the criteria for the granting of a waiver. Because the BLM is incapable of meeting the criteria for granting a waiver to seasonal stipulations, the mitigation measures should state explicitly that waivers will not be granted under any circumstances. Furthermore, for the above reasons the Red Rim facilities should be relocated so that no roads or well sites fall within two miles of a sage grouse lek site.

You opinion is noted

l) **The project area has been identified as a likely migration route for pronghorn moving through the southern part of the project area toward crucial winter/yearlong range that borders the project to the northwest, RRPEA at 3-25. Although the antelope herd that uses this area has increased in recent years, it remains 24% below the WGFD management objective, *Id.* In western Wyoming, it has been found that oilfield developments caused game animals to abandon substantial tracts of winter range. Researchers have noted that densities of pronghorn are lowest in areas of severe oil and gas development. The BLM admits that successful results of the Red Rim Pod would lead to a greatly expanded drilling effort throughout the area, RRPEA at 4-2. This shortcoming must be addressed prior to the issuance of a Decision on this project.**

Cumulative impacts for the Red Rim Pod are disclosed in Section 4.16, "Cumulative Impacts," in the Red Rim EA, page 4-33. Cumulative impacts to wildlife are found on pages 4-38 and 4-39 in the Section entitled 4.16.1.7, "Wildlife and Fisheries."

The Red Rim Pod, along with other pods associated with the Atlantic Rim project, is intended to provide exploratory information in support of development of the Atlantic Rim Environmental Impact Statement. The Atlantic Rim Pods have been proposed in order to develop information on the impacts of various actions that are envisioned occurring and to obtain baseline information on geologic and biologic conditions. There is no library where this information may be "checked out," it must be obtained by exploration in the field. In addition, the productivity of the coal formations targeted in producing natural gas is a critical piece of information. Experience has shown that there are a certain minimum number of wells necessary to successfully obtain such information. The Red Rim Pod is proposed for just such reasons. All the elements of a coal bed methane operation must be in place (production wells, plumbing, disposal wells, roads, gas lines and compressor stations) in order to adequately develop this information. The Atlantic Rim EIS, concurrently in the process of development with the Atlantic Rim Pods, will provide the broad level of analysis you've requested, including cumulative effects within and around the Atlantic Rim area. An example of the utility of this process is the recent revision of the proposed action from 3,880 wells to 2,000 wells, based on the results obtained from exploratory drilling.

m) The RRPEA states, "Many common species of birds, mammals, amphibians, and reptiles may be found within the project area. The proposed development is not expected to significantly affect the common species found in the project area; therefore, they are not discussed further in this analysis," RRPEA at 3-24. What scientific or technical analysis forms the basis for this "expectation?"

Developments such as described in the RRPEA are common within the area, including other Atlantic Rim Pods, such as the Sun dog Pod, Blue Sky Pod, and Wild Cow Pod. Based on monitoring, these developments are known to not significantly affect these species. If effects had been noted, or of the issue had been raised during scoping, the BLM would have analyzed such an assertion in greater detail. Also see the answer to the previous comment.

n) The RRPEA does not adequately address the cumulative impacts of weed invasion into areas from which plant cover is removed, though it does admit that the project area is vulnerable to infestations of invasive/noxious weeds.

Causing a weed invasion is not part of the proposed action as describe in Chapter 2. As part of the Project-Wide Mitigation Measures and Procedures, the "Companies" will implement, if necessary, a weed control and eradication program. As the companies plan to control weeds, there should be no cumulative impacts from weed invasion.

o) It is a well-established fact that roads enhance exotic species invasions. Trail and road verges are notorious for their susceptibility to weed invasion and establishment. There is also a high potential for weed seeds/propagules to be introduced by construction equipment and by gravel used for roadbeds. And yet the RRPEA includes no measures requiring construction equipment to be washed to remove weed seeds prior to entering federal lands. See RRPEA at 2-21.

Thank you for your observation

p) There is no provision for monitoring riparian areas below discharge points in order to spot noxious weed invasions before they become firmly entrenched. Weed control appears to be a discretionary activity that might or might no be undertaken by the project proponent, with no standardized methods for applying and/or dealing with herbicides which might also be detrimental to wildlife such as sage grouse. *See* RRPEA at 2-21. There is also no indication of who will do monitoring and how often it will occur.

As Part of the Project-Wide Mitigation Measures and Procedures, the "Companies" will implement, if necessary, a weed control and eradication program, page 2-21. The Water Management Plan, Appendix D, requires the establishment of a monitoring and mitigation program that addresses these concerns.

q) The plan for revegetation (RRPEA/Appendix B at 20) does not include replacement of lost sagebrush, nor does the RRPEA address the effect of loss of sagebrush on sage dependent species such as sage sparrow or Brewer's sparrow, both of which are on the BLM Sensitive Species Policy and List, BLM IM WY 2001-040.

The linear nature of the disturbance from road and pipeline disturbance and the small size of the disturbance from pad construction allow sage brush to come back naturally once the grasses and forbs that were seeded have created the needed microclimate. Chapter 4, page 4-13 and 4-17, of the RRPEA, analyze the loss of sage brush and the effect on sage dependent species.

r) In the chapter discussing long-term effects on wildlife, the EA concludes that they will be minimal over the long term, RRPEA at 4-17 and 4-18. The EA assumes all species will habituate to disturbance and that this will overcome the effects of displacement. But the EA provides no support for this contention except for pronghorn. Moreover, the research cited (RRPEA at 4-19) states that pronghorn habituation to traffic can occur provided the traffic moves in a predictable manner. However, because the project area is open to public use, traffic is likely to be unpredictable both as to type and timing.

The CD/WII DEIS summarized several studies that have occurred over the past 25 years which examined impacts from oil and gas activity on big game animals. It was concluded that of the three big game species, it appeared that pronghorn antelope exhibited the least amount of displacement due to oil and gas and mining development activities. Studies conducted in Wyoming, New Mexico, and Texas (Gusey 1986; Guenzel 1987; Easterly et al., 1991) found that pronghorn returned to these habitats once the source of disturbance left the areas. Segrestrom (1982) and Deblinger (1988) determined that a large population of pronghorn populations inhabiting surface mine sites in Wyoming were relatively unaffected by mining activities and habituated to the presence of personnel and vehicles.

Mule deer are generally less sensitive to human disturbance than elk and, in some cases, may be less sensitive than pronghorn (Easterly et al., 1991). In the Rattlesnake Hills of Wyoming, mule deer did not avoid oil fields and may have habituated to human activity associated with petroleum extraction. Other studies conducted found that wintering mule deer in Montana were minimally affected by low levels of oil and gas development (Irby et al., 1988), while a study of development on Crooks Mountain in Wyoming did not observe a mule deer within 0.5 miles from a well construction site.

Elk tend to react less to traffic along roads than to concentrated areas of noise and activity such as well sites. The CD/WII DEIS reviewed studies that examined the displacement of elk due to oil and gas development activities and concluded that elk within that project area could be displaced an average of 1.5 miles from the well locations during construction, drilling, completion, and workover operations.

Because activities associated with the construction of this project are anticipated to be short in duration and would be restricted during critical times of the year, and with the implementation of measures described in Chapter 2 of the EA and COAs in Appendix D of the Decision Record, impacts to big game as a result of implementing the Red Rim Pod project are anticipated to be minimal.

s) The RRPEA states, the direct disturbance of wildlife habitat in project area likely would reduce the availability and effectiveness of habitat for a variety of common small mammals, birds, and their predators. The initial phases of surface disturbance and increased noise that are likely would result in some direct mortality to small mammals and would displace songbirds from construction sites. In addition, a slight increase in mortality from increased vehicle use of roads in the project area would be expected. Quantification of these losses is not possible; however, the loss is likely to be low over the short term. Increased noise from compressor engines and other production activities would displace some animals and would affect the production potential of some species during the operations phase of the project. Based on the relatively high production potential of these species and the relatively small amount of habitat disturbed, however, populations of small mammals and songbirds would quickly rebound to pre-disturbance levels. This rebound would be expected after reclamation of pipelines, unused portions of roads, well pads, and wells that are no longer productive have been reclaimed. No long-term impacts to these populations would be expected (RRPEA at 4-18). However, the combined effects of habitat conversion, displacement due to the effect of roads and traffic, and habitat fragmentation resulting from construction of infrastructure for CBM extraction is very likely to have long-term cumulative impacts by affecting abundance, distribution, community interactions and community composition (species richness). Given the likely 20-year life of the project, these impacts do, in fact, constitute long-term impacts and the BLM's assertion that no long-term impacts would be expected, therefore, directly contradicts its earlier admissions that displacement and reduced production potential of wildlife would be occur during the operational life of the project.

Roads fragment habitats, increasing the edge effect, which can provide heterogeneity to the habitat in terms of food and cover resources. However, many native, non-game species require contiguous, undisturbed habitat. In addition, rare endemic species may suffer from creation of unnaturally high amounts of edge. Habitat is the single most important factor in the persistence of populations and species; its degradation either through loss of quality or quantity or both has been shown to negatively impact species persistence and increase vulnerability to stochastic events. In addition, the RRPEA fails to analyze the reasonably foreseeable development of 3,880 coalbed methane wells currently under analysis as the Atlantic Rim project; the habitat effects of this massive scale of development would scarcely leave any open habitat for wildlife to shift to during any construction phase and would have substantial long-term impacts on the abundance and effectiveness of habitat for all native species of wildlife. By failing

to consider the 3,880 CBM wells of the Atlantic Rim project, which are reasonably foreseeable to the extent that the BLM is currently considering their approval, the RRPEA fails to take a hard look at cumulative effects to wildlife habitat.

Thank you for you opinion. See q) see above.

7. USDA, Forest Service - These answers include input from Susan J. Caplan, Air Quality Specialist, Wyoming State Office

a. Section 1.4, page 1-6 - Why was air quality not included as an issue in this section? It is a large issue in the overriding Atlantic Rim EIS, which is currently being completed.

Please refer to page 1-9, other Resources and Uses," item 3. The effects of natural gas develop on air quality in southwest Wyoming have been studied extensively in recent years, including the Continental Divide/Wamsutter II air quality study that modeled the impacts of 3,000 wells and the Pinedale Anticline air quality study that modeled the impacts of 700 wells. These studies found the 0.5 deciview threshold at nearby wilderness areas (including the Bridger and Popo Agie wilderness areas) to be within an acceptable range. Furthermore, of the 3,000 wells included in the Continental Divide Model, only 2,130 (71%) were approved. The wells in the Red Rim Project can be included in the remaining 870 wells.

The small number of exploratory wells and facilities included in the project would generate only a small amount of air pollutants. Some temporary effects on air quality would likely occur in the immediate vicinity of the project, caused by particulate matter and exhausts from vehicles and equipment. Air Quality is adequately addressed in Chapter 3, Section 3.3.2, and Chapter 4, Section 4.3 of the RRPEA. Analysis beyond this level is beyond the scope of the project.

b. Section 3.3, page 3-5 - If in fact this paragraph is correct, stating that ET exceeds precipitation by six inches a year, it is highly unlikely that any vegetation could survive in this area. Are these numbers correct and/or being used correctly?

As detailed in the same section, these characteristics combine to produce a predominately dry climate where evaporation exceeds precipitation. The concern is noted.

c. Section 3.3.2, page 3-6 - There are also State and National standards for particulate matter smaller than 2.5 microns (PM2.5). These should be included in the discussion.

The requested information has been added to Table 3-2 (see Errata). Also s*ee answer to a. above*.

d. Section 3.3.2, page 3-71 - Why was different data for background concentrations used in this analysis vs. the Draft Rawlins RMP AQ document? The table should also show the PM2.5 standards and the 8 hour Ozone standard.

The Draft Rawlins RMP AQ document was not available at the time the RRPEA was written. See answer to a. above. Chapter 3 has been changed by updating Table 3-2 in the Errata.

e. Section 3.3.2, page 3-7 - The document should also mention the Savage Run wilderness, which the State of Wyoming has designated as a class I area.

Please see Table 3-3. Savage Run has a federal classification of II but the State of Wyoming manages it as a Class I air quality area.

f. Section 3.3.2, page 3-8 - What is the distance from the project area to the Bridger and Popo Agie wilderness areas? A quick measure at a scale of 1:500,000 that the Popo Agie wilderness areas are less than 100 miles from the project area. Because the Bridger and Popo Agie wilderness areas are being addressed in the Atlantic Rim EIS, they should also be addressed in this document.

It is 103.6 air miles (90 nautical miles) from Rawlins, Wyoming, to Lander, Wyoming. The distance from the Red Rim Pod to the southeast end of the Popo Agie wilderness areas is approximately the same.

The effects of natural gas development on air quality in southwest Wyoming have been studied extensively in recent years, including the Continental Divide/Wamsutter II air quality study that modeled the impacts of 3,000 wells, and the Pinedale Anticline air quality study that modeled the impacts of 700 wells. These studies found potential visibility impacts greater then the 0.5 deciview threshold at nearby wilderness areas (including the Bridger and Popo Agie wilderness areas) to be within an acceptable range. Furthermore, of the 3,000 wells included in the Continental Divide Model, only 2,130 (71%) were approved. The number of well in the Red Rim Project are well within the remaining 870 wells.

g. Section 3.3.2, page 3-8 - FYI, there are four NADP sites near Pinedale and the Wind River Mountains: Gypsum Creek, Pinedale, South Pass, and Sinks Canyon. Also, the FS has collected specific background lake chemistry in several lakes, and has established long term monitoring programs for 6 lakes. Was any of this data used in this analysis?

See response to f. above.

h. Section 4.3.1, page 4-3 - A lot of the particulate matter would be related to road traffic and clearing of well pads.

Some dust would be produced during construction. Dust abatement would comply with all applicable WOGCC requirements, as stated in section 2.1.4, page 2-7, of the RRPEA.

i. Section 4.3.1, page 4-31 - Again, how far is it to the Popo Agie wilderness? Should other wilderness areas being considered in the Atlantic Rim EIS be included in your analysis? What is the basis for the comment that, "No noticeable deterioration in visibility would occur at class I or sensitive Class II wilderness areas"? This may be true for project impacts alone, but cumulative impacts are not addressed in the document.

See answer for f. above. Section 4.16.1.2 has been changed by removing the last paragraph.

j. Section 4.3.1, page 4-3 - The second sentence indicates estimates of impacts to air quality were made; where are these estimates? About all I see is an assumption that, because the Continental Divide EIS analyzed for 3,000 wells and because they authorized a smaller number and the additional proposed project wells are below the 3,000 number, you assume there will be no impact.

See answer for a and f. above

k. Section 4.3.1, page 4-3, Last paragraph - The second sentence makes the assumption of compressor engines having emissions of 2 g/hp-hr. This is not consistent with the discussion in chapter 2, page 2-11, where the TPY of NOx from compressors was calculated based on 1.5 g/hp-hr.

Please read this sentence again. This sentence merely states that similar existing facility emissions have been shown to be less than 2.0 g/hp-hr.

l. Section 4.3.1, page 4-3 - I see an assumption that, because the Continental Divide EIS analyzed for 3,000 wells and because they authorized a smaller number and the additional proposed wells are below the 3,000 number, you assume there will be no impact. The Continental Divide EIS was released in April 1999, almost five years ago. For this assumption to be valid you must also assume there have been no changes or large scale projects analyzed or approved which would affect air quality. Because the Continental Divide EIS did not include the Pinedale Anticline or Powder River Basin projects (or any other RFDs or RFFAs for that matter), this assumption is not valid.

The analyses called for in this comment are beyond the scope of the project. Table 4-1, Summary of far-field air quality impacts from the Desolation Flats EIS, has been added to Section 4.3, Air Quality (see Errata).

m. Section 5.2, page 5-1 - The FS received the scoping notice for the Atlantic Rim project dated June 14, 2001, and we provided comments in a letter dated July 23, 2001. The FS is not shown in this section as providing comments and none of the comments were incorporated in the draft EA. Is there a reason that the FS comments were not listed or incorporated? The FS also provided similar comments to the initial scoping of the Atlantic Rim CBM project on March 30, 2000, for 96 wells.

Not including the Forest Service in this section is an oversight. The Forest Service comments will be included in the very next environmental analysis written.

n. It would be helpful to have a map of this project area in relation to other ongoing activities in Wyoming. This map should show gas fields, approved number of wells, actual developed wells, and all RFD and RFFA project locations with as much information as is available on the scope or scale of the project. Such a map would be a logical lead in to discuss cumulative impacts from other approved and RFD sources.

The comment will be taken under consideration. Generally a map such as proposed is beyond the scope of a project this size.

o. This document is lacking any analysis of air quality impacts directly related to the project or cumulative impacts. This document needs to provide the decision maker with information on developments and activities approved because the Continental Divide EIS modeled impacts on air quality relative to Class I and Class II wilderness areas. You also need to identify and take into consideration any potential impacts from RFDs and RFFAs.

This comment is noted; however, the *Continental Divide/Wamsutter II air quality study (see f. above) adequately covers the concerns express here. To conduct a study such as asserted in the comment is far beyond the scope of this project. Also refer to comment l. above.*

p. Section 5.3, page 5-4 - Is there a reason there was no input from the State BLM Air Quality staff in this document? Review at that level would facilitate an adequate discussion of air quality analysis.

Susan J. Caplan did contribute to the Red Rim Pod Environmental Analysis and the Decision Record for the Red Rim Pod Environmental Analysis.

q. In general, I believe this document falls short of the NEPA requirements to adequately disclose potential impacts from this project related to air quality and fails to disclose a cumulative assessment of these potential impacts.

This comment has been noted.

