



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Rawlins Field Office
1300 North Third Street
P.O. Box 2407
Rawlins, Wyoming 82301-2407

In Reply Refer To:

1790

June 18, 2002

Re: Hanna Draw Coalbed Methane
Exploration Project

Dear Reader:

We are providing you a copy of the enclosed Decision Record for your information and use. The Decision Record identifies BLM's decision, explains the rationale for reaching the decision, and includes the proponents' committed measures and additional requirements for the Hanna Draw Coalbed Methane Exploration Project.

On January 16, 2002, the BLM released the *Environmental Assessment for the Hanna Draw Coalbed Methane Exploration Project, Carbon County, Wyoming*. The environmental assessment was prepared pursuant to the National Environmental Policy Act, other regulations, and statutes, to fully disclose the potential environmental impacts of the alternatives (Proposed Action and No Action alternatives) and to solicit public comment on them. The assessment also identifies additional mitigation measures to further mitigate potential impacts.

A copy of this decision has been sent to governmental entities, individuals, and organizations who commented on this project or have expressed an interest in mineral-related activities proposed on public lands. The BLM wishes to thank those individuals and organizations who provided input during this process. Your input has been essential in assuring issues important to you were fully considered.

If you have any questions regarding this decision or need additional information, please contact Brenda Vosika Neuman, Project Leader, at the address shown above or phone, (307) 328-4389.

Sincerely,

Field Manager

Enclosure

**DECISION RECORD AND
FINDING OF NO SIGNIFICANT IMPACT,
HANNA DRAW COALBED METHANE EXPLORATION PROJECT**

INTRODUCTION

Williams Production RMT Company (Williams) of Denver, Colorado (formerly Barrett Resources Corporation), notified the Bureau of Land Management (BLM), Rawlins Field Office, of its proposal to explore for and potentially develop coalbed methane resources located within the administrative boundary of the BLM's Rawlins Field Office. The pilot project is located in Townships 23 and 24 North, Ranges 80 and 81 West, Carbon County, Wyoming. The Hanna Draw Exploration Project Area (HDEPA) encompasses approximately 18,151 acres (in the combined exploration drilling area and pipeline corridor), 6,735 acres (37%) of which are federal surface and mineral estate administered by the U.S. Bureau of Land Management (BLM), Rawlins Field Office. The exploration project consists of drilling, casing, completing, and producing 25 coalbed methane wells for evaluation--9 wells on federal lands and 16 wells on private lands. Because legal access already exists, 9 of the 16 wells within the project area located on private lands have been drilled under the approval of the Wyoming Oil and Gas Commission.

ALTERNATIVES CONSIDERED

The *Environmental Assessment (EA) for the Hanna Draw Coalbed Methane Exploration Project* analyzed two alternatives. The Proposed Action considered coalbed methane activities on federal lands. Under the Proposed Action, 9 wells would be drilled on federal lands administered by the BLM. Field development of 25 wells would include the construction/reconstruction of 6.5 miles of road with parallel gas gathering and water discharge lines, construction of a central gathering/metering facility, a reservoir, and if the field proves economically viable, a compressor station and a 19.5-mile interconnect pipeline. Produced water would flow through the water discharge lines to a reservoir located on private lands. The wells would evaluate the potential of producing methane gas from the Hanna Formation coal seams, specifically the Hanna 2 seam.

Under the No Action Alternative, the BLM analyzed the impacts associated with the disturbance of 23.7 acres from an existing federal ROW within the project area and the denial of any further development of federal lands associated with this project. This alternative provided a benchmark, enabling the decision-maker to compare the magnitude of the alternatives' environmental effects.

Several other alternatives were considered but rejected for various reasons. These alternatives included disposal of water produced during coalbed methane production by re-injection, changing the number of wells and locations, shortening the interconnect pipeline, and consideration of an alternative pipeline route.

DECISION

Based upon the analysis of the potential environmental impacts described in the *Hanna Draw Coalbed Methane Exploration Project EA* and, in consideration of the public, industry, and governmental agency comments received during the environmental analysis process, the BLM approves the Proposed Action as described in Chapter 2 of the EA and associated errata (see Appendix A of this Decision Record) for the exploration of nine coalbed methane wells and associated facilities within the HDEPA. The decision incorporates the Applicant-Committed Environmental Practices and Protection Measures identified in Appendix B, as modified, and certain additional measures identified in Appendix C of this Decision Record.

APPROVED PROJECT COMPONENTS

The decision authorizes the initiation of permit approvals for the following project components on BLM-administered federal lands and/or minerals within the HDEPA, subject to the requirements identified in Appendices B and C.

- Nine coalbed methane wells located on federal lands within the HDEPA resulting in a total initial disturbance of 10.8 acres and life-of-project (LOP) of 2.7 acres.
- Construction of 2.75 miles of new roads and parallel gas gathering and water discharge lines (80-ft average disturbance width) resulting in a total surface disturbance of not more than 26.7 acres.
- Construction on federal lands of 9.3 miles of interconnect pipeline with an average disturbance width of 90 ft resulting in initial disturbance of not more than 101.5 acres and LOP disturbance of 0.0 acres. This construction will only occur if the exploration project proves viable.

APPROVAL OF THE PROPOSED ACTION IS CONDITIONAL UPON THE FOLLOWING:

- Implementation of the applicant-committed environmental practices and protection measures as described in Appendix C.
- Implementation of the mitigation measures described in Appendix D.
- Implementation of the Monitoring Plan described in Appendix E.
- Adherence to oil and gas lease and right-of-way grant stipulations and application for permit to drill conditions of approval.

RATIONALE FOR THE DECISION

The decision to approve the operator's proposed development was based on the following factors: 1) consistency with the land use and resource management plans; 2) national policy; 3) agency statutory requirements; 4) relevant resource and economic considerations; 5) application of measures to avoid or minimize environmental harm; 6) finding of no significant impact; and 7) public comments.

1. Consistency with Land Use and Resource Management Plans

The Proposed Action is in conformance with the overall planning direction for the area. The objective for oil and gas management decisions described in the Great Divide Resource Management Plan, 1990, is to "provide opportunity for leasing, exploration, and development of oil and gas while protecting other resource values." The project also meets the objectives of the Lands Program which is to "support the goals and objectives of other resource programs for managing the BLM administered public lands and respond to public demand for land use authorizations."

2. National Policy

Private exploration and development of federal oil and gas leases is an integral part of the BLM 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 on foreign energy sources. Oil and gas leasing is needed to encourage development of domestic oil and gas reserves to reduce the United States' dependence on foreign energy supplies. National mineral

leasing policies and regulations by which they are enforced recognize the statutory rights of lease holders to develop federal mineral resources to meet continuing national needs and economic demands so long as undue and unnecessary environmental degradation is not incurred. Therefore, 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, including informal consultation with the U.S. Fish and Wildlife Service.

4. Relevant Resource and Economic Considerations

Environmental impacts from the exploration project to resources identified in the EA are minor and all deemed acceptable. The economic benefit is important due to the tax revenues generated from the development of natural gas.

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. The adoption of the mitigation and monitoring measures identified in Chapters 2.0 and 4.0 of the project EA, and contained in this Decision Record in Appendix C and D, represent practicable means to avoid or minimize environmental impacts.