Appendix C

Master Surface Use Program (MSUP)
Red Rim Pod
Right-Of-Way (ROW) Application For Facilities

Operators:
Warren E & P, Inc. and Anadarko E & P Company

LANDS INVOLVED:
Sections 20 & 28 in T20N R89W, 6th PM, Carbon County, Wyoming

BLM LEASES:
WYW149261, WYW150410

Surface Use Program and Plan of Development for the subject wells listed below:

Gas Wells in T20N R89W Section 20
AR Federal 2089 NE20 (WYW149261)
AR Federal 2089 SE20 (WYW149261)
AR Federal 2089 SW20 (WYW149261)

Gas Wells in T20N R89W Section 28
AR Federal 2089 NW28 (WYW150410)
AR Federal 2089 NE28 (WYW150410)

Plan of Development for the facilities listed below:

Proposed ROW (BLM surface ownership lands): Road Access to Fee and State Gas Wells in T20N R89W (AR Fee 2089 NE16, AR Fee 2089 SW16, AR State 2089 SE16, and AR Fee 2089 NE29):

Lands Involved: T20N R89W, Sections 16 and 28

Proposed ROW (BLM surface ownership lands): Road Access to Fee Injection Well in T20N R89W (AR Fee 2089 29I):

Lands Involved: T20N R89W, Section 28

Proposed ROW (BLM surface ownership lands): Gathering System for Water and Gas and Buried Electrical Utility Lines

Lands Involved: T20N R89W, Sections 20 and 28

Proposed ROW (BLM surface ownership lands): Delivery Pipeline for Gas

Lands Involved: T20N R88W, Section 8
T20N R89W, Sections 12, 14, and 22
T21N R87W, Section 30
T21N R88W, Sections 26 and 34

PROJECT DESCRIPTION

The MSUP for the Red Rim Pod is submitted by Warren E & P, Inc. (Warren), and Anadarko E & P Company (AEPC), collectively referred to as "the Companies." The proposed project would be located 8 miles southwest of Rawlins, Wyoming, along Carbon County Road 605 (Twentymile Road). The project area lies within the Great Divide Basin, a sub-basin of the Greater Green River Basin. The Continental

Divide splits around the Great Divide Basin, and isolates it as a closed, interior drainage basin. Therefore, any water entering the basin is contained within it.

The project is one of nine areas or well pods that make up the Atlantic Rim Interim Drilling Project. Of the nine proposed gas well locations, five wells would be located on surface ownership lands administered by the Bureau of Land Management (BLM) Rawlins Field Office (RFO) and would develop federal minerals. Of the remaining proposed wells, three wells would develop fee minerals on fee surface, and one well would develop state minerals on federal surface. There are currently seven gas wells in the Red Rim Pod that are existing/authorized, which were previously permitted by AEPC on fee surface and minerals. A groundwater monitoring well also will be established in the project area, at a location specified by BLM.

Several additional facilities would be included as part of the Red Rim Pod. All of these facilities would be located on fee surface and would require no authorization from BLM prior to construction. Development of these wells and facilities is currently completed, underway, or planned for 2003:

- Two produced water-conditioning facilities would be utilized to treat water produced by gas wells (one is existing/authorized and one is proposed, as needed),
- Two deep injection wells would be utilized for disposal of hydrostatic test water and the waste stream from the water conditioning facilities (one is existing/authorized and one is proposed, as needed),
- Three outfalls would be utilized for the discharge of produced water (two are existing/authorized and one is proposed, as needed), and
- One compressor station (existing/authorized).

The MSUP contains surface operating procedures for the Companies' federal Applications for Permits to Drill (APDs), as required under Onshore Order No. 1. The enclosed **Project Map** shows all wells and facilities associated with the Red Rim Pod. Name, number, location, and lease information for the proposed wells and information on proposed facilities are listed in **Table B-1** – **Red Rim Project**. Additional information on each federal well is contained in the **BLM APD Form 3160-3** and **Well Survey Plat** already on file with BLM.

Wells are currently planned on federal leases WYW149261 and WYW150410 in T20N R89W, Sections 20 and 28. Lease stipulations that affect these sections are described below.

TABLE B-1 – RED RIM PROJECT

Proposed Gas Wells			
Lease Number	**Well Name**	**Well Number**	**Location**
WYW-149261	AR Federal[1]	2089 NE20	T20N R89W Section 20 NENE
	AR Federal[1]	2089 SE20	T20N R89W Section 20 SESE
	AR Federal[1]	2089 SW20	T20N R89W Section 20 SWSW
WYW-150410	AR Federal[1]	2089 NW28	T20N R89W Section 28 SENW
	AR Federal[1]	2089 NE28	T20N R89W Section 28 NWNE
FEE/STATE LEASES	AR Fee	2089 NE16	T20N R89W Section 16 SWNE
	AR Fee	2089 SW16	T20N R89W Section 16 NESW
	AR State[1]	2089 SE16	T20N R89W Section 16 NWSE
	AR Fee	2089 NE29	T20N R89W Section 29 NENE

TABLE B-1 – RED RIM PROJECT

Existing or Authorized Gas Wells[2]			
Lease Information	**Well Name**	**Well Number**	**Location**
FEE LEASES	AR Fee	2089 NE21	T20N R89W Section 21 NENE
	AR Fee	2089 NW 21	T20N R89W Section 21 NENW
	AR Fee	2089 SW21	T20N R89W Section 21 NESW
	AR Fee	2089 SE21	T20N R89W Section 21 NESE
	AR Fee	2089 NW29	T20N R89W Section 29 SENW
	AR Fee	2089 SW29	T20N R89W Section 29 SWSW
	AR Fee	2089 SE29	T20N R89W Section 29 SESE
Proposed Injection Well			
FEE LEASE	AR Fee	29I	T20N R89W Section 29 NENE
Existing or Authorized Injection Well			
FEE LEASE	AR Fee	21I	T20N R89W Section 21 NENE
Proposed Facilities			
FEE LEASE	Conditioning Facility	Bountiful	T20N R89W Section 29 NENE
FEE LEASE	Outfall	Bountiful 001 (RR-D1)	T20N R89W Section 29 SWNE
Existing or Authorized Facilities[2]			
Lease Information	**Site Type**	**Name**	**Location**
FEE LEASE	Conditioning Facility	Abundance	T20N R89W Section 21 NENE
FEE LEASE	Outfall	Abundance 002 (RR-D2)	T20N R89W Section 21 NENE
FEE LEASE	Outfall	Abundance 003 (RR-D3)	T20N R89W Section 21 NENE
FEE LEASE	Compressor Station	Red Rim	T20N R89W Section 21 SESE

Note: [1] BLM surface ownership lands

[2] Wells and facilities requiring no authorization from BLM prior to construction; development of these wells and facilities in accordance with the Red Rim Pod is currently completed, underway, or planned for 2003.

Lease WYW149261 contains a timing limitation stipulation in Section 20 to protect nesting habitat for raptors and greater sage-grouse, from February 1 through July 31 (raptors), and from March 1 through June 30 (greater sage-grouse and sharp tailed grouse). In addition, this lease contains a controlled surface use requirement for surface occupancy within ¼ mile of greater sage-grouse and sharp-tailed grouse strutting/dancing grounds, which requires a mitigation plan where impacts may occur. Potential mountain plover habitat has been identified in Section 20, which will require mitigation of impacts from April 10 through July 10. Finally, this lease contains a timing limitation for big game crucial winter range (November 15 through April 30), however, this stipulation is applied to Section 18, which is outside the pod. No project activities are proposed in Section 18, where crucial winter range for pronghorn antelope is delineated.

Lease WYW150410 contains a timing limitation stipulation in Section 28 to protect nesting habitat for raptors and greater sage-grouse, from February 1 through July 31 (raptors), and from March 1 through June 30 (greater sage-grouse and sharp tailed grouse). In addition, this lease contains a controlled surface use requirement for surface occupancy within ¼ mile of greater sage-grouse and sharp-tailed grouse strutting/dancing grounds, which requires a mitigation plan where impacts may occur. Potential mountain plover habitat has been identified in Section 28, which will require mitigation of impacts from April 10 through July 10.

Gas wells are also planned on BLM surface ownership lands in Section 16 that are not included in a federal lease because oil and gas rights for this section are not federally owned. No project activities are proposed near the very small area in the extreme northwestern portion of Section 16 that is delineated as crucial winter range for pronghorn antelope.

This MSUP is intended to serve as the ROW pre-application for the gas lines, water lines, access roads to well locations, and electric lines in the pod. A more detailed Pan of Development will be submitted with each application. Roads will require a 30-foot right-of-way. Gas-gathering lines will require a 30-foot right-of-way, water-gathering lines a 20-foot right-of-way, and electric lines a 10-foot right-of-way. The delivery pipeline will require a 50-foot right-of-way. All ROWs located in the same corridor will overlap each other to the maximum extent possible, while maintaining sound construction and installation practices. Where ROW corridors are located along a road, working space for installation of facilities will be along the road. All flowlines and roads have been collocated where possible. The enclosed **Project Map** shows the location of all access routes, gatherings lines, and the delivery pipeline.

The primary access road to the project area would be Carbon County Road 605. Access is provided by the feeder road of I-80, which intersects Carbon County Road 605 just south and west of Rawlins. Carbon County Road 605 is an existing one-lane road that is graded and partially graveled. Access to drill locations from the existing network of roads would be provided by new and upgraded crowned, ditched, and surfaced roads.

An existing two-track runs north for about 0.8 mile from its intersection with County Road 605 in Section 21, T20N R89W to a point where new access road would be constructed across BLM lands in Section 16 to serve two fee wells and one state well proposed in Section 16. New access roads would be constructed from County Road 605 to proposed federal wells in Sections 20 and 28 and fee wells in Section 29. The Companies propose to construct new access roads across public lands in accordance with the standards in BLM Manual 9113 and applicable regulations. Roads would be located to minimize disturbances and maximize transportation efficiency. The Companies will close and reclaim roads when they are no longer required for production operations, unless otherwise directed by the BLM or the affected surface owner.

The primary targeted reservoir in the Red Rim Pod is coal seams within recognized productive formations of the Mesaverde Group. All unproductive wells will be plugged and abandoned as soon as practical after the conclusion of production testing. Productive wells may be shut-in temporarily for gas pipeline connections and/or Sundry Notices under review by the BLM for production activities and facilities.

The Red Rim Pod contains approximately 3,200 acres. **Table B-2** summarizes the estimated disturbances that would result from implementing the project. The following schematics, which show typical facilities, operating standards, and methodologies, are attached to this MSUP: Drill Site Layout; Well Site; Water Disposal Facility; Water Transfer Facility; Water Conditioning Facility; and Compressor Station. A typical discharge structure is shown in the Water Management Plan (WMP). Additional schematics for this pod are attached to the Master Drilling Plan (MDP): B.O.P.; Bottom Flange; Configuration Options; Completed Well; and Injection Well.

TABLE B-2 ESTIMATES OF DISTURBED AREA – RED RIM PROJECT AREA

Facility	Construction Phase				Operations
	Length (feet)	Width (feet)	Area, ea. (acres)	Temporary Acres	Life of Project Acres
New Roads	12.300	40	N/A	11.3	11.3
Existing Well Access Road[a]	32,300	40	N/A	29.7	29.7
Existing Road to be Upgraded[b]	17,400	40	N/A	16.0	16.0
Corridors for New Gathering Lines and Utilities	49,600	30	N/A	34.2	0
Corridor for New Market Access Line	52,800	50	N/A	60.6	0
New Drill Locations (9)	N/A	N/A	1.0	9.0	2.3
Injection Well (2)	N/A	N/A	1.0	2.0	2.0
Existing Well Location (7)	N/A	N/A	1.0	7.0	1.8
Compressor Station (1)	N/A	N/A	2.2	2.2	2.2
Water Conditioning Facility (2)	N/A	N/A	2.6	5.2	5.2
Monitoring Well (1)	N/A	N/A	1.0	1.0	0.2
Total New Disturbance				**141.5**	**39.2**
Total Disturbance				**178.2**	**70.7**

Notes:
a Carbon County Road 605 not included in existing well access road
b Existing two-track that would be upgraded, and the portion of Carbon County Road 605 within the project area that would be used during the project

Natural gas is naturally adsorbed to the surfaces of the coal matrix and typically is not free to migrate in the subsurface until pressure is relieved. Hydrostatic head provides the pressure that keeps the majority of the gas adsorbed to the coal. Gas is liberated from the coal matrix by the withdrawal of water, which in turn reduces the hydrostatic head present in the coal formation. Once a “critical” subsurface coal formation pressure is reached as water is pumped from the coal formation, gas is free to migrate. Gas will then flow or can be pumped to the surface through the wellbore.

The Companies plan to spud the wells during fall 2003. The wells will be drilled through the coal seam formations. The natural gas will be produced from the coal seams through perforations in the casing. Drilling activities are expected to occur over several months.

The wells may be tested for a period of months. Well testing involves pumping and testing water from each well and determining its capacity to produce natural gas. It is anticipated that well testing will be completed within 6 to 12 months. If unproductive, the drill holes will be plugged and abandoned in accordance with Wyoming Oil and Gas Conservation Commission (WOGCC) rules and regulations and BLM guidance as soon as practicable after the conclusion of well testing.

During well testing associated with this project, natural gas, to the extent it is produced, will be vented or flared on-location in accordance with the applicable BLM Onshore Orders, Notices To Lessees, and WOGCC regulations, and authorized by the WOGCC and the BLM in Sundry Notices until wells are connected to the gathering system. Wet gas from the productive wells will be collected and transported via buried pipelines to the compressor station. During testing, produced water will be gathered from the well sites and piped to a water conditioning facility.

The water produced from the gas wells will be conditioned using a proprietary, natural-mineral based process that will result in reduced levels of specific conductance and sodium adsorption ratio (SAR). The conditioned water will be discharged into ephemeral tributaries of Hadsell Draw on fee lands, provided it meets the applicable water quality standards for irrigation. Surface discharge of produced water will comply with all terms, conditions, and monitoring requirements of a National Pollutant Discharge Elimination System (NPDES) permit issued by the Wyoming Department of Environmental Quality (WDEQ). The waste stream from the water conditioning facility will be injected.

An allocation meter will be used to measure raw produced gas volumes for each well in the pod. A sales meter will be located downstream of the final compressor and dehydration unit, at the compressor station, and will be used to measure dry salable-quality gas. A request for variance from Onshore Order No. 5, if needed, along with a description of the measurement equipment, will be submitted in a Sundry Notice if the wells are deemed producible.

Oil and gas activities in Wyoming are managed by the WOGCC. All of the Companies' operations, and those of its contractors, will be conducted in accordance with all BLM and WOGCC rules and regulations.

The WOGCC has established a 160-acre well spacing pattern for the wells included in the Proposed Action under Chapter 3, Section 2 of WOGCC rules that establish a 160-acre spacing for gas wells located in certain townships, including T20N R89W. This order applies to all of Sections 16, 20, 21, and 29, and all except the southeast quarter of Section 28. An 80-acre spacing pattern for wells completed in the Mesaverde Group has been established for the southeast quarter of Section 28 under Cause No. 1, Order No. 1, Docket No. 154-2001.

1. EXISTING ROADS AND TRAVELWAYS

The project area is accessible from Rawlins, Wyoming, by traveling approximately 8 miles southwest on Carbon County Road 605. In Section 21, T20N, R89W, County Road 605 intersects an existing two-track that proceeds north toward various access roads that serve existing gas wells on fee lands. As stated previously, the Companies are applying for a ROW to construct new road access in the Red Rim project area. The remaining access roads are on private surface and will be maintained by access agreement with fee surface owners.

Local roads are shown on the enclosed map of the project area. Existing roads and gates will be used when practical. If necessary, existing roads will be improved. All existing roads will be brought up to minimum standards for a Resource Road as found in BLM Manual 9113.

The existing roads will be maintained in the same or better condition as existed prior to the start of operations. Maintenance of the roads used to access the well locations will continue until final abandonment and reclamation of the well locations occur. A regular maintenance program will include, but is not limited to, blading, ditching, culvert installation and cleanout, and gravel surfacing where excessive rutting or erosion may occur. Limiting or temporarily suspending vehicle access during adverse conditions will reduce excessive rutting or other resource damage that may be caused by vehicle traffic on access roads that are wet, soft, or partially frozen. If vehicles create ruts in excess of 4 inches deep, the soil will be deemed too wet to adequately support vehicles, and routine activities shall be temporarily suspended.

Culverts will be placed in the existing BLM roads as the need arises or as directed by BLM's Authorized Officer. Gates and cattle guards will be installed where appropriate (refer to Project Map).

The Companies will share maintenance costs in dollars, equipment, materials, or labor proportionate to the Companies' use with other authorized users. Upon request, the BLM's Authorized Officer shall be provided with copies of any maintenance agreement entered into.

During periods of high potential for wildfire, extreme caution will be used in accessing the drill locations. To ensure that no ignitions occur, measures such as mowing the access rights-of-way or limiting vehicles may be undertaken as necessary. The Companies are sensitive to fire issues and risks in the western United States.

2. PROPOSED ACCESS ROUTES

1.1.2 Well Access

New access routes will be sited to avoid sensitive resource areas, such as leks, and areas susceptible to increased resource damage from the proposed project, such as areas of steep terrain or poor vegetative cover. Every effort will be made to minimize the amount of cut-and-fill construction needed to maintain safe, environmentally sound, year-round access to the well sites. The special conditions of approval specified for this pod by the BLM will be implemented.

Access to the individual well sites will be provided by crowned and ditched roads that are surfaced with an appropriate grade of gravel. To the extent possible, the access roads will follow existing terrain and two-tracks that would represent a sound alignment for a constructed road.

Where possible, existing two-tracks will be upgraded, as specified by BLM, to provide access to well sites. Newly constructed access routes will be crowned, ditched, and graveled, as specified by BLM. All equipment and vehicles will be confined to identified travel corridors and other areas specified in this MSUP. Gates and cattle guards will be installed where appropriate. The access roads will be surfaced with an appropriate grade of aggregate or gravel to a depth of 4 inches before the drilling equipment or rig is moved onto the pad.

Unless otherwise exempted, free and unrestricted public access will be maintained on the access road. All construction work will be accomplished as specified by the landowner and the BLM. Access roads will be maintained in a safe and usable condition. A regular maintenance program will include, but is not limited to, blading, ditching, installing or cleaning culverts, and surfacing. Maintenance work will be accomplished as specified by the BLM.

The access roads will be constructed to minimum standards for a BLM Resource Road, as outlined in BLM Manual 9113. The minimum travelway width of the road will be 14 feet with turnouts. No structure will be allowed to narrow the road top. The inside slope will be 4:1. The bottom of the ditch will be a smooth V with no vertical cut in the bottom. The outside slope will be 2:1 or shallower. Turnouts will be intervisible and/or spaced at a minimum of 1000 feet.