6. Finding of No Significant Impact

Based upon the review of the EA, the BLM has determined that the Proposed Action, with implementation of the protective measures identified in Appendices C and D herein, would not cause a significant impact to the quality of the human, natural, and physical environment. Therefore an environmental impact statement is not necessary.

7. Public Comments

Eleven comment letters were received on the EA during the 30-day comment period that ended February 19, 2002. The following is a list of those submitting comments.

United States Geological Survey
United States Fish and Wildlife Service
United States Department of Agriculture - Forest Service
Office of Federal Land Policy
Wyoming Game and Fish Department
Wyoming Business Council
State Engineer's Office
Office of State Lands and Investments
Petroleum Association of Wyoming
Wyoming Outdoor Council/National Wildlife Federation
Biodiversity Associates

The substantive comments are summarized, and BLM's responses are found in Appendix B.

APPEAL

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, WY 82003, within 20 business days of the date this Decision Record is received or considered to have been received.

Field Manager

Date

APPENDIX A

**MODIFICATIONS AND CORRECTIONS
TO THE
HANNA DRAW COALBED METHANE EXPLORATION PROJECT
ENVIRONMENTAL ASSESSMENT**

APPENDIX A

ERRATA MODIFICATIONS AND CORRECTIONS TO THE HANNA DRAW COALBED METHANE EXPLORATION PROJECT ENVIRONMENTAL ASSESSMENT

Dear Reader Letter

Note that Dennis Carpenter is “Acting” Field Manager.

2.1 The Proposed Action

Change line 11 of this paragraph to read as follows, “Development of the nine wells on federal land would begin in 2002.”

2.1.13.15 Wildlife and Fisheries

Add the following requirement, “During construction of the interconnect pipeline, any trench open at night for long distances ($\frac{3}{4}$ to 1 mile) will be required to have wildlife/livestock plugs.”

Table 1.1

On page 9, add to the column titled, “Permit, Approval, or Action” for the Wyoming State Engineers Office, “Authorize permits for storage reservoirs and for beneficial use of produced CBM water.”

Appendix B

Water Quality

Line 5, change the sentence to read, “The terms and conditions of the permits issued by WSEO do not require monitoring.”

APPENDIX B
SUMMARY OF EA COMMENT LETTERS
AND
BLM RESPONSES

APPENDIX B

SUMMARY OF EA COMMENT LETTERS AND BLM RESPONSES

The EA was released for a 30-day public review period on January 16, 2002. Eleven comment letters were received on the EA. 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 (shown in italics) with responses are summarized below with BLM responses to each immediately following the comment. The BLM would like to thank all commentors for taking time to review the EA and providing comments.

1. **Terry Svalberg, U.S. Department of Agriculture, Bridger-Teton National Forest**

- a. *Although the EA states, "Impacts of compressor station construction and operation are evaluated in this EA," I did not see any evaluation of this in Chapters 3 or 4.*

A methane compression facility may be constructed if the pilot program proves successful (page 27 of the EA). The compression station is shown under the components of the Proposed Action on Page 14 of the EA, although it states that the compressor station would be located on private land and would result in approximately 4.0 acres of disturbance. Under Section 2.1.13, Project-Wide Environmental Practices and Protection Measures, page 46, it states that "Williams would adhere to all applicable WAAQS, NAAQS, and permit requirements, including preconstruction testing, operating permits, and other regulations, as required by WDEQ/AQD." On page 124, it states that impacts to air quality would be significant if they resulted in a violation of federal/and or state air quality attainment standards.

Chapter 4, pages 123, 139, 143, 154, and 162 of the EA, discusses the potential impacts to various resources should a compressor station be constructed.

- b. *With regard to the discussion in Section 2.1.13.10, there is no consideration for possible impacts to Class I areas, especially possible impacts to visibility. Also the discussion indicates that Williams will initiate abatement of dust when air quality, soil loss, or safety concerns are identified by BLM or WDEQ. Are the BLM and DEQ/AQD funded to do this monitoring? What measurements/equipment will be used to trigger an action by Williams for air quality deterioration and soil loss?*

As stated in the EA in Section 4.1.1, Air Quality, the effects of natural gas development on air quality has been extensively studied in recent years in several projects including Jonah II, Continental Divide/Wamsutter II (CD/WII), and the Pinedale Anticline. As the discussion on page 125 states, the Pinedale Anticline and CD/WII models using CalPuff dispersion model, found exceedences of the 0.5 deciview threshold. The Pinedale EIS found that the visibility impacts would be exceeded from 4 to 11 days, but the Forest Service determined this potential impact to be within the acceptable range.

The CD/WII Draft Environmental Impact Statement (DEIS) reports the results of an air quality study which modeled the cumulative impacts from 3,000 wells using the CalPuff dispersion modeling system. Of the 3,000 wells analyzed within the CD/WII Project Area, 2,130 wells have been authorized for development. The remaining 870 wells included in

the cumulative analysis have not been authorized for development by CD/WII to allow for other development to occur in the area administered by the Rawlins Field Office.

While BLM is not funded for air quality monitoring on a site-specific basis, compliance with the mitigation is expected. Because uncontrolled fugitive dust can result in a safety concern, it will be to the advantage of the operator to water well pads and resource roads during construction and at other times when necessary to control emissions of fugitive particulate matter. Under the WDEQ/AQD, "Wyoming Air Quality Standards and Regulations," sources operating within the State of Wyoming are required to control fugitive dust with the method approved by the Division Administrator. The amount of particulate matter shall be measured by source test methods specified by the Administrator and found in the WDEQ/AQD Air Quality regulations and in 40 CFR part 60.

- c. *The summary of environmental consequences does not address any long-term impacts to air quality that may be associated with compressor stations.***

No long term impacts are anticipated from the potential to construct and utilize one compression facility associated with this exploration project. Emissions from a typical coalbed methane compression station is quantified below in response 1f.

- d. *Section 4.1.1 does not address possible visibility impacts in Class I wilderness areas for which there are no federal or state standards.***

Page 69 of the EA describes management of these Class I areas. It states that "although the Savage Run Wilderness has not been designated Class I by Congress and thus legally does not have to be managed as a Class I area, it has the legal requirement to be managed as a Class I area under the *Wyoming Air Quality Standards and Regulations*, Chapter 6, Section 4(c)." The CD/WII air quality model predicted impacts in these areas as they would in areas legally required to be managed as Class I.

- e. *It states in Section 4.1.1.1 that the 0.5 exceedences above the 0.5 deciview level are acceptable. In the case of Continental Divide analysis, impacts were determined by the BLM to be not significant due to the fact that only 71% of the wells modeled were approved.***

The CD/WII and South Baggs cumulative air quality analysis analyzed impact from 3,000 natural gas wells, 5 compressor stations, 1 natural gas processing plant associated with the CD/WII project, and 90 natural gas wells and 1 compressor station associated with the South Baggs project. The modeling analysis made the assumption that all of these emission sources were fully operational year round. Of the 3,000 wells analyzed in the CD/WII project area, only 2,130 were authorized for development. The remaining 870 wells included in the CD/WII project cumulative analysis were not approved so that other oil and gas development could occur on lands under the administration of the Rawlins Field Office. The need for this was that oil and gas development was nearing the disturbance acres allowed under the reasonably foreseeable actions described in the RMP. All currently proposed and approved exploratory CBM projects in the Rawlins Field Office are covered by the CD/WII cumulative analysis; however, any further development beyond the 870 wells would require an amendment to the RMP.