Wing ditches will be constructed as deemed necessary to divert water from the road ditches. Wing ditches will be constructed at a slope of ½ percent to 1 percent.

Topsoil and vegetation will be windrowed to the side of the newly constructed access roads. After the roads are crowned and ditched with a 0.03 to 0.05 foot crown, the topsoil will be pulled back onto the cut slopes of the road right-of-way so no berm is left at the top of the cut slope.

Drainage crossings on the access routes will be low water crossings or crossings using "fish friendly" culverts. Crossings of Hadsell Draw and its tributaries will be accomplished according to BLM specifications. Low water crossings would be used in shallow channel crossings and at crossings of the main channel. Crossings of the main channel would consist of excavating an area approximately 4 feet deep, or deeper if specified by BLM, under the travelway and filling it with rock and gravel to the level of the drainage bottom. Channel banks on either side of these crossings would be cut down to reduce grade where necessary. Culverts would be installed on smaller, steeper channel crossings. Rip-rap will be added at the outlet of each culvert to minimize erosion. Topsoil would be conserved before channel crossing construction occurs. Additional culverts would be placed as the need arises or as directed by the BLM's Authorized Officer. Also, the total area to be disturbed would be flagged on the ground for review during the onsite and before construction begins.

Where low water crossings are required, a 30-inch deep rock fill over geotextile through the drainage will be required. The rock fill will consist of 75 percent 3-inch to 10-inch diameter rough rock and 25 percent Wyoming Grading "W" Material to fill the voids. The geotextile will be overlapping at all joints and will extend beyond the rock fill. The top of the rock fill in the drainage bottom will match the elevation of the natural drainage to allow for smooth flow with no unnatural scouring or water backup. Four inches of course gravel over the rock will be used for the surface.

Culverts will be covered with a minimum of 12 inches of fill or one-half the diameter of the pipe, whichever is greater. The inlet and outlet will be set flush with existing ground and lined up in the center of the draw. Before the area is backfilled, the bottom of the pipe will be bedded on stable ground that does not contain expansive or clay soils, protruding rocks that would damage the pipe, or unevenly sized material that would not form a good seat for the pipe. The site will be backfilled with unfrozen material and rocks no larger than 2 inches in diameter. Care will be exercised to thoroughly compact the backfill under the haunches of the conduit. The backfill will be brought up evenly in 6-inch layers on both sides of the conduit and thoroughly compacted. A permanent marker will be installed at both ends of the culvert to help keep traffic from running over the ends. Culverts will be installed in a manner that minimizes erosion or head-cutting and may include rip rapping or other measures as required. Additional culverts will be placed in the access road as the need arises or as directed by BLM's Authorized Officer.

If additional structures are warranted to maintain the access routes in acceptable condition during use, the affected road segments will be identified for BLM approval. In the event that specific BLM field survey requirements are not provided or do not exist, the field survey requirements described in BLM Manual 9113 will be followed.

The access roads will be winterized by providing a well-drained travelway to minimize erosion and other damage to the roadway or the surrounding public land. Construction activity or routine maintenance will not be conducted using frozen or saturated soil material or during periods when watershed damage is likely to occur.

No construction or routine maintenance activities will be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 4 inches deep, the soil will be deemed too wet to adequately support construction equipment, and construction and maintenance will be temporarily suspended.

The written approval of the Authorized Officer will be obtained before snow removal is undertaken outside the new and existing roadways. If approval is given, equipment used for snow removal operations

outside the road ditches will be equipped with shoes to keep the blade off the ground surface. Special precautions will be taken where the surface of the ground is uneven to ensure that equipment blades do not destroy the vegetation.
Design drawings and templates will be submitted only if specifically required by the BLM. A "plans-in-hand" review will be conducted with the drilling contractor prior to construction to review the access routes to the well sites. Directional markers will be set where needed and will be removed as soon as they are no longer needed.

If drilling is productive, all access roads to the well site would remain in place for well servicing (such as maintenance and improvements). Portions of the drill location outside the well pad that are no longer needed would be reclaimed. Any portions of the ROW for the access road that are no longer needed also would be reclaimed. The outside ditch cuts also would be seeded and reclaimed.

3. LOCATION OF EXISTING WELLS

As mentioned previously, AEPC previously permitted seven gas wells that are currently existing or authorized for development on fee surface and minerals. These wells are identified in **Table B-1**. Apart from the existing or previously authorized wells that are part of the Red Rim Pod, a search of the WOGCC website identified one oil well drilled in 1974 by Davis Oil Company in Section 20 (API 720214), which was subsequently abandoned in 1975. The enclosed **Project Map** shows locations of disposal, drilling, producing, injection, and abandoned oil and gas wells within 1 mile of the Red Rim Pod wells.

According to the Wyoming State Engineer's Office (WSEO), there are no permitted water wells located within one mile of the project area.

Each Company would offer a water well agreement to the landowner for all wells within the circle of influence for that Company's producible gas wells. However, no permitted water wells are located within the circle of influence of any gas wells in the Red Rim Pod.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES, IF WELLS ARE PRODUCTIVE

On Well Pad

Wellhead facilities would be installed if the gas wells are productive. Natural gas and produced water would be collected and transported from the wellhead via buried pipelines. Gas and water would be measured as specified elsewhere in this MSUP.

The long-term surface disturbance at the location of each productive well would encompass approximately 0.25 acre, including cut and fill slopes. Typically, only the production facilities at the well site would be fenced or otherwise removed from existing uses. A loop road or a small, graveled pad area would provide a safe turnaround area for vehicles. The perimeter of the pad area would be fenced if adjacent cut and fill slopes represent a safety hazard for vehicles.

The wellhead facilities would be contained within an area covering approximately 15 feet by 15 feet. The surface equipment at each well will consist of the wellhead, a pump panel, and an insulated wellhead cover. Additionally, a vertical separator at some well sites would separate gas from the water stream. Each productive well is expected to require installation of an electric submersible pump below ground level, which will be used to produce water necessary to lower pressure within the coal seams. A schematic of a **Typical Well Site** is enclosed with the MSUP.

The Companies will paint structures at wells and central facilities with flat colors that blend with the adjacent undisturbed terrain. The paint used will be a color which simulates "Carlsbad Canyon", color 2.5Y 6/2 of the "Standard Environmental Colors," unless otherwise specified by the BLM. This measure does not apply to structures that require safety coloration in accordance with the requirements of the Occupational Safety and Health administration (OSHA).

Electricity would be used to power pumps during well development and to initiate and maintain production. Engines fired by natural gas or propane would be used to run generators temporarily at individual wells until electric distribution lines are analyzed in the Atlantic Rim EIS and then constructed. If a well is productive, it will be shut-in until production facilities are constructed.

After construction of the production facilities, a temporary generator would be centrally located and used until permanent electrical services are installed. The Companies may choose to use centrally located generation equipment at the compressor station and an underground distribution system to supply power to well sites.

Where practical, utility lines on the well pad would be installed in the same trench as the gas-gathering and water-gathering lines in order to minimize surface disturbance. All utility lines would be buried in accordance with the Interim Drilling Policy.

Off Well Pad

Pipelines (Gathering Lines and Delivery Pipeline)/Compressor Station/ Water Handling and Disposal Facilities/Injection Wells/Tanks

The operator will submit a Sundry Notice for approval prior to construction of any new surface-disturbing activities on-lease that are not specifically addressed in the MSUP or individual APDs.

Pipelines

The ROWs for the gathering systems will typically follow access roads, except in a limited number of cases where topography dictates otherwise or as required by BLM. ROWs located in the same corridor will overlap each other to the maximum extent possible, while maintaining sound construction and installation practices. Where ROW corridors are located along a road, working space for installation of facilities will be along the road.

Trenches will be excavated to install the flowlines and electrical lines. Trenching will occur as close to the road prism as feasible. Gas-gathering and produced water-gathering pipelines (as well as utility lines) will be laid together in the same trench when practical. Trenches excavated for well gathering lines and electrical lines are expected to temporarily disturb 30-foot wide corridors, which would be reclaimed as soon as practical after trenching and backfilling are completed. An additional area, estimated to be 10 feet wide will be used to transport machinery, personnel, and equipment along the corridor to install flowlines and electrical lines wherever the gathering system would not follow an access road. This corridor is used to allow working room for the machinery, personnel, and equipment during the installation process. Corridors for the system of gathering lines in the project area would be 9.3 miles long. About 3.9 miles of corridors for gathering lines would be located on BLM surface ownership lands.

Construction and installation of gathering lines for gas and water would occur at the same time as access roads are constructed or immediately after drilling has been completed. Construction and installation of the gas delivery pipeline would occur after the producibility of the wells has been confirmed. All produced water used to test the integrity of the gas delivery pipeline [500 barrels (bbls) or 21,000 gallons] would be injected. Pipeline corridors would be reclaimed as soon as practical after construction of the pipeline is complete. Three types of pipelines would be constructed as part of the proposed project:

1. A gas-gathering pipeline system (low pressure) would be constructed from the wellheads to the compressor station. This system would use high-density polyethylene (HDPE) pipe, starting with 4-inch diameter pipe at the wellhead and graduating up to 12-inch diameter pipe at the inlet to the compressor.

2. A produced water-gathering pipeline system (low pressure) would be constructed from the wellheads to a water conditioning facility. This network of water lines would use 4-inch through 12-inch diameter pipe made of HDPE.

3. Should encouraging quantities of natural gas be discovered, a gas delivery pipeline (high pressure) would be constructed. This pipeline would be constructed of 8-inch diameter steel pipe.

The alignment of the delivery line from the compressor station to the existing transmission pipeline is shown on the **Project Map**. The Companies are applying for a ROW for the delivery pipeline that would be buried 6 feet deep on a 50-foot wide ROW. This pipeline would be anchored at the compressor station and would proceed northeast to an existing pipeline located in Section 30 of T21N R87W. This gas delivery pipeline would be 10.2 miles long, of which about 4.6 miles would be located on BLM surface ownership lands.

Construction and installation of this delivery pipeline would temporarily disturb a 50-foot wide corridor, which will be reclaimed as soon as practical after construction is completed. An area, estimated to be 25 feet wide, would be used to transport machinery, personnel, and equipment along the corridor to install the pipeline wherever the delivery pipeline would not follow an access road. This corridor would allow working room for machinery, personnel, and equipment during the installation process.

The delivery pipeline will be constructed using open cut construction methods for upland areas, and dry ditch construction methods for water body crossings. The disturbed area will be kept to a minimum. Surface soil material will be stockpiled to the side and segregated. Surface soil material will not be mixed or covered with subsurface material. Trenches will be compacted during backfilling. Pipeline routes will be graded to conform to the adjacent terrain. Cuts and fills will be made only where necessary. After construction, cut and fill slopes will be waterbarred or regraded to conform to the adjacent terrain, as specified by BLM. The constructed pipeline will not block, dam, or change the natural course of any drainage. Water body crossings will be completed as quickly as possible, with ditching, pipeline installation, and backfilling completed in less than 48 hours if possible. All minimum requirements contained in the pipeline safety regulations of the U.S. Department of Transportation will be met or exceeded.

The Companies would complete the pipeline during periods when key habitats are not occupied to limit human presence in and disturbance of key wildlife habitats during critical periods of use. The availability of adequate working space would accelerate construction.

In order to minimize surface disturbance, the operator will use wheel trenchers (ditchers) or ditch witches, where possible, to construct all pipeline trenches associated with this project. Track hoes or other equipment will be used where topographic or other factors require their use.

Trenches that are open for the installation of pipelines will have plugs placed no more than 1,000 feet apart to allow livestock and wildlife to cross the trench or walk out of it, if needed. Placement of plugs will be determined in consultation with BLM and any affected landowner.

Procedures will be implemented to prevent livestock or wildlife from falling into open excavations. Procedures could include temporary covers, fencing, or other means acceptable to BLM and any affected landowner.

Compressor Station

The compressor station will be sited to allow for the installation of one compressor initially, with the addition of up to two more compressors later in the life of the field. Each compressor would be sized to handle 5 million cubic feet per day (MMCFD) from 15 pounds per square inch (psi) suction pressure to 1,200 psi discharge pressure. Each compressor would be driven by a natural gas engine that would be designed to meet all specifications established by the Wyoming Department of Environmental Quality, Air Quality Division (WDEQ–AQD). Engines used to drive compressors would have emissions of less than

1.5 grams per brake horsepower per hour (g/bhp-hr), or less than 16.7 tons per year of nitrogen oxides (NO_x), and 0.5 g/bhp-hr, or less than 5.6 tons per year of carbon monoxide (CO). Additional equipment at the compressor station would include a tri-ethylene glycol (TEG) dehydration system, which would dry the gas to meet pipeline-quality specifications of the market pipeline.

The compressor station facility is expected to be constructed within a site area covering approximately 300 feet by 300 feet (see enclosed **Typical Compressor Station**). In addition to the facilities on the pad, the Companies will construct drainage ditches to divert stormwater away from the compressor station pad. About one-half of the compressor station site area will be affected by construction, maintenance, and operation of the facility. The compressor station facility will be of all-weather construction, having a thick layer of gravel surfacing over the pad site. Topsoil will be removed and conserved for later reclamation activities. The compressor station will consist of an insulated header building containing a separator or a separator and allocation meters for each well. The compressor station will also have a dehydrator that will remove water from the wet gas stream. The water will be pumped from the header building to an approved injection well. If different production facilities are required, plans will be submitted in a Sundry Notice.

Water Handling and Disposal Facilities, Injection Wells, Monitoring Well (this section has been changed from what is in the RRPEA)

Within 90 days of initial production start-up, the operator will submit an analysis of the produced water to the BLM's Authorized Officer. The source of the water to be disposed is the coals in the Mesaverde Group. Coal bed formation water (produced water) will be collected in a buried polyethylene flowline (pipeline) for transport to the water injection facility. Any changes in the produced water disposal method or location must receive written approval from BLM's Authorized Officer before the changes take place.

A small portion of the water produced from gas wells, about 5 gallons per minute at each location identified on the **Project Map**, would be dispensed for use by livestock in five stock watering tanks at locations specified by BLM and the surface owners. These tanks would be equipped with float valves that would prevent overflow and discharge into drainages.

Injection will also be utilized for disposal of hydrostatic test water used to test the integrity of the gas delivery pipeline (500 bbls or 21,000 gallons).

A typical water disposal facility would consist of a pad of approximately 200 feet by 200 feet that would disturb an estimated 1.0 acre, including cut and fill slopes. Each facility would contain four 400-bbl water tanks, pump house, piping, and well house (see attached schematic of **Typical Water Disposal Facility**). An approximate 3.5-foot berm would be constructed around the perimeter of the water tanks, excluding the pump shed, at each disposal facility to contain any potential spills on the pad. The pump shed would be excluded from the berm area to minimize the potential for electrical or safety hazards that could occur if water entered the pump shed and caused electrical shorts. The berm would be constructed to contain the water from the largest tank, plus 10 percent, and maintain a freeboard (extra capacity) of 1 foot.

The approximate minimum injection capacity of the injection wells would be 5,000 barrels per day (bbls/day), and the maximum injection capacity would be 12,000 bbls/day. Both injection wells will be located on fee land. The injection zone, in the Hatfield, Cherokee, or Deep Creek sands, is isolated above and below by competent shale barriers. Maximum pressure requirements for the injection zone would be established through injectivity tests that would identify fracture pressure limits to prevent the overlying shale from being breached by the initiation and propagation of fractures through overlying strata to any zones of fresh water. The injection capacity would be determined by the permeability of the receiving reservoirs and limits on the injection pressure to preclude fracturing the formation, and would be established in the permit for each well. Injection horizons will not be exceeded based on injectivity tests and applicable permit limits, as regulated by the State of Wyoming and BLM. These deep sands are

limited reservoirs, and it may be necessary to find deeper reservoirs if they become filled to capacity. There are a number of deeper reservoirs that could be utilized.

Each injection well will be drilled, cased, and cemented from TD to surface. The injection wells would be drilled with the same equipment and personnel used for the gas wells. Depth of the injection wells is expected to be between 5,965 and 6,335 feet. Drilling and completing each injection well would require approximately 7 to 14 days; installing surface equipment, holding tanks, and pumping equipment may require an additional 14 days.

BLM has requested that three to six groundwater monitoring wells be installed within the Atlantic Rim EIS study area during the interim drilling project. The locations of these monitoring wells have not yet been specified, however, one of them will be located in the Red Rim project area. The effects of interim drilling and development on the coal aquifer, including drawdown, will be monitored by these wells.

Transfer pumping stations, consisting of two 400-bbl water tanks with associated pump and piping, may be needed (see attached **Typical Water Transfer Facility**). Water transfer pumping stations may be used during production operations to transfer produced water from the gas wells to the water handling facilities. The transfer pumping stations are needed in areas where differences in elevation require supplemental pumping to transfer the produced water. Each pumping station would contain up to two 400-bbl water tanks, an inlet separation vessel, and a small centrifugal water pump. A small pump shed would be constructed to enclose the pump. Each pumping station would consist of a pad of approximately 125 feet by 125 feet that would disturb an estimated 0.4 acre, including cut and fill slopes. An approximate 3.5-foot berm would be constructed around the perimeter of the water tanks, excluding the pump shed, at each pumping station to contain any potential spills on the pad. The pump shed would be excluded from the berm area to minimize the potential for electrical or safety hazards that could occur if water entered the pump shed and caused electrical shorts. The berm would be constructed to contain the water from the largest tank, plus 10 percent, and maintain a freeboard (extra capacity) of 1 foot. These transfer stations will be located near proposed disturbance areas, outside cultural sites, and, where possible, away from any known sensitive wildlife or resource areas. Final location of the water transfer facilities will be submitted in a Sundry Notice.

Tanks

The water tanks at transfer and disposal facilities will be constructed, maintained, and operated to prevent unauthorized surface or subsurface discharges of water. The tanks will be located away from the established drainage patterns in the area and will be constructed to prevent the entrance of surface water.