- f. ***There is no discussion as to what types of emissions can be expected, short-term or long-term. There is no quantification of emissions. Are there hazardous air pollutants? How much of each emission is expected? The document describes impacts to air quality as minor; these impacts should be quantified.***

Emissions from conventional natural gas drilling and CBM drilling are very similar. Air emissions generated from one well during both natural gas and methane gas production are summarized in the table below. Air emissions from a 1,000-horsepower compressor engine are also shown on the table below. Emissions from well sites and compressor engines are similar for CO, NOx, SO2, and PM10. Volatile organic compound (VOC) emissions from coalbed methane production are less than VOC emissions from natural gas production due to the absence of non-methane hydrocarbons in the nearly 100% methane gas stream. Gas analyses performed for representative methane gas streams indicate no or negligible amounts of hazardous air pollutant (HAP) emissions in the methane gas stream. For comparison purposes, an Atlantic Rim CBM well is used as an example; however, it is anticipated that most CBM project wells will have similar emissions.

**Air Emissions from Production Operations [tons per year (tpy)]
CD/WII Project (Natural Gas) Typical Well vs. Atlantic Rim Project (Coalbed Methane)
Typical Well**

Pollutant	CD/WII (Natural Gas) ¹		Atlantic Rim (Coalbed Methane)	
	One Well Site ²	1000 hp Compression	One Well Site ⁴	1000 hp Compression
CO	0.02	19.28	0.02	19.28
NOx	0.08	19.28	0.11	19.28
SO2	<0.1	<0.1	0	0
PM10	<0.1	<0.1	0.013	1.74 ⁵
VOC	38	0.97	0.009	0.97
Formaldehyde	--	1.95	--	1.95
Total HAPs	6.64	³	--	³

¹ From: BLM, 1999. Air Quality Impact Assessment Technical Support Document, Continental Divide/Wamsutter II and South Baggs Natural Gas Development Projects – Environmental Impact Statements, Volume I – Emissions Inventory and Near-Field Analysis. U.S. Department of the Interior, Bureau of Land Management Rawlins and Rock Springs Field Offices, April 1999.

² Emissions from non-best-available-control-technology (BACT) well (maximum emissions scenario)

³ Formaldehyde only HAP calculated from internal combustion

⁴ TRC, 2000. Draft emissions calculations for Atlantic Rim EA, TRC Environmental Corporation, Laramie, Wyoming, October 2000.

⁵ PM10 emissions differ from CD/WII due to the use of PM10 emission factor of 0.000397 lb/hp-hr from EPA's AP-42 (CD/WII assumed PM emissions negligible).

In addition, because the dehydration of methane gas is not proposed for this project, no liquids are removed from which flashing of VOCs and HAPs will occur. Similarly, no gas processing facilities are proposed in the HDEPA. Air emissions from a representative gas processing plant in the CD/WII Project Area were calculated to be 3.5 tpy CO, 16.7 tpy NOx,

21.6 tpy VOC, 7.3 tpy HAPs, and <0.1 tpy SO₂ and PM₁₀. The presence of fewer VOCs and HAPs in methane gas stream than in natural gas, and the absence of dehydration and gas processing in the HDEPA, will result in lower VOC and HAP emissions for 25 wells (and associated equipment) than analyzed for 25 wells in the CD/WII study.

- g. *There is no discussion in section 4.11.2.1 of cumulative impacts from the Continental Divide/Wamsutter II and Pinedale Anticline projects on visibility in Class I wilderness areas. Since both of these modeled projects did indicate an impact to visibility in the Bridger and Savage Run wilderness areas, it is likely to assume that the addition of this project to the model would still show impacts, which may be even greater than before. Also the assumption is made that there has been no additional development in the Laramie Basin that would affect the air quality since these analyses were completed. The document needs to discuss cumulative impacts of drilling and development activities when combined with other proposed and ongoing developments on lands in the vicinity of the HDEPA.***

All development that has been approved since the Record of Decision for CD/WII was signed in May 2000 have come under the 870 wells that were modeled for the air quality cumulative impact analysis but not approved as part of the CD/WII project. See response to 1e above. This project is not an addition; it is considered to have been modeled and the results, including the conclusions on impacts to Class I wilderness, are the same as those described in CD/WII DEIS and Record of Decision. The total number of wells completed since the ROD for CD/WII was signed as of December 6, 2001, was 98. Since that time it is estimated that another 10 wells have been completed for a total of 108 wells, far below the 870 well cap.

- h. *Do the types and amounts of emissions from coalbed methane development differ from deep natural gas wells?***

Emissions from conventional natural gas drilling and CBM drilling are very similar. Air emissions generated from one well during both natural gas and methane gas production are summarized in the table in response 1f above.

- i. *It would be helpful to have a map showing all development occurring in the general area and/or cumulative impact analysis area (CIAA).***

A generalized map of CBM exploratory project locations and major oil and gas projects and a map showing areas of oil and gas drilling in Wyoming are available in Appendix F.

- j. *Other issues not adequately addressed in the document include the increased likelihood of underground fires in de-watered coals and the potential for methane contamination of shallow aquifers.***

In the San Juan Basin of Colorado, the BLM San Juan Field Office has studied this issue and found that when water levels drop in confined aquifers during CBM production, ambient air is drawn into the coal beds that could supply the necessary oxygen to support spontaneous combustion or further oxidation of coal beds at the outcrop. However, it was the office's conclusion that the downdip extraction of water from CBM production resulting in coal fires at the outcrop would only occur if these outcropping seams were hydraulically connected to the producing wells (BLM 1999). In the Hanna Draw project, the depth of the producing wells (3,500 to 5,000 feet), and because the targeted seams are stratigraphically

isolated because they exist on the down thrown side of the Barrel Springs fault, limits the potential that these coals are hydraulically connected to any seams exposed at the surface and makes the possibility of any resulting coal seam fires from CBM extraction exceedingly remote.

Methane migration can occur naturally anytime there is a gassy coal seam. As described on page 22 of the EA, cementing would isolate all other formations in the hole and would eliminate the possibility of contamination between hydrocarbon zones and/or water aquifers and other mineral resources.

2. **Petroleum Association of Wyoming**

- a. ***The applicant committed measures are voluntary actions agreed to by the individual company and should not establish precedent for future projects that are similar in nature.***

The measures identified under Section 2.1.13, Project-Wide Environmental Practices and Protection Measures in the EA, are actions or features which are included as part of the proposed action that could be taken to avoid or reduce projected impacts or reflect standard 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 BLM or the applicant, they will be applied if necessary.