The closed-top water tanks will be fenced or capped to prevent livestock or wildlife entry.

The water tanks will be kept reasonably free from surface accumulations of liquid hydrocarbons and are not to be used for disposal of water from other sources without the prior approval of the BLM. Any discharge from the tanks will be reported to the BLM as required by NTL-3A.

All storage tanks and compressor facilities designed to contain oil, glycol, produced water, or other fluid, which may constitute a hazard to public health or safety, will be surrounded by a secondary means of containment for the entire contents of the largest single tank in use, plus one foot of freeboard. The 3.5 foot berms planned for any closed produced water tanks used at well sites before flowlines are constructed, closed tanks used to hold fracing fluids during well completion and testing, water disposal facilities, and water transfer facilities will contain the contents of the largest tank in use at that site, plus one foot of freeboard. The containment or diversionary structure will be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours and would be constructed so that any discharge from a primary containment system would not drain, infiltrate, or otherwise escape to groundwater, surface water, or navigable waters before cleanup is completed.

5. LOCATION AND TYPE OF WATER SUPPLY FOR DRILLING

Water to drill the first well will be trucked from the AR Fee 20 89 SE21 well located in T20N R89W, Section 21.

Water produced from project wells will be transported to nearby drilling locations and used to drill subsequent wells.

Water for use in drilling the wells would be obtained from existing wells completed in the coal seams of the Mesaverde Group. Approximately 700 barrels of water (almost 30,000 gallons) would be needed to drill each well. The actual volume of water used in drilling operations would depend on the depth of the well and any losses that might occur during drilling. The proposed project also would require almost 70,000 gallons of water per well for preparation of cement and stimulation of the well (14,000 gallons) and control of dust (55,440 gallons). In all, nearly 100,000 gallons (about 0.3 acre-feet) of water per well would be used.

Any changes in the water source or method of transportation must receive written approval from BLM's Authorized Officer before the changes take place.

6. CONSTRUCTION MATERIALS

Construction materials (mineral material aggregate suitable for surfacing material) will be purchased from a nearby private source or a local supplier having a permitted source of materials in the area. No construction materials will be removed from federal and/or Indian lands without prior approval from the BLM.

7. METHODS FOR HANDLING WASTE DISPOSAL

Drill cuttings (rock fragments generated during drilling) will be produced during drilling of the borehole. Cuttings will be buried in the reserve pit upon closure of the reserve pit.
No oil or other oil-based drilling additives, chromium/metals-based muds, or saline muds will be used during drilling of these wells. Only fresh water, biodegradable polymer soap, bentonite clay, and non-toxic additives will be used in the mud system. Details regarding the mud program are incorporated within the MDP. These wells will not produce oil or salt water typical of oil production. Furthermore, other liquid hydrocarbons are not anticipated. Should unexpected liquid petroleum hydrocarbons (crude oil or condensate) be encountered during drilling or well testing, all liquid petroleum hydrocarbons will be contained in test tanks on the well site.

Dust abatement will comply with all applicable WOGCC, WDEQ, or BLM requirements. Only water suitable for livestock use would be used for dust abatement. Only disturbed areas will be sprayed. Spraying will be done in a way that will reduce runoff and channelized flow.

A portable, self-contained chemical toilet will be provided on location during drilling and completion operations. Upon completion of operations, or as required, the contents of toilet holding tanks will be disposed of at an authorized sewage treatment and disposal facility. Disposal will be in accordance with State of Wyoming, Carbon County, and BLM requirements regarding sewage treatment and disposal. The Companies will comply with all state and local laws and regulations pertaining to disposal of human and solid wastes.

No trash will be placed in the reserve pit. All refuse (trash and other solid waste including cans, paper, cable, etc.) generated during construction, drilling, and well testing activities will be contained in an enclosed receptacle, removed from the drill locations promptly, and hauled to an authorized disposal site.

Immediately after removal of the drilling rig, all debris and other waste materials not contained within trash barrels will be cleaned up and removed from the well location. No potentially adverse materials or substances will be left on the drill locations.

Hazardous Materials Management

All project-related activities involving hazardous materials will be conducted in a manner that minimizes potential environmental impacts. An on-site file will be maintained containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds, or substances that are used in the course of construction, drilling, completion, production, and reclamation operations. Netting will be placed over any pits that may contain hazardous substances (Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] Section 101(14)), as determined by visual observation or testing. The mesh diameter shall be no larger than 1 inch.

No hazardous substance, as defined by CERCLA, will be used in the construction or drilling operations associated with these wells. No Resource Conservation and Recovery Act (RCRA) hazardous wastes will be generated by well-drilling operations. The term "hazardous materials" as used here means: (1) any substance, pollutant, or containment (regardless of quantity) listed as hazardous under CERCLA of 1980, as amended 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA; (2) any hazardous waste as defined in RCRA of 1976, as amended; and (3) any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 U.D.C. 2001 et seq. The operator will be required to provide a referenced list of hazardous materials that could be used, produced, transported, disposed of, or stored on the well location including a discussion on the management of the hazardous materials.

Any spills of oil, gas, or any other potentially hazardous substance will be reported immediately to the BLM, landowner, local authorities, and other responsible parties and will be mitigated immediately, as appropriate, through cleanup or removal to an approved disposal site.

8. ANCILLARY FACILITIES

Several self-contained travel-type trailers may be used onsite during drilling operations. No facilities other than those described in this MSUP will be constructed to support the operations associated with the wells.

9. WELL SITE LAYOUT

A schematic drawing of the **Typical Drill Site Layout** used for each well is enclosed with this MSUP. Information on each federal well is contained in the **BLM APD Form 3160-3, Well Survey Plat**, and **Drill Pad Cross Section** already on file with BLM. The cross section shows the orientation of the drill pad with respect to the topographic features (cut and fill), facilities, and access to the pad.

At each drill location, surface disturbance will be kept to a minimum. The areal extent of each drill pad is approximately 200 feet by 200 feet. Each drill pad will be leveled using cut and fill construction techniques where needed. Prior to constructing the drill pad the top 6 to 8 inches of soil (more if available) and associated vegetative material will be removed and stockpiled. Drainage ditches will be constructed to divert stormwater away from each pad. All surface disturbance related to drilling will be confined to each drill site.

The Companies plan to use one reserve pit at each drilling location. A reserve pit is used during drilling to circulate the drilling mud (mostly bentonite clay and fresh water) and rock cuttings out of the borehole and for holding drilling fluids. This pit will be designed and constructed according to WOGCC and BLM requirements.

Each reserve pit will be approximately 20 feet deep (including 2 feet of freeboard), and will be 40 feet wide and 40 feet long (at the surface). Each pit will be excavated within the "cut area" of the drill site to minimize any potential for slope failure. Each pit will be designed to prevent collection of surface runoff

and will be closely monitored to ensure no pit overflows occur. The reserve pit will be open for an estimated 2 to 8 weeks to allow for evaporation of pit fluids. During this time the pit will be closed off from wildlife and livestock by two strands of barbed wire above a woven wire fence.

Each reserve pit will be constructed in a manner that minimizes the accumulation of surface precipitation runoff into the pit. This will be accomplished by appropriate placement of subsoil/topsoil storage areas or construction of berms or ditches. Netting will be placed over any pits that have been identified as containing oil, as determined by visual observation or testing. The mesh diameter will be no larger than 1 inch. For the protection of livestock and wildlife, all pits and open cellars will be fenced. Fencing shall be in accordance with BLM specifications.

A conventional drilling rig would be used to drill the gas wells. Additional equipment and materials needed for drilling operations would be trucked to the drill location. Depending on the location of the coal seam, each producing well would be drilled to a depth of 4,050 feet to 5,850 feet or deeper. Natural gas in the coal seam would be produced through perforations in the casing. The well control system will be designed to meet the conditions likely to be encountered in the hole and will conform to BLM and State of Wyoming requirements.

The drilling and completion operation for a gas well normally requires a maximum of 10 to 15 workers at a time, including personnel for logging and cementing. Each well would be drilled within 7 to 10 days. A well completion program may be initiated to stimulate production of gas and to evaluate the characteristics of gas and water production in preparation for production of gas from a drilled, cased, and cemented well. Wells determined to be productive would be shut in until pipelines and other production facilities are constructed.

A mobile completion rig similar to the drill rig may be transported to the well site and used to complete each well. Completion operations are expected to average 2 to 5 days per well. When the applicable permits are received, methane gas may be vented or flared. Formation water may be temporarily contained in the reserve pit during drilling and well completion activities. All fracing fluids will be contained in closed tanks on location. During the testing period, produced water from the Mesaverde aquifer will be contained in closed tanks on location or trucked to an authorized disposal well, pending the completion of flowlines for produced water. All closed tanks on location will be encompassed by a 3.5 foot berm that will contain the entire contents of the largest tank in use, plus 10 percent, with one foot of freeboard, as authorized by BLM.

10. PROGRAMS FOR RECLAMATION OF THE SURFACE

BLM surface ownership lands that contain disturbed areas or facilities that are no longer needed would be reclaimed at the earliest opportunity in accordance with applicable regulations and agency guidance. Non-federal lands would be reclaimed in accordance with the requirements of the surface owner.

Roads, culverts, cattle guards, pipelines, stock water facilities, or other structures could be left in place at the end of the project for any beneficial use, as designated by the affected surface owners and BLM. Water wells and produced water would be available to the surface owners and BLM, provided that appropriations, diversions, and storage rights are properly filed with the WSEO.

As soon as practical after the conclusion of drilling and testing operations, unproductive drill holes will be plugged and abandoned and site reclamation will commence. The BLM will be notified prior to commencement of reclamation operations. A Notice of Intent to Abandon will be filed for final recommendations regarding surface reclamation. Upon completion of drilling, the reserve pit will be dewatered and reclaimed in accordance with BLM guidance. Typically, this procedure involves allowing the contents to dry naturally, and then backfilling, re-contouring, and reclaiming the reserve pit area to approximate pre-drilling site conditions. The reserve pit will be backfilled with a minimum cover of 5 feet of soil or subsoil material.

After abandonment of productive wells, all wellhead equipment that is no longer needed will be removed, and the well sites will be restored.

Any areas, including the drilling locations, reserve pits, or access routes, that are disturbed by earthwork will be recontoured to a natural appearance as near to the original contour as possible as soon as practical after the conclusion of operations. Any flowline trenches that may be constructed will be backfilled completely.

Recontoured areas will graded to be outsloped, and waterbreaks will be constructed where needed to avoid concentrating surface waters and producing gullies. The land surface will be left "rough" after recontouring to ensure that the maximum surface area will be available to support the reestablishment of vegetative cover.

All topsoil conserved during earthwork will be redistributed evenly and left "rough" over these recontoured areas. BLM goals for vegetative cover will guide revegetation efforts. Common goals are erosion control, weed control, palatable and nutritious forage for livestock and wildlife, and visual aesthetics.

Revegetation efforts will comply with BLM specifications on all BLM surface ownership lands. If no specifications are provided, the following specifications will be used. Seeding is expected to occur in the fall after September, prior to ground frost, or in the spring after frost has left the ground. The seed mixture, including fertilizer and mulching requirements, seeding depth, and seed drilling specifications, will be developed in consultation with the BLM. Seed will be drilled on the contour using a seed drill equipped with a depth regulator to ensure even depths of planting. Seed will be planted between one-quarter to one-half inch deep. The anticipated seed mix to be applied and rates of application are listed below in **Table B-3**. Soil material that will be stockpiled for 10 months or longer, will be seeded according to BLM specifications, to the extent practicable. Prior to seeding, the stockpile will be protected from wind and water erosion by roughening the soil surface, covering the stockpile with vegetation that has been removed, and mulching, if necessary.

TABLE B-3 SEED MIX FOR RECLAMATION

Species	Rate of Application*
Western Wheatgrass	4 lbs./Acre
Green Needlegrass	4 lbs./Acre
Indian Ricegrass	4 lbs./Acre
Sandberg Bluegrass	0.5 lbs./Acre
Gardner's Saltbush	1 lb./Acre
Winterfat	0.5 lbs./Acre

These rates of application apply to pure live seed (PLS) that is used for drill seeding. For broadcast seeding, the rates of application will be doubled.

11. SURFACE OWNERSHIP

U.S. Bureau of Land Management
Rawlins Field Office
1300 North Third
Rawlins, Wyoming 82301-2407
(307) 328-4200

Mr. John Espy / Red Rim Company *(Sections 21 and 29)*
206 West Maple Street
Rawlins, Wyoming 82301
(307) 324-4174

The Companies are the lessee or operator for the federal oil and gas leases associated with this MSUP and these APDs.

No slopes in excess of 25 percent would be affected by this proposal. No activities are planned near existing highways, railroads, pipelines, or powerlines. There are no occupied buildings or residences within one-quarter mile of the proposed drill sites.

Any road crossings of dry drainages, riparian, or other wetland areas will use appropriate Best Management Practices (BMP) to minimize impacts to these areas.

The presence, distribution, and density of noxious weeds in the project area will be monitored. The well access roads and well pads will be inspected regularly to ensure that noxious weeds do not become established in newly disturbed areas. Control methods will be based on available technology, taking into consideration the weed species present. Methods of noxious weed control may include revegetation of disturbed areas to reduce the potential for and success of weed establishment, mowing, hand-pulling, or application of appropriate herbicides. All BLM requirements associated with the control of noxious weeds will be met.

The project area encompasses public lands that contain sagebrush/grassland community types on gentle to steep upland ridges and undulating to rolling uplands, with some highly dissected areas. The existing stream channels are intermittent or ephemeral and are partially vegetated with grasses and shrubs.

Local flora consist primarily of needlegrass, western wheatgrass, prairie junegrass, blue grama grass, Indian rice grass, prickly pear cactus, and two varieties of big sagebrush intermixed with rabbbitbrush and saltbush, horsebrush, and occasionally dense greasewood near drainages. Local fauna consist primarily of mule deer, antelope, greater sage-grouse, coyotes, rabbits, raptors, and various smaller vertebrate and invertebrate species. Livestock graze on some of these lands. Oil and gas activities have occurred in the general area.

Soils have a good reclamation potential provided the hazards of wind and water erosion are mitigated through the use of surface roughening, management of grubbed vegetation, surface mulch, adequate water breaks, and drainage structures in recontoured areas. With proper management, suitable soil material is available to reestablish vegetation at the conclusion of project activities.

A cultural/historical resource inventory has been conducted on the public lands by a qualified archaeologist permitted in Wyoming by the BLM. A block survey for cultural resources was required by the BLM for the Red Rim Pod. The findings have been submitted under separate cover. Any additional areas of potential effect identified subsequent to the completion of these reports will be inventoried as specified by the BLM, and a supplemental report will be prepared.

Landowner Notification

The Companies would obtain a surface use agreement with the landowner.

13. SITE-SPECIFIC CONDITIONS OF APPROVAL

Wildlife Stipulations

Facilities: All facilities on public surface.

Construction, drilling, and other activities potentially disruptive to strutting and nesting of greater sage-grouse or sharp tailed grouse are prohibited during the period of March 1 through June 30 for the protection of nesting areas.

Wells: AR State 20 89 SE16 (BLM Surface), AR Federal 20 89 NE20, and AR Federal 20 89 SW 20

Mitigation of impacts is required during April 10 through July 10 for the protection of potential mountain plover habitat.

Road and Well Pad Minimum Requirements

Culverts (minimum 18 inches in diameter) will be placed in drainages and draws that are shown on the enclosed **Project Map**.

Project-Wide Mitigation Measures and Procedures

For this project, the Companies have voluntarily agreed to use and comply with the following measures and procedures to avoid or mitigate potential impacts to resources or other land uses, after consultation with BLM regarding agency requirements. These measures and procedures will be referred to as Best Management Practices (BMPs). These mitigation measures and procedures would be applied on privately owned surface unless the private surface owners involved specifically require alternative actions. An exception to a mitigation measure or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM. An exception would be approved only after a thorough, site-specific analysis has been concluded that the resource or land use that the measure was intended to mitigate is not present or would not be significantly affected in the absence of the mitigating measures.

Preconstruction Planning, Design, and Compliance Measures

1. The Companies would designate a qualified representative to serve as compliance coordinator. This person will be responsible for ensuring that all requirements of the APD and Plan of Development (MSUP, MDP, WMP, and Conditions of Approval) are followed.

2. The Companies and the BLM would make onsite inspections of each proposed and staked facility site (such as drill locations and other facilities), new access road, access road upgrades, and pipeline alignment projects to develop site-specific recommendations and mitigation measures.

3. New roads would be constructed and existing roads maintained in the project area in accordance with standards in BLM Manual 9113 and applicable regulations for resource roads and construction details outlined in the MSUP and Conditions of Approval. These standards would be followed on BLM surface ownership lands.

4. Prior to construction, the Companies would submit an APD package to BLM. This package would contain individual APDs for each drill site, as well as the MDP, MSUP, WMP, schematics of facilities, and ROW applications for pipelines, utilities, and access roads. APDs submitted by the Companies would show the layout of the drill pad over the existing topography, the dimensions of the pad, cross sections of the cuts and fills (when required), the location and dimensions of reserve pits, and locations of access roads.

5. The Companies would slope-stake construction when required by the BLM (for example, in steep or unstable slopes) and receive approval from the BLM before construction begins.

6. BLM would require roads to be crowned with a 0.3- to 0.5-foot crown, and ditched. The topsoil would be graded over the cut slope so no berm is left at the top of the cut slope.

7. BLM would require that culverts be covered with a minimum of 12 inches of fill or one-half the diameter of the pipe, whichever is greater. The inlet and outlet will be set flush with existing ground and lined up in the center of the draw. Before the area is backfilled, the bottom of the pipe will be bedded on stable ground that does not contain expansive or clay soils, protruding rocks that would damage the pipe, or unevenly sized material that would not form a good seat for the pipe. The site would be backfilled with unfrozen material and rocks no larger than 2 inches in diameter. Care would be exercised to thoroughly compact the backfill under the haunches of the conduit. The backfill would be brought up evenly in 6-inch layers on both sides of the conduit.

8. Additional culverts would be installed in the existing access road as needed or as directed by BLM.

9. The access roads would be surfaced with an appropriate grade of aggregate or gravel to a depth of 4 inches before the drilling equipment or rig is moved onto the pad.

10. BLM would require that access roads be maintained in a safe and usable condition. A regular maintenance program would include, but is not limited to, blading, ditching, installing or cleaning culverts, and surfacing.

11. The written approval of the authorized officer will be obtained before snow removal outside the new and existing roadways is undertaken. If approval is given, equipment used for snow removal operations outside the road ditches will be equipped with shoes to keep the blade off the ground surface. Special precautions will be taken where the surface of the ground is uneven to ensure that equipment blades do not destroy the vegetation.

12. BLM would require that wing ditches be constructed, as necessary, to divert water from road ditches.

13. Trenches that are open for the installation of pipelines should have plugs placed no more than 1,000 feet apart to allow livestock and wildlife to cross the trench or walk out of it, if needed. Placement of plugs would be determined in consultation with BLM and any affected landowner.

14. Procedures would be implemented to prevent livestock or wildlife from falling into open excavations. Procedures could include temporary covers, fencing, or other means acceptable to BLM and any affected landowner.

Resource-Specific Requirements

The Companies propose to implement the following resource-specific mitigation measures, procedures, and BLM management requirements on public lands.

Geology, Minerals, and Paleontology

Mitigation measures presented in the sections of this EA on Soils and Water Resources would avoid or minimize many of the potential impacts to surface mineral resources. BLM and WOGCC policies on casing and cementing would protect subsurface mineral resources from adverse impacts.

Scientifically significant paleontological resources that may occur within the Lance Formation, the only geologic formation of concern exposed at the surface in the project area, would be protected through the following mitigation measures:

1. If recommended by BLM, each proposed facility located in areas of known and potential vertebrate paleontological resources would be surveyed by a BLM-approved paleontologist before any surface disturbance is allowed (BLM 1987 and 1990).

2. Discovery. Project personnel would make contingency plans for the accidental discovery of significant fossils. If construction personnel discover fossils during implementation of the project, the BLM would be notified immediately. If the fossils could be adversely affected, construction would be redirected or halted until a qualified paleontologist had assessed the importance of the uncovered fossils, the extent of the fossiliferous deposits, and had made or implemented recommendations for further mitigation.

3. Field Survey. No specific data currently exist on deposits of high or undetermined paleontologic potential in project area. For that reason, field survey for paleontologic resources would be conducted on a case-by-case basis, as directed by the BLM. These resources would be surveyed in areas where surface exposures of the Browns Park, Green River, or Wasatch Formations occur. A field survey may result in the identification of additional mitigation measures needed to reduce adverse impacts to fossil resources. This mitigation may include collection of additional data or representative samples of fossil material, monitoring excavation, or avoidance. In some cases, no action beyond the measures taken during the field survey may be necessary.

   A report would be submitted to the BLM after each field survey is complete. The report will describe in detail the results of the survey, with a list of fossils collected, if any, and may recommend additional mitigation measures. If scientifically significant fossils are collected, the report must document the curation of specimens into the collection of an acceptable museum repository and must contain appropriate geologic records for the specimens.

Air Quality

1. All activities conducted or authorized by BLM must comply with local, state, tribal, and federal air quality regulations and standards. The Companies would adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing and operating permits), standards for motorized equipment, and other regulations, as required by the WDEQ-AQD.

2. The Companies would not allow garbage or refuse to be burned at well locations or other facilities. Before any wells are vented or flared, WDEQ-AQD would be notified as required by Wyoming Air Quality Standards and Regulations, Chapter 1, Section 5 *Reporting Guidelines for Well Flaring and Venting*. Test periods longer than 15 days would require authorization by WOGCC, in accordance with Chapter 3, Section 40 *Authorization for Flaring and Venting of Gas*.

3. On federal land, the Companies would immediately abate fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality is impaired, soil is lost, or safety concerns are noticed by the Companies or identified by the BLM or the WDEQ-AQD. These concerns include, but are not limited to, actions that exceed applicable air quality standards. BLM would approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved sources in accordance with any applicable regulations.

Soils

1. The Companies would reduce the area of disturbance to the absolute minimum necessary for construction and production operations while providing for the safety of the operation.

2. Where feasible, the Companies would locate pipelines immediately adjacent to roads to avoid creating separate areas of disturbance and to reduce the total area of disturbance.

3. The Companies would avoid using frozen or saturated soils as construction material.

4. The Companies would minimize construction in areas of steep slopes.

5. Cut slopes would be designed in a manner that would retain topsoil, and facilitate use of surface treatment such as mulch and subsequent revegetation.

6. The Companies would selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas. Topsoil would be removed and conserved to a minimum depth of 6 inches and a maximum of 12 inches from all drill locations, unless otherwise agreed by the BLM and the operator.

7. Where possible, disturbance to vegetated cuts and fills would be minimized on existing improved roads.

8. The Companies would install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.

9. The Companies would install culverts for ephemeral and intermittent drainage crossings. In addition, drainage crossing structures would be designed to carry the 25-year discharge event, or as otherwise directed by the BLM.

10. Layout of the access roads may require minor variations in routing to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, the Companies would maintain a 100-foot wide buffer of natural vegetation (not including wetland vegetation) between construction and ephemeral and intermittent channels.

11. The Companies would include adequate drainage control devices and measures in the design of roads (for example, berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipaters). These devices and measures would be located at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road to avoid erosive, concentrated flows. In conjunction with surface runoff or drainage control measures, the Companies would use erosion control devices and measures such as temporary barriers, ditch blocks, erosion stops, mattes, mulches, and vegetative covers. In addition, the Companies would implement a revegetation program as soon as possible to reestablish the soil protection afforded by vegetation.

12. When construction that is not specifically required for production operations is complete, the Companies would restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites. The Companies also would replace up to 6 inches of topsoil or suitable plant growth material over all disturbed surfaces; apply fertilizer as required; seed; and mulch.

Water Resources

Other mitigation measures listed in the sections of this EA on Soils, and Vegetation and Wetlands would apply to Water Resources.

1. Applications would be submitted for all necessary NPDES permits as required by the Water Quality Division (WQD) of WDEQ for discharge of produced water into ephemeral drainages. Plans for surface discharge are described in the WMP **(Appendix D**).

2. The Companies would limit construction of all drainage crossings to no-flow or low-flow periods.

3. The area of disturbance would be minimized within perennial, ephemeral, and intermittent drainage channels.

4. BLM would prohibit construction of well sites and other non-linear features within 500 feet of surface water and riparian areas. BLM would grant possible exceptions for linear features based on a site-specific environmental analysis and site-specific mitigation plans.

5. The Companies would design channel crossings to minimize changes in channel geometry and subsequent alterations in flow hydraulics.

6. Layouts of the access roads may require minor variations in routing to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, a 100-foot wide buffer of natural vegetation (not including wetland vegetation) would be maintained between construction and ephemeral and intermittent channels.

7. Interceptor ditches, sediment traps, water bars, silt fences, and other revegetation and soil stabilization measures would be designed and constructed, as needed.

8. The Companies would construct channel crossings by pipelines such that the pipe is buried a minimum of 4 to 6 feet below the channel bottom, as specified by BLM.

9. Disturbed channel beds would be regraded to the original geometric configuration and would contain the same or similar bed material.

10. Wells must be cased during drilling, and all wells cased and cemented in accordance with Onshore Order No. 2 to protect all high-quality aquifers. High-quality aquifers exhibit known water quality of 10,000 milligrams per liter total dissolved solids (TDS) or less. Well casing and welding must be of adequate integrity to contain all fluids under high pressure during drilling and well completion. Furthermore, wells would adhere to the appropriate BLM cementing policy.

11. The reserve pits would be constructed in cut rather than fill materials. Fill material must be compacted and stabilized, as needed. The subsoil material of the pit to be constructed should be inspected to assess stability and permeability and to evaluate whether reinforcement or lining is required. If lining is required, the reserve pit must be lined with a reinforced synthetic liner at least 12 mils thick and with a bursting strength of 175 by 175 pounds per inch (American Society for Testing and Materials [ASTM] Standard D 75179). Use of closed or semi-closed drilling systems should be considered in situations where a liner may be required.

12. Two feet of freeboard must be maintained on all reserve pits to ensure they are not in danger of overflowing. Drilling operations must be shut down if leakage is found outside the pit until the problem is corrected.

13. Hydrostatic test water used in conjunction with pipeline testing, and all water used during construction or dust abatement must be extracted from sources that contain sufficient quantities and with appropriation permits approved by the State of Wyoming.

14. Hydrostatic test water would be injected into an authorized deep injection well, in compliance with all applicable requirements.

15. All concentrated water flows must be discharged within the ROW for an access road onto or through an energy dissipater structure (such as riprapped aprons and discharge points) and into undisturbed vegetation.

16. If required by the applicable regulations, the Companies would develop and implement a pollution prevention plan (PPP) for storm water runoff at drill sites as required per WDEQ permit requirements under NPDES. All required WDEQ permits will be in place before water is discharged.

17. The Companies would exercise stringent precautions against pipeline breaks and other potential accidental discharges of oil or hazardous chemicals into adjacent streams. If liquid petroleum products are stored on site in sufficient quantities (per the criteria contained in Title 40 CFR Part 112), a Spill Prevention Control and Countermeasures (SPCC) plan would be developed in accordance with 40 CFR Part 112.

18. The Companies would coordinate all crossings or encroachments of waters of the U.S. with the U.S. Army Corps of Engineers (COE).

19. BLM must approve in writing any changes in the method or location for disposal of produced water.

Vegetation, Wetlands, and Noxious Weeds

Other mitigation measures under the section on Soils and Water Resources of this EA would also apply to vegetation and wetlands.

1. Noxious weed monitoring forms must be filed with the BLM, and the Companies must implement, if necessary, a weed control and eradication program.

2. The Companies would evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project facilities would be located out of these sensitive areas. If complete avoidance is not possible, the Companies would minimize impacts through modification and minor relocations. The Companies will comply with applicable regulations for any activities that involve dredge or fill of wetlands.

3. An approved Pesticide Use Proposal would be obtained before herbicides or other pesticides are applied on BLM surface ownership lands to control noxious weeds.

4. Disturbed areas would be seeded and stabilized in accordance with BLM-approved reclamation guidelines.

Range Resources and Other Land Uses

Mitigation requirements listed under sections of this analysis on Soils, Vegetation, Wetlands, Noxious Weeds, and Wildlife also apply to Range Resources and Other Land Uses.

1. The Companies would coordinate with the affected livestock operators to ensure that livestock control structures remain functional (as directed by the livestock operator) during drilling and production operations, and to coordinate timing of activities planned.

2. When necessary, traffic control and speed limits would be used to limit potential conflicts.

Wildlife

1. During reclamation, the Companies would establish a variety of forage species that would return the land to a condition that approximates or is equal to its state before disturbance.

2. The Companies would prohibit unnecessary off-site activities of operational personnel near the drill sites. The Companies also would inform all project employees of applicable wildlife laws and the potential penalties associated with unlawful take and harassment.

3. The Companies would limit construction within crucial winter range for big game from November 15 to April 30, unless authorized by BLM.

4. A raptor survey would be completed before construction begins to ensure that well sites are located away from potential conflict areas.

5. The Companies would survey and clear well sites within 1 mile of raptor nests identified in the raptor survey before construction or drilling can begin during the raptor nesting period (February 1 through July 31).

6. When an "active" raptor nest is located 0.75 to 1 mile from a proposed well site (depending on species and line of sight), the Companies must restrict construction during the critical nesting season for the species. The distance would be increased to within 1 mile of a proposed well site for listed and BLM sensitive species (Chapter 3).

7. Raptor nests must be inventoried annually to evaluate potential nesting activity in areas where work may be occurring during the raptor nesting period from February 1 to July 31. Inventories will be conducted annually by BLM.

8. Construction and surface occupancy cannot occur any time within 0.25 mile of existing leks for greater sage-grouse.

9. The Companies must protect leks for greater sage-grouse during the breeding, egg-laying, and incubation period (March 1 through June 30) by restricting construction within a 2-mile radius of active leks for greater sage-grouse. Exceptions may be granted if the activity would occur in unsuitable nesting habitat.

10. Construction, drilling, or other activities that could disrupt nesting areas are prohibited during the period from February 1 to July 31 (raptors) and from March 1 to June 30 (greater sage-grouse and sharp tailed grouse) for the protection of nesting areas for these species. An exception would be approved only after a thorough, site-specific analysis concluded that a negative impact would not occur.

11. Surface occupancy or use within 0.25 mile of a greater sage-grouse strutting or dancing ground will be restricted or prohibited unless the operator and surface managing agency arrive at an acceptable plan for mitigation of anticipated impacts.

12. All pits and open cellars must be fenced for the protection of wildlife and livestock. Fencing must be in accordance with BLM specifications. Netting must be placed over all production pits to eliminate any hazard to migratory birds or other wildlife. Netting is also required over reserve pits that have been identified as containing oil or hazardous substances as these terms are defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101 (14), as determined by visual observation or testing. The mesh diameter shall be no larger than 1 inch.

Fisheries

1. No mitigation for fisheries is needed beyond the measures indicated under Water Resources and Special Status Species.

Special Status Species

Special Status Plants

1. The Companies would employ site-specific recommendations developed by the BLM interdisciplinary team (IDT) for staked facilities.

2. The occurrence and distribution of two T&E plants (Ute ladies'-tresses orchid and western prairie fringed orchid) and seven BLM sensitive plants (Laramie columbine, Nelson's millkvetch, Cedar Rim thistle, Weber's scarlet gilia, Gibben's beardtongue, persistent sepal yellowcress, and Laramie false sagebrush) will require specific consideration during the APD process.

3. Impacts caused by clearing and soil handling must be minimized.

4. Clearance surveys must be performed for plant species of concern.

Recreation

Measures under the section of the EA on Wildlife, Transportation, Soils, Health and Safety, and Water Resources apply to Recreation.

1. The Companies must minimize conflicts between project vehicles and equipment and recreation traffic by posting warning signs, implementing operator safety training, and requiring project vehicles to adhere to low speed limits.

Visual Resources

1. Roads, pipeline corridors, drill rigs, wellheads, and production facilities must be screened from view to the extent possible, when specified by BLM.

2. The Companies must paint structures at wells and central facilities with flat colors (such as Carlsbad Canyon) that blend with the adjacent undisturbed terrain. This measure does not apply to structures that require safety coloration in accordance with the requirements of the Occupational Safety and Health Administration (OSHA).

Cultural Resources

1. A Class III inventory for cultural resources has been done, but if the area of potential effect were to change, additional inventory would be required.

2. Avoidance is the preferred method for mitigating adverse effects to a property that is considered eligible for, or is already on, the NRHP.

3. Adverse effects to cultural or historical properties that cannot be avoided would be mitigated by preparing and implementing a cultural resources mitigation plan. Mitigation plans would be developed as needed for eligible sites that would be impacted.

4. If cultural resources are discovered at any time during construction, all construction would halt and BLM would be immediately notified. Work would not resume until BLM issues a Notice to Proceed.

Socioeconomics

1. Project activities must be coordinated with ranching operations to minimize conflicts that involve movement of livestock or other ranch operations. Coordination would include scheduling project activities to minimize potential disturbance of large-scale livestock movements. The Companies would establish effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.

Transportation

1. Existing roads would be used as collectors and local roads whenever possible. Standards for road design would be consistent with BLM Road Standards Manual Section 9113. The proposed access road would be constructed to the BLM standard for a local road.

2. Roads that are not required for routine operation and maintenance of producing wells and ancillary facilities or field production would be permanently blocked, reclaimed, and revegetated.

3. Areas with important resource values, steep slopes, and fragile soils would be avoided where possible in planning for new roads.

4. Permits are required from Carbon County for any access to or across a county road or for any pipeline that crosses a county road. These permits would be acquired before additional roads are built. All roads on public lands that are not required for operation and maintenance of field production would be permanently blocked, re-contoured, and seeded. Roads on private lands would be treated in a like manner, depending on the desires of the landowner.

5. The Companies would be responsible for preventive and corrective maintenance of roads in the project area throughout the duration of the project. Maintenance may include blading, surfacing, cleaning ditches and drainage facilities, abating dust, controlling noxious weeds, or other requirements as directed by the BLM or the Carbon County Road and Bridge Department.

6. Except in emergencies, access would be limited to drier conditions to prevent severe rutting of the road surface. No construction or routine maintenance activities would be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 4 inches deep, the soil would be considered too wet to adequately support construction equipment. Culverts would be installed where needed to allow drainage in all draws and areas of natural drainage. Low water crossings would be used where applicable. Onsite reviews would be conducted with BLM personnel for approval of proposed access before any construction begins.

Health and Safety

Measures listed under the section of the EA on Air Quality and Water Quality also apply to Health and Safety.

1. Sanitation facilities installed on the drill sites and any resident camps would be approved by the WDEQ.

2. To minimize undue exposure to hazardous situations, the Companies would comply with all applicable rules and regulations (such as Onshore Orders and OSHA requirements) that would prevent the public from entering hazardous areas and would post warning signs to alert the public of truck traffic.

3. The Companies would haul all garbage from the drill site to a state-approved sanitary landfill for disposal. In addition, the Companies would collect and store any garbage or refuse on location in containers approved by the BLM until it can be transported.

4. During construction and when production operations begin, the Companies would maintain an inventory of chemicals or hazardous substances for all items that may be at the site. The Companies would institute a Hazard Communication Program for employees and would require subcontractors to establish programs in accordance with OSHA regulations at 29 CFR 1910.1200. These programs are designed to educate and protect employees and subcontractors with respect

to any chemicals or hazardous substances that may be present in the work place. In addition, Material Safety Data Sheets (MSDS) would accompany every chemical or hazardous material that is brought on location and would become part of the file maintained at the Red Rim field office, as required by 29 CFR 1910.1200. All employees would receive proper training in storage, handling, and disposal of hazardous substances.

5. SPCC Plans would be written and implemented as necessary, in accordance with 40 CFR Part 112, to prevent discharge into navigable waters of the United States.