- b. ***Under 2.1.13.12, Soils, it states, "All roads would be crowned, ditched, and appropriately surfaced (e.g., graveled)." In the exploratory phase of development, it is not yet determined that complete road construction is necessary and, therefore, may not be environmentally prudent. PAW recommends that, to minimize surface disturbance, roads and locations constructed during the exploratory phase of the project should be crowned and ditched, but left unimproved until either the pod has demonstrated economic viability or the entire project is economically feasible.***

The requirement to gravel, or have an appropriate surface, is a standard operating procedure for road construction within the BLM Rawlins Field Office area based on past experience. Placing an adequate surface on the roads where the soils are poor provides a better, safer, and less environmentally destructive type of access, especially for projects where heavy equipment is used. This is especially true in wetter seasons.

- c. ***The status of the mountain plover (Section 2.1.13.16) as "proposed for listing" allows for a certain amount of flexibility in developing measures protective of the species. The BLM has certain discretionary authority and should consider the effects on the oil and gas operator as part of its adoption of reasonable and prudent measures necessary to minimize the impact on the mountain plover.***

In a letter to the Bureau of Land Management dated February 19, 2002, the United States Fish and Wildlife Service stated it had reviewed the Environmental Assessment, including the Biological Assessment, and concurred that the project, as proposed, is unlikely to jeopardize the continued existence of the mountain plover "provided the mitigation measures outlined in the EA are implemented in full."

- d. ***At Section 4.13.7.3 it states that the BLM may require that noise levels be limited to no more than 10 dBA above background at greater sage-grouse leks and other sensitive resource areas. There is no mitigation in the Resource Management Plan regarding noise and its effect on greater sage-grouse leks. PAW recommends that BLM remain flexible with noise mitigation while monitoring studies regarding this issue are being conducted by the BLM and Wyoming Game and Fish Department and base mitigation on the results of 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.

- e. ***Section 4.3, Cultural Resources, states, "Significant impacts to cultural resources may include...any surface-disturbing activities within 0.25-mi of a historic trail unless such disturbance would not be visible from the trail or would occur in an existing visual intrusion within the 0.25-mi buffer." All historic trails and their contributing segments do no warrant the protection of the ¼-mile stipulation. To eliminate confusion, PAW recommends that this section include a list of the trails and their contributing segments that require this protection measure. Protection measures should be limited to congressionally-designated trails and the Overland and Cherokee Trails, per the RMP.***

Because the Cherokee and Overland Trails, in general, lie south of Interstate 80 in this area, none of the activities proposed under the Hanna Draw project (exploratory drilling or interconnect pipeline) would overlap any trails or contributing segments that would require this protective measure. Neither the Cherokee or Overland Trails are congressionally-designated.

3. United States Fish and Wildlife Service

- a. ***The Platte River depletions information provided for the water generated by CBM wells is adequate and we concur that produced water is unlikely to be connected to the Platte River System. However, water used for the hydrostatic testing of the pipeline may result in a depletion to the Platte River. Complete details of water used for hydrostatic testing should be provided to our office in order for us to make that determination.***

As stated on page 1 of the EA, should the exploration field prove to be economically productive, Williams proposes to construct the necessary production facilities, including the natural gas interconnect pipeline. The exact pipeline alignment is not yet known, but once

a site-specific proposal is received by 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 further consult with USFWS.

- b. *The discharge of CBM water with a selenium > 2µg/L into closed containment pits or ponds for disposal by evaporation also may present a risk to aquatic birds using these ponds if the ponds provide a food source in the form of submerged aquatic vegetation or aquatic invertebrates. Selenium in closed ponds can be elevated through evaporation.***

Effluent limits on National Pollutant Discharge Elimination System (NPDES) permits reflect the standards set forth by the Environmental Protection Agency (EPA), which has delegated those responsibilities in Wyoming to the WDEQ/WQD. The permit for the reservoir constructed on private lands to contain CBM water for this project has already been approved by WDEQ/WQD to the EPA standards including <5 µg/L standard for selenium. WDEQ/WQD allows for public and agency comment on these permits prior to approval. The appropriate forum to address concerns regarding effluent standards that may not adequately protect wildlife species should be made to WDEQ/WQD during the public comment period.

Page 140 of the EA describes the potential for selenium concentration to occur in the reservoir. It states, "because the produced water contains <5 µg/L selenium, it is not likely that water would contribute to any notable increase in selenium in the reservoir's sediments during the 18 months of reservoir operation. However, the limited period of operation and the low concentration in the produced water will limit the extent to which evaporative concentration of selenium can occur."

- c. *Discharging waters with high SAR into rivers and streams could change stream temperature and hydrology, and increase erosion and sedimentation resulting in the destruction of fish spawning grounds and compromising fish and aquatic invertebrate growth and survival.***

All produced CBM water from this exploration project will be contained in the manner described in the approved NPDES permit. In this permit, the operator has committed to total containment of produced water; therefore, impacts which could result from discharging high SAR water into drainages was not examined in the EA.

- d. *Because methane can migrate a long distance underground once hydrostatic pressure is released within the coalbed, methane seepage (venting) becomes a serious danger to humans, as well as wildlife, in close proximity to the wells.***

As stated above, methane migration can occur naturally anytime there is a gassy coal seam. As described on page 22 of the EA, proper cementing of casing in the borehole would isolate all other formations in the hole and would eliminate the possibility of contamination between hydrocarbon zones and/or water aquifers and other mineral resources.

- e. *Habitat fragmentation, as a result of coalbed methane development, poses a serious threat to wildlife. State and federal agencies have estimated that each CBM well disturbs three to four acres of land and results in the construction of a quarter to a third of a mile of new roads.***

For the Hanna Draw CBM exploration project, disturbance per well pad is estimated to be 1.2 acres. The project attempts to minimize disturbance by placing all gas gathering and water discharge lines in or adjacent to the roadways where feasible. The projected disturbance in the project area is described on page 14 of the EA. Also see response to 7h and 8e.

- f. *Air pollution is a serious environmental hazard associated with CBM development. Toxic emissions from generators include sulfur dioxide, nitrous oxide, carbon monoxide, carbon dioxide, and formaldehyde. Dust generated from increased traffic on unpaved roads and noise produced by compressors pose serious threats to health of humans and wildlife.***

Potential emissions that could result from CBM development on a per-well basis have been estimated in the table shown in response to question 1f above. In addition, because the dehydration of methane gas is not proposed for this project, no liquids are removed from which flashing of VOCs and HAPs will occur. Similarly, no gas processing facilities are proposed in the HDEPA. The presence of fewer VOCs and HAPs in methane gas stream than in natural gas, and the absence of dehydration and gas processing in the HDEPA, will result in lower VOC and HAP emissions for 25 wells (and associated equipment) than analyzed for 25 wells in the CD/WII study.

Because uncontrolled fugitive dust can result in a safety concern, it will be to the advantage of the operator to water well pads and resource roads during construction and at other times when necessary to control emissions of fugitive particulate matter. Under the WDEQ/AQD, "Wyoming Air Quality Standards and Regulations," sources operating within the State of Wyoming are required to control fugitive dust with the method approved by the Division Administrator. The amount of particulate matter shall be measured by source test methods specified by the Administrator and found in the WDEQ/AQD Air Quality regulations and in 40 CFR part 60.