6. If quantities that exceed 10,000 pounds or the threshold planning quantity (TPQ) as designated by the RFO are to be produced or stored in association with the project, chemical and hazardous materials would be inventoried and reported in accordance with the toxic release inventory (TRI) requirements set forth in Title III of the Superfund Amendments and Reauthorization Act (SARA) and codified at 40 CFR Part 335. The required Section 311 and 312 forms would be submitted at the specified times to the state and county emergency management coordinators and the local fire departments.

7. Any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), would be transported and disposed of in accordance with all applicable federal, state, and local regulations.

8. All storage tanks and compressor facilities that are designed to contain oil, glycol, produced water, or other fluid that may constitute a hazard to public health or safety, must be surrounded by a secondary means of containment for the entire contents of the largest single tank in use, plus 1 foot of freeboard. The Companies would use 3.5-foot berms around affected storage tanks and facilities. The containment or diversionary structure must be impervious to any oil, glycol, produced water, or other hazardous fluid for 72 hours. In addition, it would be constructed so that any discharge from a primary containment system would not drain, infiltrate, or otherwise escape to groundwater, surface water, or navigable waters before cleanup is completed.

Noise

1. The Companies would muffle and maintain all motorized equipment according to manufacturer's specifications and Best Management Practices .

2. In any area of operations (such as a drill site or compressor station) where noise levels may exceed safe limits specified by OSHA, the Companies would provide and require that employees use proper personal protective equipment.

3. In addition to other restrictions on activities near leks, the BLM will require that noise levels be limited to no more than 10 decibels on the A-weighted scale (dBA) above background levels at leks for greater sage-grouse that are located on public lands. This scale simulates human hearing by placing less emphasis on lower frequency noise. The BLM will require that compressor engines located on public lands be enclosed in a building and located at least 600 feet away from sensitive receptors or sensitive resource areas to comply with these limits on noise levels.

14. LESSEE'S REPRESENTATIVE AND CERTIFICATIONS

Representative for Anadarko E & P Company

Name and Title: William M. Fowler, Environmental and Regulatory Affairs Manager
Address: 1201 Lake Robbins Drive
City/State/Zip: The Woodlands, Texas 77380
Phone: (832) 636-3167

Bonding

BLM Nationwide Bond, WY 1280, $150,000

Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill sites and access routes; that I am familiar with the conditions which currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by AEPC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C 1001 for the filing of a false statement.

I also certify that AEPC will comply with the provisions of the law or the regulations governing the Federal or Indian right of reentry to the surface under 43 CFR 3814.

I also certify that AEPC has reached or will reach an agreement with the surface owner(s) and surface lessee(s) regarding the requirements for the protection of surface resources and reclamation of disturbed areas and/or damages in lieu thereof, or if an agreement cannot be reached, will comply with the provisions of the law or the regulations governing Federal or Indian right of reentry to the surface under 43 CFR 3814.

I also certify that:

A. All potentially affected landowners having properly permitted water wells with the WSEO within each producible well's Circle of Influence (one-half mile radius) will be offered a Water Well Agreement; and

B. If a Water Well Agreement is not reached with the landowner, AEPC agrees to mitigate the impacts of its coal bed methane wells in accordance with State of Wyoming water laws; and

C. Permits to Appropriate Groundwater have been applied for from the Wyoming State Engineer's Office, concurrently with these Applications for Permits to Drill.

I also certify that AEPC shall use its best efforts to conduct its approved operations in a manner that avoids adverse effects on any properties which are listed, or may be eligible for listing, in the National Register of Historic Places (NRHP). If historic or archaeological materials are uncovered during construction, the operator will immediately stop work that might further disturb such materials, and contact the authorized officer (or his/her representative) at the BLM Rawlins Field Office. Any paleontological resources or fossils discovered as a result of operations associated with these wells will be brought to the attention of the authorized officer or his/her representative immediately. All activities in the vicinity of such discoveries will be suspended until notified to proceed by the Authorized Officer.

I also certify that AEPC shall use its best efforts to conduct its approved operations in accordance with the Project-wide Mitigation Measures and procedures outlined in Chapter 2 of the Environmental Assessment (EA) for this project.

By: _____ Date: _____

William M. Fowler
Environmental and Regulatory Affairs Manager
Anadarko E & P Company

MASTER DRILLING PLAN (MDP)
RED RIM PLAN OF DEVELOPMENT (POD)

OPERATORS (The Companies):
Warren E & P, Inc. (Warren)
Anadarko E & P Company (Anadarko)
Sections 20 & 28 in T20N R89W, 6th PM, Carbon County, Wyoming
BLM Leases: WYW149261, WYW150410

Drilling Plan for the subject wells listed below:

Gas Wells in Section 20

AR Federal 2089 NE20 (WYW149261)
AR Federal 2089 SE20 (WYW149261)
AR Federal 2089 SW20 (WYW149261)

Gas Wells in Section 28

AR Federal 2089 NW28 (WYW150410)
AR Federal 2089 NE28 (WYW150410)

Monitoring Well

BLM has requested that three to six groundwater monitoring wells be installed within the Atlantic Rim EIS study area during the interim drilling project. The locations of these monitoring wells have not yet been specified, however, one of them will be located in the Red Rim project area. The effects of interim drilling and development on the coal aquifer, including drawdown, will be monitored by these wells.

1. ESTIMATED TOPS OF IMPORTANT GEOLOGIC MARKERS

Formation	Depth
Lance	Surface
Lewis Shale	630’ – 2460’
Almond	2880’ – 4710’
Pine Ridge SS	3420’ – 5250’
Allen Ridge	3560’ – 5390’
TD (Gas Wells)	4050’ – 5850’
Hatfield/Cherokee/Deep Creek	5965’ – 6335’

2. ESTIMATED DEPTH OF ANTICIPATED WATER, OIL, GAS OR MINERAL FORMATIONS

Almond	Natural gas
Pine Ridge	Natural gas
Allen Ridge	Natural gas

The Lance Formation and Lewis Shale are not anticipated to contain any zones capable of producing water. There are several zones within the Mesaverde Group capable of producing fresh water, including the coal seams. The Companies propose to test the productive formations between 2,880’ and 5,390’. Several coal seams may be tested for gas production to total depth. All shallow water zones will be protected with casing and cement. Cement will be brought above the base of the Lewis Shale to isolate all formations in the Mesaverde Group.

Planned Objective for Gas Wells: Mesaverde

3. MINIMUM BLOW OUT PREVENTOR (BOP) REQUIREMENTS (refer to attached schematics)

1. The BOPE will conform to Onshore Shore Order #2. The blowout preventer equipment will consist of a 2000 psi W.P. Double Ram, Hydraulic Preventer (enclosed). All fill and kill lines will be 2000 psi W.P. From 0-160' there will be no pressure control. From 160'-1,600' the 2,000# system will provide control. Note: These wells are proposed as coal bed natural gas (CBNG) wells. Data from a number of CBNG wells drilled in the area indicate that the maximum anticipated surface pressure will not exceed 250 psi, thus the BOP will be tested to 1,000 psi (see attached schematic).

2. The BOP shall be pressure tested when initially installed, whenever any seal subject to pressure testing is broken, after repairs, or every 30 days.

3. The Companies shall notify the Rawlins BLM office 24 hours prior to the BOP test.

4. SUPPLEMENTAL INFORMATION

The primary objective of this project is to drill, stimulate, and produce natural gas from coal seams in recognized gas-producing formations of the Mesaverde Group. The coal seams are overpressured and are very unlikely to be in communication with overlying layers. Produced water will be conditioned and discharged as authorized by WDEQ in a NPDES permit or injected in one of two deep injection wells completed in the Cherokee/Deep Creek Sandstones. The coal seams will be perforated and stimulated by hydraulic enhancement or fracturing during testing. Fresh water, gelled water, and/or foam fracturing techniques will be used.

The following schematics that show typical facilities, operating standards, and methodologies, are attached to this MDP: B.O.P.; Bottom Flange; Configuration Options; Completed Well; and Injection Well. Additional schematics for this POD are attached to the Master Surface Use Program (MSUP): Drill Site Layout; Well Site; Water Disposal Facility; Water Transfer Facility; Water Conditioning Facility; and Compressor Station.

5. CASING PROGRAM

Hole Size	Casing Size	Casing Wt.	Grade	Joint	Depth Set	New/Used	Rng
12 ¼"	9 ⅝"	32.3#	H-40	ST&C	10% of well depth	New	3
9 ⅞"	7"	23#	MC-50	LT&C	0-TD	New	3
Surface Casing:	9 ⅝"	32.3 ppf	H-40	STC	Collapse	Burst	Tension
				Ratings:	1370	2270	254M

A. Burst= [0.052 * FG * TVD (shoe)] – [Gas Gradient * TVD]
= [0.052 * 8.8ppg * 580'] – [0.1psi/ft * 580']
= 207.4psi
Safety Factor = Rating/Burst
= 2270/207.4
= 10.94

B. Collapse = 0.052 * MW * TVD (shoe)
= 0.052 * 8.8ppg * 580'
= 265.4psi
Safety Factor = Rating/Collapse
= 1370/265.4
= 5.16

C. Tension = Weight * MD * [1 – (MW/65.5ppg)]
= 32.3ppf * 580' * [1 – (8.8ppg/65.5ppg)]
= 16299 lbs.
Safety Factor = Rating/Tension
= 254,000/16299
= 15.58

Surface casing shall have centralizers on the bottom 3 joints of the casing, starting with the shoe joint.

Production Casing:	7"	23 ppf	MC-50	STC **Ratings:**	Collapse 3110	Burst 3960	Tension 273M

A. Burst = [0.052 * 8.3ppg * 5800'] – [0.1psi/ft * 5800']
= 1923.3psi
Safety Factor = Rating/Burst
= 3960/1923.3
= 2.06

B. Collapse = 0.052 * 8.3ppg * 5800'
= 2503.3psi
Safety Factor = Rating/Collapse
= 3110/2503.3
= 1.24

C. Tension = 23ppf * 5800' * [1 – (8.3ppg/65.5ppg)]
= 23ppf * 5800' * .87
= 116,058 lbs.
Safety Factor = Rating/Tension
= 273,000/116,058
= 2.35

6. MUD PROGRAM

Drilling mud will be used as the circulation medium. A fresh water, polymer, gel drilling mud will be used and visual monitoring will be done from spud to total depth. The anticipated mud weight will be between 8.3–10 ppg. Sufficient quantities of lost circulation material and barite will be available at the well site at all times for the purpose of assuring well control.

7. CEMENTING PROGRAM

The following is the proposed procedure for cementing the 9 ⅝" surface pipe and 7" long string:

Surface Casing:

Lead: Class "C" Type III, 14.4 ppg, yield 1.44ft^3/sk @ 101% excess. Compressive strength in 24 hours at 80^{o}F 3100psi.

The surface casing shall be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface.

Long String:

Lead: Class "C" Type III, 14.4 ppg, yield 1.44ft^3/sk @ 35% excess. Compressive strength in 24 hours at 95^{o}F 3200psi.

Estimated top of cement back to surface.

8. LOGGING PROGRAM

Cores: Rotary Cores will be taken as needed to evaluate the coal seams.

DSTs: None Planned

Logs: Induction, GR, SP, Density, Neutron and Caliper – From surface to TD
Cement Bond Log – From 9 ⅝"casing shoe to TD
Mud Logger – As needed.

9. PRESSURE DATA AND POTENTIAL HAZARDS

Bottom hole pressures anticipated at much less than 1,000 – 1,100 psi.
There is no history of hydrogen sulfide gas in the area and none is anticipated.

10. ANTICIPATED STARTING DATES AND NOTIFICATION OF OPERATIONS

A. Anticipated Starting Dates:

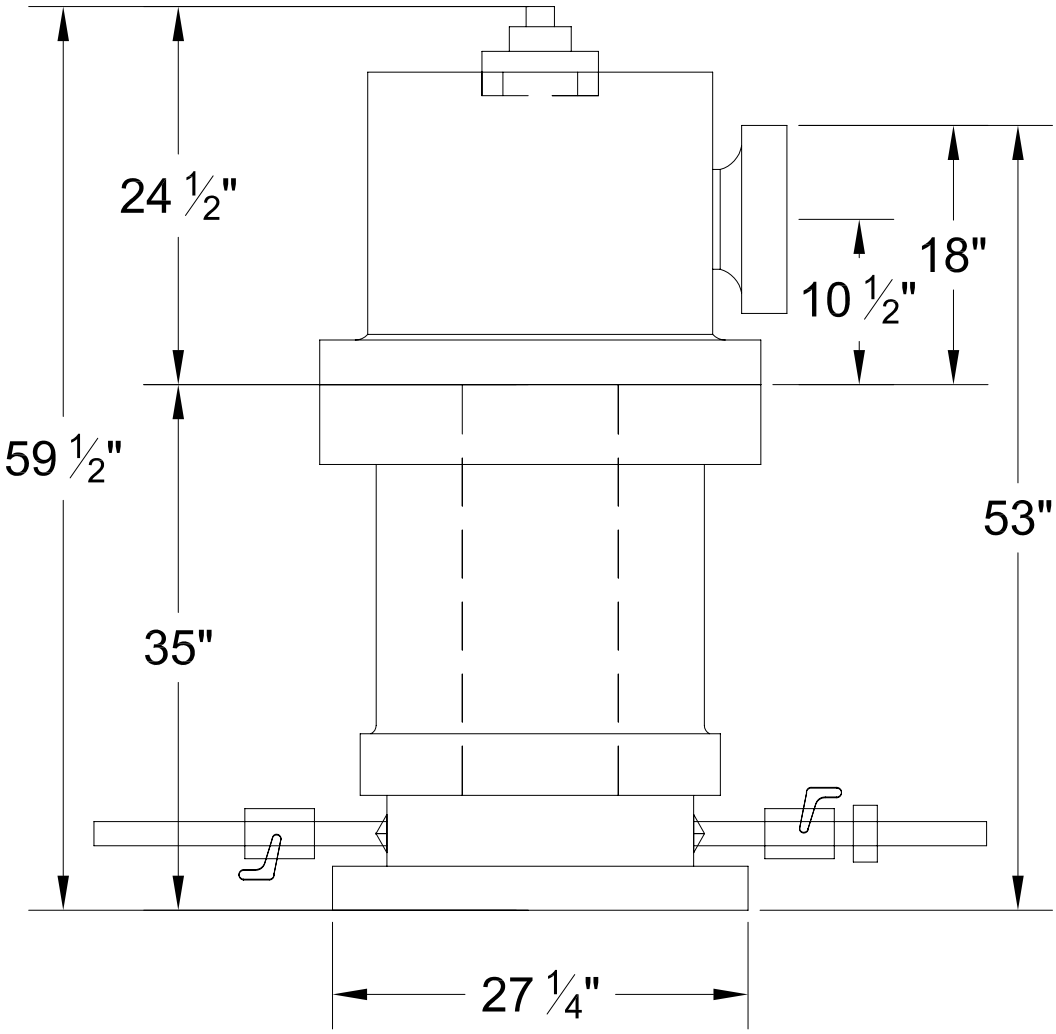
Anticipated Commencement Date - Fall 2003, or upon approval

Drilling	- Approximately 7 days per well
Completion	- Approximately 2 days per well
Initial Testing	- Approximately 7-14 days per well
Production Testing	- Approximately 6-12 months per well

Note: Drilling operations will commence as soon as practical after approval of all necessary permits including the Applications for Permits to Drill (APDs).

B. Notification of Operations:

Rawlins Field Office, BLM
1300 North Third St.
Rawlins, Wyoming 82301
(307) 328-4200



SPECIFICATIONS

10" - 900 FLANGES ON B.O.P.
10" - 900 FLANGE ON ROTATING HEAD
6" - 600 FLANGE ON FLOWLINE
2" - COLLAR ON EACH SIDE OF B.O.P. AT BOTTOM

Anadarko Petroleum Corporation

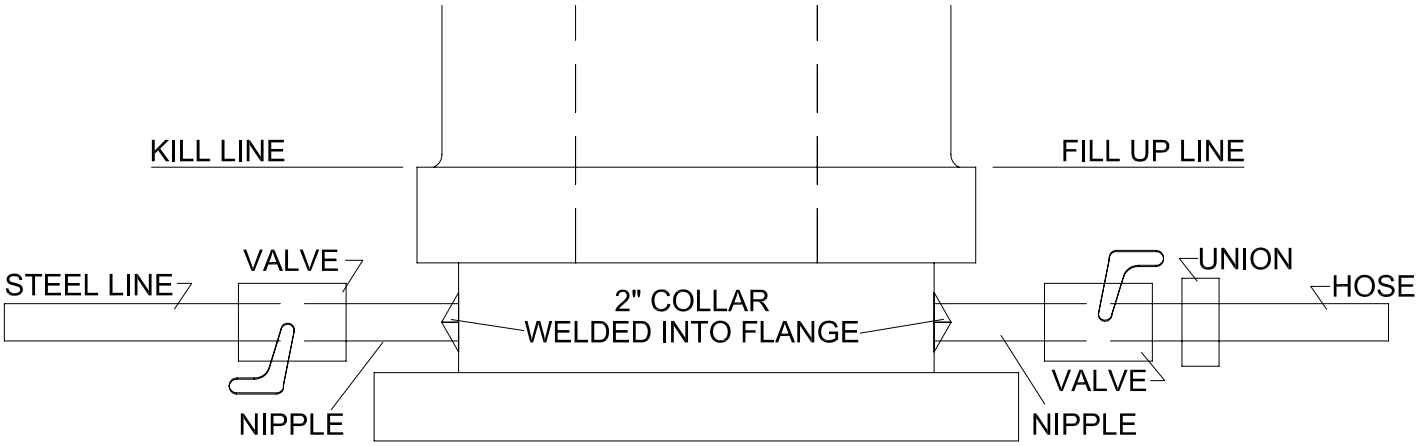
SCHEMATIC

1500 P.S.I. REAGAN ANNULAR B.O.P

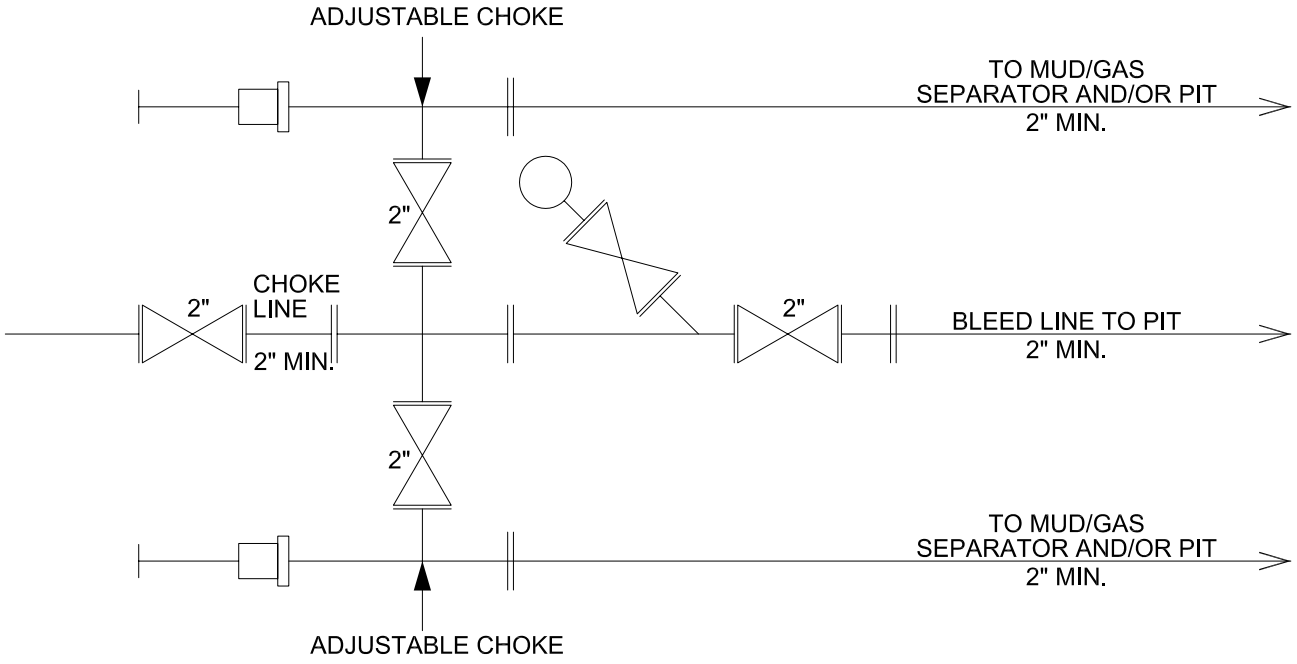
SCALE: as noted	DATE: 05.04.01	DRAWN BY: MTM	FIGURE:

1172/Exhibit A.dwg

BOTTOM FLANGE ON ANNULAR B.O.P.



2M CHOKE MANIFOLD EQUIPMENT



SPECIFICATIONS

10" - 900 FLANGES ON B.O.P.
10" - 900 FLANGES ON ROTATING HEAD
6" - 600 FLANGES ON FLOWLINE
2" - COLLAR ON EACH SIDE OF B.O.P. AT BOTTOM

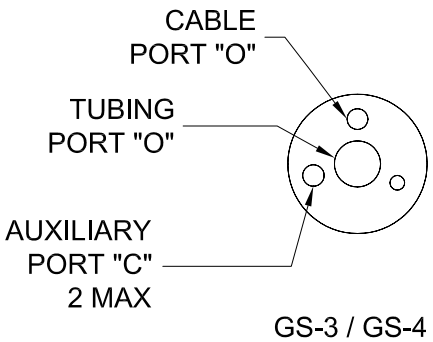
Anadarko Petroleum Corporation

SCHEMATIC

BOTTOM FLANGE ON ANNULAR B.O.P. &
2M CHOKE MANIFOLD EQUIPMENT

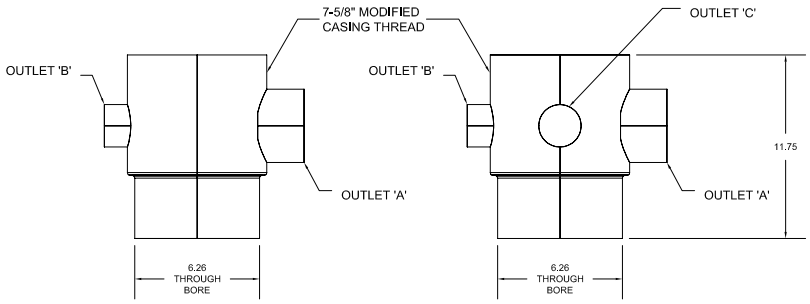
SCALE: as noted	DATE: 05.04.01	DRAWN BY: MTM	FIGURE:

MANDREL STYLE



GS-3 / GS-4
CENTERED HANGER
WITH CABLE PORT &
UP TO 2 AUX PORTS

BODY STYLES



4 x 3 STYLE

4 x 2 STYLE

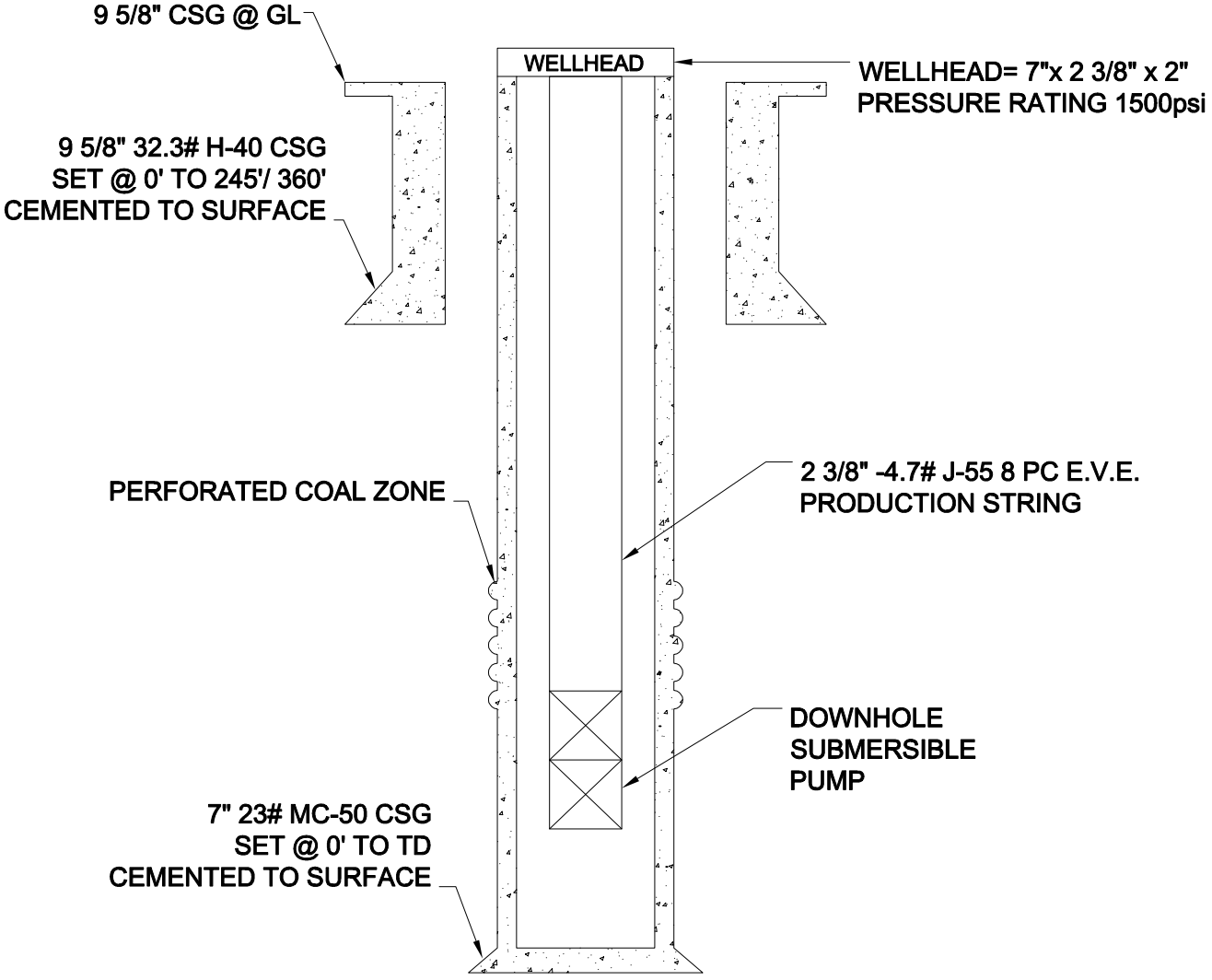
Standard Body Configurations				
Body Style	Bottom Connection	Outlet "A"	Outlet "B"	Outlet "C"
4 x 2	7" Short Casing (Male or Female)	4' LP Female	2" LP Female	NA
4 x 3	7" Short Casing (Male or Female)	4" LP Female	3" LP Female	NA
4 x 2 x 2	7" Short Casing (Male or Female)	4" LP Female	2" LP Female	2" LP Female

Standard Mandrel Configurations				
Mandrel Style	Port "C"	Port "D"	Port "E"	Approx Wt - LBS
GS-3	2-3/8" UPTBG Box Down X	1" LP	(1) 1/2" LP Box Up	26
GS-4	2-3/8" UPTBG Box Up	Box Up	(2) 1/2" LP Box Up	26

Anadarko Petroleum Corporation

CONFIGURATION OPTIONS

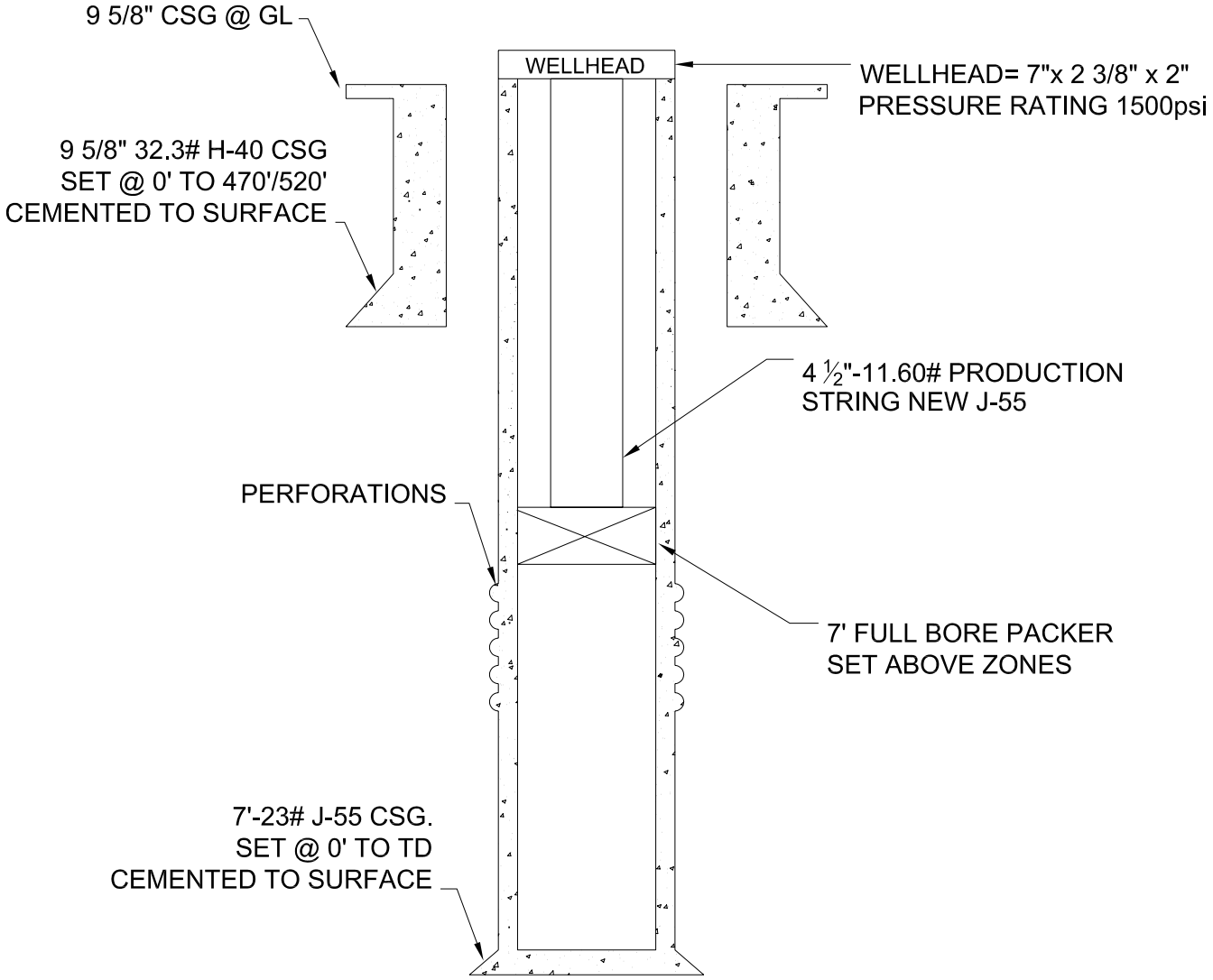
SCALE: NTS	DATE: 05.04.01	DRAWN BY: MTM	FIGURE:



Anadarko Petroleum Corporation

TYPICAL COMPLETED WELL

SCALE: NTS	DATE: 10.08.03	DRAWN BY: ETC	FIGURE:



Anadarko Petroleum Corporation

TYPICAL INJECTION WELL

SCALE: NTS	DATE: 01.10.02	DRAWN BY: RLZ	FIGURE:

1172/Exhibit A

Appendix D
Conditions of Approval
Red Rim Pod

Lease Number	Well Name	Well Number	Location
WYW-149261	AR Federal[1]	2089 NE20	T20N R89W Section 20 NENE
	AR Federal[1]	2089 SE20	T20N R89W Section 20 SESE
	AR Federal[1]	2089 SW20	T20N R89W Section 20 SWSW
WYW-150410	AR Federal[1]	2089 NW28	T20N R89W Section 28 SENW
	AR Federal[1]	2089 NE28	T20N R89W Section 28 NWNE

GOVERNMENT CONTACTS

USDI, BUREAU OF LAND MANAGEMENT

Field Office: Rawlins
Address: P.O. Box 2407 , Rawlins, Wyoming 82301
Office Hours: 7:45 am to 4:30 pm

Authorized Officer's Designated Representatives:

Assistant Field Manager: (Minerals & Lands)	Clare Miller	Home Phone Work Phone	(307) 324-2372 (307) 328-4245
Petroleum Engineer:	Bob Hartman	Work Phone Cell Phone	(307) 328-4254 (307) 321-3439
Pet. Engineer Tech.:	Cole Thomas	Home Phone Work Phone Cell Phone	(307) 328-1901 (307) 328-4249 (307) 320-8594
Pet. Engineer Tech.:	Chuck Ross	Home Phone Work Phone Cell Phone	(307) 320-8339 (307) 328-4230 (307) 320-7778
Pet. Engineer Tech.:	Bill Ashline	Home Phone Work Phone Cell Phone	(307) 324-6355 (307) 328-4263 (307) 320-7777
Pet. Engineer Tech.:	Bryan Hurst	Home Phone Office Phone Cell Phone	(307) 324-5066 (307) 328-4277 (307) 320-5414
Resource Specialist:	Larry Jackson	Work Phone	(307) 328-4231

In the event that the Petroleum Engineer named above is not available please contact the following:

Petroleum Engineer:	Stuart Cerovski	Home Phone Work Phone	(307) 332-2408 (307) 332-8426

A COPY OF THE APPLICATION FOR PERMIT TO DRILL AND THESE CONDITIONS OF APPROVAL MUST BE FURNISHED TO YOUR FIELD REPRESENTATIVE AND BE AVAILABLE ON SITE.

GENERAL PERMITTING REQUIREMENTS

1. All lease operations are subject to the terms of the lease and the lease stipulations, the regulations of 43 CFR Part 3100, Onshore Oil and Gas Orders, Notices to Lessees (NTLs), the approved APD and any written instructions or orders of the authorized officer. The following requirements are emphasized.

Abandonment: In the event abandonment of the hole is desired, oral approval may be granted by this office but must be followed within 5 days with a **Notice of Intention to Abandon (Form 3160-5)**. Unless the plugging is to take place immediately upon receipt of oral approval, the BLM Branch of Minerals must be notified at least 24 hours in advance of the plugging of the well in order that a representative can witness the plugging operation. The **Subsequent Report of Abandonment (Form 3160-5)** must be submitted within 30 days after the actual plugging of the wellbore, reporting where the plugs were placed and volumes of cement used, along with copies of the service company invoice and job log.

The operator shall promptly plug and abandon each newly completed, recompleted or producing well which is not capable of producing in paying quantities. No well may be temporarily abandoned for more than 30 days without prior approval of the authorized officer. When justified by the operator, the authorized officer may authorize additional delays, no one of which may exceed an additional 12 months. Upon removal of drilling or producing equipment from the site of a well, which is to be permanently abandoned, the surface of the lands disturbed shall be reclaimed in accordance with a plan first approved or prescribed by the authorized officer.

Completion Report: If the well is completed as a dryhole or as a producer, **Well Completion or Recompletion Report and Log (Form 3160-4)** must be submitted within 30 days after completion of the well or after completion of operations being performed, in accordance with **43 CFR 3160**. Copies of all logs, core descriptions, core analyses, well test data, geologic summaries, sample descriptions, daily drilling reports, daily completion reports, and all other surveys or data obtained and compiled during the drilling, completion, and/or workover operations, will be filed with **Form 3160-4**.

2. Approval of this APD does not warrant that any party holds equitable or legal lease title.

3. This permit is valid for a period of one year from the day of approval or until lease expiration/termination, whichever is shorter. If the permit terminates, any surface disturbance created under the application shall be reclaimed in accordance with the approved plan.

4. The spud date shall be reported to the BLM authorized officer's representative within 24 hours following spudding. A follow-up report on Form 3160-5 confirming the date of spud shall be promptly submitted to this office within 5 working days from date of spud.