4. United States Geological Survey

- a. *The Hanna No. 2 coal is presently proposed for initial exploration, but other seams may be explored. Please clarify whether the other seams are shallower and/or deeper than the Hanna No. 2 coal seams. How many potential seams are there? What are the possible water-bearing capacities of the other seams and would the water in these seams present water-quality problems?***

Other seams with the potential for development would be Seams 78 and 80. These seams are shallower than the Hanna No. 2, but still deeper than 3,500 feet below the surface (page 21 of the EA). It is anticipated that the water quality would be similar to that found in the Hanna No. 2 seam, but even if water quality problems were present, the operator would still be required to keep the water in the containment reservoir in compliance with their approved NPDES discharge permit. Currently the operators have no plans to produce from Seams 78 or 80.

- b. *On page 129 of the EA there is no discussion on the potential impacts of wind erosion on construction areas. As noted on page 68 of the EA, the Hanna Draw area is characterized by strong, sustained winds, and wind erosion is a major problem on freshly exposed soils.***

Under Section 4.1.5.1, line 4, on page 129 of the EA, it does recognize that direct impacts to soils would include “soil exposure due to vegetation removal, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion.” This discussion continues, “reclamation and re-vegetation procedures would be designed to reduced the susceptibility of disturbed areas to soil erosion in both the short-term and long-term and for the LOP.” The analysis on page 130 of the EA concludes that, by implementing the applicant-committed practices designed to protect soil erosion (as described in Sections 2.1.13.10, Air Quality and 2.1.13.12, Soils, of the EA), impacts to soils would be minimized.

- c. ***In Appendix B, Water Management Plan, the section presents a water budget for the well-water retention reservoir. The reservoir is a closed basin and water outflow is solely by evaporation. All dissolved solids would be retained in the reservoir, so the reservoir water would soon have high concentrations of dissolved solids. The Draft EA should address the potential for high dissolved solid concentrations in the reservoir and propose mitigation measures if and when these conditions occur.***

The EA, on page 140, recognizes that, as water evaporates from the reservoir upon completion of the 18-month exploration phase of the project, the water quality would degrade and that salt and other major constituents may increase, but it would be similar to conditions found in local stock ponds, which typically fill and dry annually. Even with this information, the BLM is unable to propose mitigation for the reservoir as it is located on private lands over which it has no authority. The authority administering the discharge of CBM water is the WDEQ/WQD. It has permitted this pond under the conditions described in Appendix C of the EA. In conducting the analysis, the BLM has to review the conditions under which the permit is granted to determine if federal activities would contribute to a significant impact on all lands in the project area. If it were determined that a significant impact from federal component of this project was present, the project on federal lands would not go forward until an EIS was completed. Because the state agency authorizing includes a anti-degradation standard in this permit and effluent limits are in place for the protection of aquatic life as well as for use for stock and wildlife watering, the BLM analysis would assume that the state authority will oversee and ensure that these standard are met and conclude no significant impacts will occur. If the waters in this reservoir degrade to below those standards described in the NPDES permit, then the permittee will be in noncompliance with the terms of the permit and civil or criminal penalties could be levied.

5. **Wyoming Game and Fish Department**

- a. ***The EA states that development of the nine wells on federal lands would begin in the fourth quarter of 2001 but the EA was not available until February 2002; the EA should clarify if the 2001 date was a typographical error or whether development actually began before this analysis was complete.***

This was a typographical error and the change has been identified in Appendix A of this Decision Record.

- b. ***It appears that well HD-26 has eliminated a greater sage-grouse lek in SW, section 12, T. 23 N., R. 81 W. It also appears that roads and wells have eliminated leks in NW, section 13, and SE, section 13, T. 23 N., R. 81 W. It should be disclosed whether the activities that caused these impacts were a result of this project or previous projects.***

No wells have been approved on federal lands in section 12, T. 23 N., R. 81 W. Impacts associated with this development are included in this analysis. It is unclear if the wells drilled in section 13 eliminated any greater sage-grouse leks. These are located on private lands which can be reached by the operator using existing legal access. These wells were approved under the authority of the Wyoming Oil and Gas Conservation Commission.

- c. ***The cumulative impact analysis for wildlife can be clarified through a more quantitative analysis. The analysis should include accumulated loss of habitat due to activities listed in Tables 4.4 and 4.5. The loss of wildlife habitat is most accurately calculated as that habitat disturbed to date. It cannot be assumed, as the EA does, that reclaimed lands have become useful wildlife habitat. As we state in our scoping comments, "Reclaimed roads, coal leases and well pads in the area consist of very little sagebrush, often too much rabbitbrush, a considerable component of non-native plant species and weedy species on some sites." To be accurate, the cumulative analysis should calculate the direct loss of crucial winter/yearlong and yearlong range for Medicine Bow pronghorn herd for acres "disturbed to date" from those activities identified in Tables 4.4 and 4.5.***

According to the Permit No. 377-T4, 2000-2001 Annual Report submitted for the Seminole II Mine, big game surveys were discontinued in 2000 with the approval of WDEQ and WGFD. Surveys for big game were determined to be of little value due to the mobility of these species and the fact that past monitoring efforts have failed to document major impacts from mining activities.

Mining activities began in the Hanna Basin in 1888. Surface mining activities began in 1937 in the Hanna 2 Pit, which until recently was still mined by Arch of Wyoming at the Seminole II Mine. Between 1937 and 1971, strip mining occurred in 20 open pits (Gary Glass, Wyoming Geological Survey 1972), and the majority of this area is in various stages of reclamation.

In general, surface mining in the Hanna Basin occurs in small, isolated pits throughout the permit areas that leave large areas of undisturbed habitat. None of the areas currently being mined in the Hanna Basin are permitted within any big game crucial winter ranges. All of the mines conduct yearly wildlife monitoring under methods described in the Wildlife Monitoring and Mitigation Plan for each individual mine. The area disturbed to date from coal mining can be reviewed on page 158, Table 4.5 of the EA. Most of the permit areas adjacent to the HDEPA consists of upland sagebrush-grass vegetation type (Seminole II Annual Report 2000-2001) and provide year-long range for pronghorn and mule deer. It is assumed that the majority of the disturbance to date shown on Table 4.5 is within this vegetation type. In addition, recorded samples on reclaimed areas in 2000 indicated a diversity of plant species in reclaimed areas that often exhibited higher production values than the upland sagebrush-grass control area (Seminole II Annual Report 2000-2001).

- d. ***We suggest for a project-level EA analysis using the "disturbed to date" loss of greater sage-grouse habitat for the project area, calculating cumulative "disturbed to date" losses of greater sage-grouse habitat within the area defined by projects listed in Tables 4.4 and 4.5.***

No disturbance from mining activity has occurred within two miles of the known greater sage-grouse leks located in section 13, T. 23 N., R 81 W.; and section 19, T. 23 N., R. 80 W., within the area permitted by Rosebud Coal Sales. The leks are also located several

miles from disturbance from the Shoshone No. 1 Mine loadout facility. No greater sage-grouse leks have been located within the Seminoe II permit area, although greater sage-grouse have been observed on western portions of the permit area. Surveys are conducted at both mines to determine if new strutting grounds become established. According to the 2000-2001 Annual Report for the Seminoe II mine of lands affected by mining activity, 2,550 acres of sagebrush-grass habitats have been disturbed. Of the approximately total 3,569 acres of land disturbed by mining, 2,782 acres have been reclaimed to mixed shrub-grass habitats. All disturbed areas at the Rosebud and Shoshone No. 1 Mines have been reclaimed.

- e. ***The cumulative analysis did not include analysis of vegetation condition and the compounding effects of habitat loss to wildlife populations. Instead, the EA included harvest quotas with climatological conditions as factors affecting pronghorn and mule deer populations. In fact harvest has accounted for less than 5% of the females and 70% of the annual Medicine Bow pronghorn population since 1995. Harvest has accounted for 0% of the females and less than 7% of the annual Shirley Mountain mule deer population since 1994. We suggest a cumulative vegetation condition analysis to address the continued loss of quantity, quality, and age class diversity along with continued fragmentation of shrub and grassland habitats that may negatively affect wildlife in the project area.***

All of the mines complete sampling on the reclaimed areas, which is reported in their Annual Report submission to WDEQ. This is public information available through the WDEQ/LQD and would be an excellent source for the information you are seeking. The survey is done by transect, which amounts to a voluminous amount of information that will not be reported here. In summary, the 1998 Rosebud Annual Report stated that the results of the 1998 re-vegetation monitoring at Rosebud Coal indicated that the species planted in the seed mixtures are established and that shrubs were increasing in the stands and will continue to increase with time, especially big sagebrush and black greasewood. Mining continues at Seminoe II, and of the 3,569 acres disturbed as of the date of the report, 2,782 acres have been reclaimed to mostly mixed upland shrubland and grassland. Of those areas reclaimed, the study states that they met all the final vegetation bond release criteria for 2000. Those completing the survey felt that the goal of one shrub per square meter in mosaics over 10% of the area may have been met.

The Annual Reports prepared for these mines have all concluded that seasonal distribution data, when compared to weather data, indicates that pronghorn may frequent the area during mild winters and leave the site when snow accumulates. Conversely it is concluded that mule deer may frequent the area during winters with significant snow accumulations but may not use the area as much in mild winters.

Within the last 10 years, surveys reported in the Annual Reports required by the WDEQ have indicated that a stable population of animals continues to utilize habitat disturbed and undisturbed by mining activities. Animals will likely continue to utilize this area as mining at Seminoe II ceases by 2003 and reclamation activities continue. Also see response to 3b and c.

6. **State Engineer's Office**

- a. ***While the project proponent acknowledged the necessity for obtaining permits to appropriate ground water from the State Engineer's Office, they did not mention that***

permits for storage reservoirs to hold produced water from CBM wells will also be required from our office. Any other beneficial use of the produced CBM water for various other project purposes (i.e., hydrostatic testing of pipelines, dust abatement, well drilling, etc.) may also require permits from our office.

The information will be added to Table 1.1 as described in Appendix A of this Decision Record.

7. Wyoming Outdoor Council

- a. ***RMP-Nonconformity. The Great Divide RMP does not mention coalbed methane as a possible land use. The gas production analyzed and approved in the RMP is deep methane gas, not coalbed methane. Production of CBM gas involves issues and creates impacts that are substantially different from those disclosed in the RMP. Therefore the CBM development within the entire Rawlins resource area is not “in conformance with” the underlying RMP in question - it is obviously not specifically mentioned in this dated RMP.***

The RMP decision that the entire planning area is open to oil and gas leasing 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. The RMP does not specifically mention coalbed methane; however, this does not mean the activity is not allowed. “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. It is a well-settled scientific principal that CBM gas exists in coal in three basic states: as free gas, as gas dissolved in the water in coal, and as gas absorbed on the solid surface of the coal [see *Amoco Production Co. v. Southern Ute Indian Tribe*, 199 S. Ct. 1719, 1724 (1999)]. In fact, these are the same three states or conditions in which natural gas is stored in other geological formations, including sandstones and shales. See *Amoco*.

The general analysis presented in the RMP was based on the amount of disturbance associated with oil and gas development. The amount of long-term disturbance associated with the implementation of this project (39.7 acres) is within the Reasonably Foreseeable Development Scenario described in the RMP.

- b. ***Metfuels EIS. The Metfuels EIS is a good start for any current analysis; however, since so much has been learned concerning CBM development in the years since this study, a new EIS is required.***

There are differences between the Metfuels proposal and the one proposed in the HDEPA. The major difference is that Metfuels proposed full-field development of 132 wells, while the HDEPA is an exploration project of 25 wells. No significant impacts are anticipated as a result of the HDEPA project as long as federal, state, and local laws and regulations, and the mitigation found in Chapters 2 and 4 of the EA, are implemented, and an EIS is not required.

- 1) ***Power lines. The 1993 Metfuels EIS stated that power lines in areas with high visual impacts would be buried. Visual impacts are one concern, power lines***

should also be avoided or buried in known greater sage-grouse lekking, brooding, or nesting areas.

No electric power will be utilized for this exploration project. Power needs will be provided, as described on page 13 of the EA, by gas-driven engines, propane generators, or gas-powered generators fueled by produced gas.

- 2) ***Hydraulic Fracturing. The current EA does not include a detailed study of the types of fluids to be used and in which coal seams they will be used. The EA does not described the potential for cross contamination of aquifers of all underground fractures and fissures between aquifers, or a full analysis and monitoring program established for ensuring that all known or potential drinking water supplies are protected.***

Hydraulic fracturing is the process in which sand within a viscous fluid is injected into a reservoir in order to improve the reservoir productivity. The viscosity is required to carry the sand and to limit leak off into the formation permeability. Enzymes reduce the viscosity in the formation to that of water and the fluid is easily produced back. The primary fluid used for the hydraulic process is water and, in the case of a single-phase or water saturated system like coal, essentially all of the fracturing water is produced back during the initial dewatering phase. Therefore, there is a very low probability of any impact due to hydraulic fracturing. This conclusion is further verified by the Ground Water Protection Council's survey of 10,000 coalbed methane wells and the State of Alabama and the EPA analysis of the well in the LEAF vs EPA lawsuit that showed no contamination (Testimony of the Independent Petroleum Association of America and the National Stripper Well Association before the Environmental Protection Agency regarding Underground Injection Control, August 25, 2000).

It is highly unlikely that cross aquifer communication and contamination will occur. The contamination question was answered above as the only probability of contamination is due to hydraulic fracturing and this has been shown to be very remote. The thick shales between the coals and the cement that is used to isolate the wellbore from the formations will eliminate communication between these aquifers.

Casing and cement have a long history of ability to isolate formations in the petroleum industry. This history includes isolation of very high-pressure gas from low or hydrostatic pressure gas in the Madden Deep Unit, Wyoming. A history of isolation of very dangerous poisonous H₂S gas from sweet gas in the Worland Field, Wyoming, and isolation of high-pressure water and CO₂ gas injection in the Lost Soldier Field, Wyoming, can be documented. This is a very short list of thousands of zonal isolation cases in Wyoming.