5. Verbal notification shall be given to the BLM authorized officer's representative at least 24 hours in advance of pluggings, DST's and/or other formation tests, BOP tests, running and cementing casing (other than conductor casing), and drilling over lease expiration dates.

6. Verbal notification shall be given to the BLM's resource specialist at least 48 hours in advance of access road/well pad construction, seeding, and the initiation of any reclamation work.

7. Operations that deviate from the approved APD shall receive prior written approval from the authorized officer. Emergency approval may be obtained orally but such approval does not waive the written report requirement.

8. All lease exploration, development, production and construction operations shall be conducted in a manner which conforms with all applicable federal, state, and local laws and regulations.

9. Historic, Cultural, and Paleontological Resources

The operator shall be responsible for informing all persons associated with this project that they shall 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 shall suspend all operations that further disturb such materials and immediately contact the authorized officer. Operations shall not resume until written authorization to proceed is issued by the authorized officer.

Within five (5) working days, the authorized officer will evaluate the discovery and inform the operator of actions that will be necessary to prevent loss of significant cultural or scientific values.

The operator shall be responsible for the cost of any mitigation required by the authorized officer. The authorized officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the authorized officer that the required mitigation has been completed, the operator shall be allowed to resume operations.

10. Hazardous Waste: Those 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 downhole 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.

ADDITIONAL PERMITTING REQUIREMENTS

DRILLING PLAN

BOP:

1. All BOPE shall meet or exceed the requirements of a 2M system as set forth in Onshore Order No. 2.

2. The ram type preventer(s) shall be tested to the approved BOP stack working pressure when a test plug is used. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing.

3. The annular type preventer(s) shall be tested to 50% of the approved BOP stack working pressure.

4. A Sundry Notice (Form 3160-5), along with a copy of the BOP test report, shall be submitted to this office within 5 working days following the test. Test reports shall include time and pressure charts and accumulator tests.

Casing and Cementing:

1. The surface casing shall be cemented back to surface. In the event cement does not circulate to surface or fall back of the cement column occurs, remedial cementing shall be done to cement the casing back to surface.

   Pea Gravel or other material shall not be used to fill up around the surface casing in the event cement fall back occurs.

3. A Sundry Notice (Form 3160-5), along with a copy of the service company's materials ticket and job log, shall be submitted to this office within 5 working days following the running and cementing of all casing strings.

4. All casing strings shall be tested, prior to drilling out the casing shoe, to 0.22 psi/ft of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the internal yield pressure of the casing.

5. Any change in the casing and cement design will be approved by the Authorized Officer prior to running casing and cementing.

   No freshly hard banded rough carbide pipe/collars will be rotated in the surface casing.

Mud Programs:

1. Sufficient quantities of mud materials shall be maintained at the well site, at all times, for the purpose of assuring well control.

Other:

1. A summary of the drilling operation and/or completion operation shall be submitted on Sundry Notice (Form 3160-5), to this office, along with copies of the daily drilling reports and/or daily completion reports, on a weekly basis.

2. Any permanent plug placed in the well during drilling and/or **completion** operations must have **prior** approval of the Authorized Officer.

3. A copy of all logs, formation test reports, stimulation reports, etc. shall be promptly submitted to this office.

4. Gas produced from this well may not be vented or flared beyond an initial test period, 30 days or 50 MMcf, whichever first occurs, without approval of the Authorized Officer. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue the venting or flaring as uneconomic is granted, and you shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

SURFACE USE PLAN OF OPERATIONS

A COPY OF THE APPLICATION FOR PERMIT TO DRILL, AND THESE CONDITIONS OF APPROVAL MUST BE FURNISHED TO YOUR FIELD REPRESENTATIVE AND BE AVAILABLE ON SITE.

The "Companies" shall have a copy of the, *Decision Record and Finding of No Significant Impact* for the *Atlantic Rim Natural Gas Project, Red Rim Pod EA,* available at all construction and drilling projects.

All of the *Project-Wide Mitigation Measures and* Procedures as found in the *Atlantic Rim Natural Gas Project, Red Rim Pod EA and* this *Decision Record and Finding of No Significant Impact shall be followed.*

Existing Roads:

1. The Companies" shall have permission the use (cross) the private land involved in this project. Upon request, the Authorized Officer shall be provided with copies of any agreement entered into.

2. The Operator shall enter into a maintenance agreement with other authorized users of the access road(s). The Operator shall share the maintenance costs in dollars, equipment, materials, and/or labor proportionate to the Operator's use relative to other authorized users. Upon request, the BLM Authorized Officer shall be provided with executed copies of any maintenance agreement.

Roads to be Constructed or Reconstructed:

1. All road segments must be thoroughly compacting the road's sub-base to **85% maximum dry density** before or as gravel is applied, this will allow the road to stand up to the heavy equipment used during the drilling of the well.

2. Wing ditches shall be placed in accordance with the chart on Illustration 9 in BLM's 9113 Road Manual. The 10 erosion index shall be used.

3. Design drawings are required on all low water crossings.

4. If any additional erosion occurs during the life of the project, additional wing ditches and culverts will be placed in the access roads as the need arises or as directed by BLM's Authorized Officer.

5. Maintenance work will be will done expeditiously after discovery.

6. Cattleguards will be installed perpendicular to the travelway and will be set on treated timber, precast concrete or cast in place concrete bases. Cattleguards shall be at least as wide as the road travelway, in this case a minimum of 14 feet wide, and 8 feet long. The cattleguard must be deigned to minimum AASHTO H-20 standards.

7. Construction-related traffic shall be restricted to routes approved by the Authorized Officer. Cross-country vehicle travel will not be permitted unless prior written approval is given by the Authorized Officer.

8. Proposed roadway centerline stakes shall be placed intervisibly at no more than 100-foot intervals along the alignment of the proposed road. Construction control stakes will be placed as necessary to ensure construction in accordance with the outlined specifications.

Existing and/or Proposed Facilities If Productive:

All structures including but not limited to storage tanks, meter houses, de-hydrators, and the wellhead, shall be designed to be as low (short) as possible and incorporate perch-inhibitors into their design.

1. All production facilities installed on location that have the potential to leak or spill oil, glycol, produced water, or other fluid, which may constitute a hazard to public health or safety, shall be placed within an appropriate containment or diversionary structure. The structure shall be sufficiently impervious to oil, glycol, produced water, or other toxic fluid. It shall be installed so that any spill or leakage would not drain, infiltrate, or otherwise escape to ground water, surface water, or navigable waters before cleanup is completed

2. A diagram showing the proposed production facilities, with accurate reference to their spatial orientation on the proposed well pad, shall be submitted using a Sundry Notice to the BLM Authorized Officer for review and approval prior to their construction. This includes all the proposed pipelines and electric lines.

3. Fencing Standards

32-inch net wire shall be used with two (2) strands of barbed wire on top (above) the net wire.

The net wire shall be no more than four (4) inches above the ground. The first strand of barbed wire shall be about three (3) inches above the net wire. Total height of the fence shall be at least forty-two (42) inches.

Corner posts shall be cemented and/or braces in such a manner to keep the fence tight at all times.

Standard steel, wood, or pipe posts shall be used between the corner braces. The maximum distance between any two (2) posts shall be no grater than sixteen (16) feet.

All wire shall be stretched by using a stretching device before it is attached to the corner posts.

4. Pipelines and electrical line systems

Pipeline (including the Compressor Station Facility) and electrical line system proposals will be submitted to the BLM Authorized Officer either by Sundry Notice or by Right-of-Way application for review and approval.

The pipeline and electrical line system applications shall comply with the following.

a. The maximum width of the pipeline disturbance shall not exceed 30 feet.

b. All disturbance must be with-in the area covered by the cultural survey.

c. Slope, grade, and other construction control stakes shall be placed as necessary to ensure construction in accordance with the surface use plan. If stakes are disturbed, they shall be replaced before proceeding with construction.

d. The centerline and exterior limits of the pipeline right-of-way shall be surveyed and clearly marked prior to any surface disturbing activities and kept in place until final construction cleanup is completed.

e. Pipeline trenches shall be compacted during backfilling. The backfill shall not extend above the original ground surface.

f. Clearing along the pipeline route shall be limited to removal of above ground vegetative parts (brush beating or mowing).

g. Where surface clearing occurs (along the actual trench), the top 6 inches of topsoil will be stripped, windrowed and stored along one side of the working area. Topsoil shall be kept separate from the trench spoil material.

h. A maximum of 1200 feet unattended or unprotected open trench shall be allowed at any give time.

i. During the period when a trench is open, warning devices, such as signs, flares, or warning lights shall be posted to warn the public of the hazard.

j. Drainage crossings shall be constructed to prevent any blocking, diversion, or restriction of the existing channel. Material removed shall be stockpiled for use in reclamation of the crossing.

k. Construction trenches and other openings left overnight shall be covered. Covers shall be secured in place and strong enough to prevent livestock or wildlife from falling through.

l. Construction-related traffic shall be restricted to approved routes. Cross-country vehicle travel shall not be allowed.

m. The holder is prohibited from discharging oil or other pollutants into or upon the navigable waters of the United States, adjoining shorelines, or the waters of the contiguous zone in violation of Section 311 of the Clean Water Act as amended, 33 U.S.C. 1321, and the regulations issued thereunder, or applicable laws of the State(s) of Wyoming and regulations issued thereunder. Holder shall give immediate notice of any such discharge to the authorized officer and such other Federal and State officials as are required by law to be given such notice.

Compressor Station Facility

a. No more compression that is needed to produce the Red Rim Pod will be authorized.

b. Compressors shall be muffled using the best available methods. Noise levels shall be limited to no more than 10 decibels on the A-weighted scale (dBA) above background levels at leks for greater sage grouse. Compressor engines shall be enclosed in a building and located at least 1320 feet away from sensitive receptors or sensitive resource areas to comply with these limits on noise levels.

5. WATER HANDLING AND DISPOSAL FACILITIES AND INJECTION WELLS

a. No livestock watering system is being approved with this proposal.

b. No surface discharge outfall facilities are being authorized.

c. No injection well sites are being authorized on public land.

d. Water transfer facilities proposals will be submitted to the BLM Authorized Officer either by Sundry Notice or by Right-of-Way application for review and approval (see 4. Pipelines and electrical line systems above).

e. Produced water storage tanks are not to be used for disposal of water from other sources.

Methods for Handling Waste Disposal:

1. The Operator shall comply with the Hazardous Materials Management Summary provided in the Continental Divide/Wamsutter II EIS for hazardous materials that may potentially be used, produced, transported, disposed of, or stored on the well location.

2. The Operator shall comply with all federal, state, and local laws and regulations pertaining to disposal of human and solid wastes.

3. Fluids containing any hydrocarbons (condensate, diesel, etc.) shall not enter the reserve pit or production pit.

4. Produced fluids and fracturing fluids shall be contained in test tanks during completion and testing. This fluid shall not be placed into the reserve pit without prior written approval from the BLM Authorized Officer.

5. Within 90 days of initial production start-up, the Operator shall submit to the BLM Authorized Officer an analysis of the produced water. In addition, facilities/pits used for the disposal of produced water shall be approved, as outlined in Onshore Oil and Gas Order No. 7, using a Sundry Notice.

6. No fluids containing hydrocarbons or hazardous substances shall be allowed to accumulate in the flare pits.

7. All production facilities installed on location that have the potential to leak or spill oil, glycol, produced water, or other fluid, which may constitute a hazard to public health or safety, shall be placed within an appropriate containment or diversionary structure. The structure shall be sufficiently impervious to oil, glycol, produced water, or other toxic fluid. It shall be installed so that any spill or leakage would not drain, infiltrate, or otherwise escape to ground water, surface water, or navigable waters before cleanup is completed

8. All storage tanks and compressor facilities, designed to contain oil, glycol, produced water, or other fluid which may constitute a hazard to public health or safety, shall be surrounded by a secondary means of containment for the entire contents of the largest single tank in use, plus 1 foot of freeboard. The containment or diversionary structure shall be impervious to any oil, glycol, produced water, or other toxic fluid for 72 hours and would be constructed so that any discharge from a primary containment system would not drain, infiltrate, or otherwise escape to ground water, surface water, or navigable waters before cleanup is completed.

Well Site Layout:

1. For the protection of livestock and wildlife, all pits and open cellars shall be fenced. Fencing shall be in accordance with BLM specifications. Netting shall be placed over all open production pits to eliminate any hazard to migratory birds or other wildlife. Netting is also required over reserve pits which have been identified as containing oil or hazardous substances (CERCLA Section 101(14)). The mesh diameter of netting shall be no larger than one inch. The reserve pit shall be fenced on three sides during drilling, and

the working side shall be fenced immediately after the drilling rig is moved. Fencing shall meet BLM specifications. The reserve pit shall remain fenced until reclamation is initiated.

2. If water is encountered within 50 feet of the surface, during construction of the rathole, reserve pit, or drilling of a water well, the Operator must contact the BLM Authorized Officer.

3. No flaring of gas will be allowed into the reserve pit without prior approval

Surface Reclamation Plans:

1. Prior to reclamation or abandonment of the well site, a joint inspection of the disturbed area will be held. This inspection will be held to review the existing plan

2. Pits containing drilling muds and fluids shall be allowed to dry. Fluids remaining after two years shall be moved to an approved site. Other options, if approved by the Authorized Officer, may include fly-ash solidification or sprinkler evaporation over the pit containing the fluid.

Producing wells

1. Should the well become productive, all disturbed areas not needed for production operations shall be reclaimed (partial reclamation) as soon as possible, but no longer than within 2 years from the date production facilities are completed. The production pad shall be as small as possible but no larger than one and a half acres.

2. The reserve pit will be backfilled when dry with a minimum cover of 5 feet of soil material.
Should the well become productive, all disturbed areas not needed for production operations will be recontoured and revegetated as outlined in these COA.

3. Seeding and other reclamations requirements are listed in the following section also apply.

Plugged and Abandoned wells

1. Should the well be plugged and abandoned, fencing of the reseeded well site will be required to exclude grazing and to help vegetation success.

2. **After** recontouring the site, to the original contour that existed before the pad was constructed, and replacement of topsoil, the entire surface of the well site and access road will be ripped to a depth of 18 to 24 inches on the 18 to 24 inch centers.

3. The surface soil material will be plowed to form longitudinal depressions 12-18 inches deep and the entire reclamation area will be uniformly covered with the depressions constructed perpendicular to the prevailing wind. Either the above method or some comparable technique (i.e. snow fencing) will be used to roughen the surface and help increase soil moisture retention.

4. Waterbars will be constructed on all disturbed areas to: (1) simulate the imaginary contour lines of the slope with a grade of one or two percent; (2) drain away from the disturbed area; and (3) begin and end in undisturbed vegetation or soil.

5. The travelway of the access road to be rehabilitated shall be ripped to a depth of 18 inches, recontoured to approximately the original contour of the ground, pitted as mentioned previously, and seeded in accordance with reclamation portions of these COAs.

6. Water control structures will be designed and constructed at each drainage crossing to prevent excessive erosion within the drainage.

7. The holder shall seed all disturbed areas with the seed mixture(s) listed in the MSUP, including the surplus topsoil pile. The seed mixture(s) shall be planted in the amounts specified in pounds of pure live seed/acre. There shall be no primary or secondary noxious weed seed in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with State law(s) and within 9 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer. If a drill is used the drill shall be equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop to the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Seed shall be broadcast if possible. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth will not be made before completion of the second growing season after seeding. The Authorized Officer is to be notified a minimum of three days prior to seeding of the project.

8. The plugged and abandoned well will be identified with a marker no more than 4 feet tall. A perch inhibitor may be required on top of the marker.

Wildlife

1. Construction, drilling and other activities potentially disruptive to strutting and nesting greater sage grouse are prohibited during the period of March 1 to June 30 for the protection of greater sage grouse nesting areas. This condition shall be applied to all facilities with in the Red Rim Pod.

2. Construction, drilling, reclamation and other activities are prohibited during the reproductive period of April 10 to July 10 for mountain plover. This condition shall be applied to the following wells and all felicities associated with the wells: AR Federal 2089 SW20, AR Federal 2089 NE20, AR State 2089 SE16, and the access road to AR Fee 2089 NE16, AR Fee 2089 SW16, and AR Federal 2089 NE28.

Please be advised that due to limits on the available time of qualified personnel, the unpredictability of wildlife, and inclement weather conditions, requests for exceptions to impending wildlife stipulations will only be considered in the event of extraordinary and unavoidable occurrences over which the requestor has little or no control. Additionally, wells must be spudded in a time frame which would allow for reasonably normal drilling and completion of the well prior to the beginning date of wildlife protection stipulations

Other:

1. The Companies would muffle and maintain all motorized equipment using Best Management Practices

2. All stationary machinery that makes noise shall be muffled using the best available methods. Noise levels shall be limited to no more than 10 decibels on the A-weighted scale (dBA) above background levels at leks for greater sage grouse. Machinery shall be located at least 1320 feet away from sensitive receptors or sensitive resource areas to comply with these limits on noise levels

3. Facilities approved by this APD and/or Sundry Notice that are no longer included within the lease, due to a change in the lease or unit boundary shall be authorized with a right-of-way.

4. The Operator shall have a qualified individual to serve as Compliance Coordinator on-site during active operations. This individual will be responsible for ensuring that all requirements of the Master Surface Use Plan and appropriate Conditions of Approval are applied.

Miscellaneous Permitting Requirements

1. All survey monuments found within the area of operations shall be protected. Survey monuments include, but are not limited to, (1) General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coast 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 survey monuments, the incident shall be reported in writing to the BLM Authorized Officer.

2. The Operator shall be held responsible for the prevention and suppression of fires on public lands caused by its employees, contractors, or subcontractors. During conditions of extreme fire danger, surface use operations may be either limited or suspended, or additional measures may be required by the BLM Authorized Officer. The occurrence of any wild land fire shall be reported immediately to the BLM Fire Dispatch, 1 (800) 295-9953.

3. No flaring of gas shall be allowed into the reserve pit without prior approval by the BLM Authorized Officer.

4. The Operator shall comply with all Federal, State, and local laws, rules, and regulations, including the acquisition of any necessary Federal, State, and/or local permits.