Wellbore control by the use of drilling muds will effectively isolate aquifers during the drilling process and this control will be effective until the casing is cemented in place. Communication outside the wellbore and within the formation is not within the scope of this assessment.

As stated on page 133 of the EA, "groundwater monitoring wells, well logging, and pump testing may be required by BLM to monitor project impacts on ground water.

A monitoring plan will be developed and implemented by Williams, subject to BLM approval." A monitor well(s) would preclude any second-guessing as to aquifer communication and will be required as part of this project.

- 3) ***Flaring. In order to demonstrate the economic productivity of a field, or to demonstrate enough commercial gas exists to induce capital for pipeline infrastructure, CBM companies flare or vent millions of cubic feet of gas into the atmosphere. BLM has failed in the current analysis to assess this practice under the "undue and unnecessary" degradation of public lands prohibition in FLPMA.***

The drilling conditions of approval (COAs) always stipulate, "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." This requirement is taken from Notice to Lessees and Operators of Onshore Federal and Indian Oil and Gas Leases - NTL-4A. In addition, noncommercial volumes of gas temporarily vented or flared must also be accomplished in accordance of WOGCC regulations.

Venting or flaring is recognized as a necessary part of the completion and initial production operations of a CBM well in order to evaluate the economics of the well and to allow equipment sizing. CBM wells are different than conventional gas wells by displaying a history of inclining production and normally very little gas is initially produced. Also, it has been found that coal seams can be damaged by disruptions in the dewatering process, so some venting may occur due to emergencies or equipment malfunctions when the gas can't be produced into the pipeline. Once the permitted venting limit is reached, wells would either be out into production or shut-in for later production (page 23 of the EA).

- 4) ***Water Quality. The Metfuels EIS demonstrates some very serious water quality issues. For example, the Sodium Absorption Ratio (SAR) in Hanna Coal Number 80 averaged 70 with a electrical conductance (EC) at 3,953 uohm/cm. The WDEQ has recently established effluent limits for the Belle Fourche River at 10 for SAR and 2,000 for EC. In addition, attached to our earlier submitted scoping comments was a Casper Star Tribune article demonstrating the problems with CBM permits that will discharge into or near the Little Snake River.***

The WDEQ/WQD has issued a permit to discharge water for this project based on effluent limits protective of Class 3 standards (see Appendix C of the EA). The Sodium Absorption Ratio is particularly relevant to agricultural land. Page 129 of the EA states, "Since produced water will be discharged into the reservoir rather than into existing drainages and because no irrigation is occurring in the project area vicinity, the project would not affect sodium adsorption [sic] ratios in project area soils." Where irrigation activity is not occurring, such as WDEQ/WQD has found in other projects (e.g., the Seminole Road CBM Pilot Project), that the lack

of irrigation limits the significance of elevated values. The NPDES permit approved for this project does not require monitoring for the SAR value.

- 5) ***Water Management. The Metfuels EIS analyzed water disposal and monitoring of produced water. Essentially, the EIS proposed numerous reservoirs that would infiltrate into the shallow subsurface aquifers at each well site. The present project proposes one single containment reservoir. These types of reservoirs are specifically designed to infiltrate into shallow aquifers, and the EA must analyze downstream impacts to ephemeral draws and perennial rivers, including the Medicine Bow River, Hanna Draw, Barrel Springs, and Dixie Draw.***

Williams has received an National Pollutant Discharge Elimination Permit (NPDES) under the permitting option 1B defined in WDEQ's Coal Bed Methane NPDES Guidance document dated August 2001. As WDEQ has described in the Statement of Basis which can be reviewed in Appendix C of the EA, under this option produced water will be contained in a closed basin, playa, or reservoir that will not flow into any other water of the state. This document goes on to state that the "permittee has demonstrated through a water balance study that, considering CBM well inflow, natural precipitation, evaporation, and infiltration, the reservoir will be adequate to contain all CBM discharge water and storm water up to a 25-year, 24-hour event. The permittee has committed to the complete containment of all discharge waters while the permit establishes effluent limits which are protective of Class 3 standards. The rate of infiltration, as described in Appendix B of the EA, assumes infiltration from the pond to be negligible.

- c. ***Re-injection and Development of Reasonable Alternatives. The present EA, because it tosses out the no action alternative, only looks at one alternative. Why nine federal wells, could the non-federal wells in the same area have provided the necessary data? Could any less than nine federal wells be looked at or considered? That is a serious NEPA short-coming. A hard look at a full range of reasonable alternatives should consider a lesser number of wells; different water- handling/treatment options, such as re-injection; an alternative with emphasis on soil, water, wildlife, natural resource protection, etc.***

Page 4 of the EA describes the primary objectives for this exploration project. One of the purposes of this project is to determine if economic resources exist, and the number of wells could be crucial in reducing coal seam pressures enough to produce methane gas. The proponent has determined that 25 wells would best serve this purpose. In the case of an exploratory EA, it is much better to look at a higher target than to go back to the process and ask for a greater number of wells. Even to reduce the number of wells on federal lands would not greatly lessen impacts to the environment because in a nine-well project, the analysis of one or two less wells would essentially have the same impacts as the Proposed Action and, therefore, would not be a meaningful alternative.

As for the re-injection alternative, if the field proves economic, re-injection could be looked at as a reasonable alternative. For the exploration project, the re-injection of water from federal wells would not likely serve as a benefit to the environment as the reservoir has already been constructed on private lands and is currently, and will likely continue to be, used for this project on private lands.

In the context of this exploration project, the alternatives you proposed were found not to be reasonable alternatives.

- d. **Aquifer Recharge. The EA is lacking detailed information about aquifer recharge, not only on the targeted coal seam, but also regarding aquifers above Coal No. 2, that may be affected due to aquifer communication.**

This is discussed on page 154 of the EA. It states, "Dewatered coal seams would slowly recharge; however, the rate of recharge is currently unknown." As this is an exploration project, implementation of monitoring programs in the project area will help characterize potential impacts of full-field development if the area proves economically viable for CBM. Because monitoring wells are present in the adjacent coal mining areas, any changes, or lack of change, noted in these wells may allow some assumptions regarding water recharge. Because of the depth of the targeted seams and, because they are essentially isolated from seams exposed at the surface, it is anticipated that recharge may take many years and the impact to surface aquifers from the pumping of 25 wells for 18 months will be minimal.

- e. **Water Quality. The EA overlooks or understudied several key impacts associated with the high values of EC and SAR from produced CBM water. These include salt build-up, the ability to grow crops or native grasses, and salt-accumulation. The BLM must address impact to soils in the proposed retention reservoirs with a decade or more of continuous salty water dumped into them and what will happen to them after the CBM play is over. This includes the impacts to wildlife and bird species that may be negatively impacted by reservoirs that will increase in salt concentrations over time. Along with this the BLM should require Williams to provide baseline data on existing site conditions in Class 4 drainages prior to any discharges into reservoirs. Natural spring run-off has typically been used to irrigate and provide water for natural vegetation and any Section 20 or 8 analyses which must be conducted by BLM pursuant to the Clean Water Act federal facilities clause which requires information on the quality of the water that would be there but for the CBM discharges. With CBM discharges creating perennial waterways out of ephemeral drainages, impacts must be assessed and evaluated concerning the loss of this high quality water. Also, the BLM cannot authorize any action that would violate state water quality standards. The three areas of water and soil testing are mandatory for a sufficient and complete analysis.**

As stated before, this pond is located on private lands and, even if requested, there is no requirement for the proponent or private landowner to provide information to the BLM regarding resource values associated with this pond. The EA discusses the potential impacts from the pond on pages 139-140. The WDEQ/WQD has the authority over CBM water discharge and has set the effluent and monitoring levels required to meet state water quality standards. No CBM water will be discharged in any type of drainage per the requirements of Williams' approved NPDES permit, Appendix C of the EA. Also see response to 7b, item 4, above. It should also be noted that this is a temporary discharge pit and that the NPDES permit, as currently authorized, will expire at midnight, November 27, 2006.

- f. ***If the BLM allows the wells to proceed, it may very well violate the Colorado Basin Salinity Forum.***

This project is located in the North Platte River drainage not the Colorado River Basin, and the requirements of this pact do not apply.

- g. In addition to salinity and SAR values in discharged water, a complete NEPA document must thoroughly analyze the effects of these high discharges of water on soils, including the dispersal (high sodicity impact) and erosion. In particular, WOC is concerned about the discharge of water in playas and closed basins, in areas with soils having low reclamation potential and areas with poorly drained soils, in order to prevent the accumulation of salts and other minerals. This will lessen the likelihood for invasion of weed and salt-tolerant species and erosion of bare soils.**

The water will be piped to and contained in the reservoir located on private lands in the manner described in the approved NPDES permit, Appendix C of the EA.

- h. BLM Instruction Memorandum 99-178 recognizes that weeds frequently thrive when the land is disturbed. All NEPA documents must include an analysis of the potential for weed spread and establishment as an environmental consequence of the proposed action. Measures and stipulations to minimize the spread of weeds must be provided.**

Page 137 of the EA indicates that habitat suitable for non-native invasive species and other undesirable plants would be created as a result of the removal of existing vegetation, and that these species may become established. However, it also states that “Williams would take measures to control undesirable plant invasions (Section 2.1.13.5), pursuant to BLM and Carbon County Weed and Pest Supervisor guidance.” By implementing the mitigation practices described under Section 2.1.13.5, page 42 of the EA, impacts from the possible introduction and spread of non-native invasive species is anticipated to be minimal.

- i. Air quality as it affects wildlife, vegetation, human health, and visibility impairment in sensitive Class I and II areas, is not sufficiently addressed.**

As stated in the mitigation under the Air Quality section, page 46, Williams would adhere to all applicable WAAQS, NAAQS, and permit requirements, and take measures to abate fugitive dust. The EA on page 125 recognizes that there would be some temporary deterioration to air quality in the immediate vicinity of project activities due to particulate matter and exhaust from equipment and vehicles, but that these would be localized, temporary, and quickly dispersed by the wind. Impacts would also be minimized by the project-wide mitigation included in Chapter 2 of the EA. Also, see the responses to 1a, 1b, 1d, 1e, 1f, and 1g above.

- j. The present EA is lacking baseline data for important wildlife issues (i.e., threatened and endangered species, sensitive species, game and non-game) and specifics on how produced water, roads, noise, and surface disturbance will affect these species.**

You do not specify why you believe the description of wildlife resource and the impact analysis is inadequate. The description of the Affected Environment given in Chapter 3 and the analysis of impacts described as a result of the implementation of this project is adequate for this level of development. In addition, in order to protect wildlife and other resources, site-specific investigations will be conducted prior to allowing development on federal lands, wells will be sited, and COAs may be placed on APDs to protect wildlife that may occur on the project site.

Impacts to wildlife species from the proposed project are found in 4.2.4, Wildlife and Fisheries, of the EA.

- k. Application for Permit to Drill (APDs). Historically, the BLM, particularly in the area of CBM drilling, often defers the bulk of the required environmental analyses to the APD level. This is unacceptable and in direct contravention of both the spirit and letter of NEPA mandates, in that NEPA requires all of the potential environmental impacts to be studied prior to, and not after, the full commitment of resources made by granting approval to a multi-well project.***

The BLM's use of a tiered approach to environmental analysis in this project is outlined on page 6 of the HDEPA. The BLM NEPA Handbook (H-1790-1, Chapter I, page I-2) states, when an action is proposed, any relevant EA or EIS should be reviewed to determine if the proposed action is already fully covered. If an existing environmental document fully covers all the elements of the proposed action, then no further NEPA analysis is necessary. If an existing NEPA document does not fully cover the proposed action, then a new environmental assessment document must be prepared. In this case, APDs submitted by the operator would be designed to implement the activities assessed and decided in the HDEPA but would also propose specific actions and locations that are not known precisely at this time. While the operator and BLM know in general where to place the various actions proposed, such as well sites and roads, the exact locations will depend on guidance from the HDEPA, and opportunities and conditions in the field that allow for minimization of environmental impacts, mitigations, and costs. Locating a ground-disturbing activity just a few feet one way or the other can often greatly reduce, or increase, the impacts of the action. For any detailed site-specific proposals not fully covered by HDEPA, an environmental assessment must be performed, and a decision made. This is consistent with the BLM NEPA handbook, the Code of Federal Regulations (43CFR 3162.5-1, Environmental Obligations), and NEPA.

- l. Cumulative Impacts. Any project in the Rawlins resource area must consider the impacts to reasonably foreseeable development in the area, including state and private wells. Other traditional oil and gas development must also be considered, in terms of the effects of roads, power lines, compressor stations, pipelines, and other surface disturbances. The EA did not include cumulative impacts of development of the Seminoe Road CBM project; the Atlantic Rim 3,880 wells project; the three exploratory projects including the Sun Dog, Blue Sky, Cow Creek; and the six other anticipated exploratory CBM projects.***

The cumulative impact assessment area (CIAA) included development east of Seminoe Reservoir, north of I-80, and south of the Medicine Bow River. The largest development is associated with the mining activities in Hanna Basin. However, CIAAs vary depending on the resource affected. For example, because the Medicine Bow herd unit area ends east of Seminoe Reservoir, the Seminoe Road CBM Pilot Project would not be considered in the CIAA area in analyzing the impacts to pronghorn antelope. Conversely, the Laramie Air Basin would be impacted by the Seminoe Road, Sun Dog, Blue Sky, and Cow Creek, and the other interim drilling projects and all of the exploration projects and were considered in the cumulative air quality analysis.

- l. There is a discrepancy concerning the pipeline disturbance. On page one the EA says 12,471 acres will be disturbed, but on page 14, on Table 2.1, another figure is stated. Which is accurate?***

The information provided on page 14 of the EA describes the acres of disturbance expected to be associated with the development of the Proposed Action and No Action Alternatives.

- m. Why is there no alternative to drilling with a reserve pit. A new closed-loop system developed by Nabors Drilling U.S.A, Environmental Equipment Corporation and Prima Energy Corporation can completely eliminate the drilling water, reserve pits, and water consumption, as well as reducing vehicle trips.**

Closed loops systems have been utilized in some very sensitive environmental areas, such as creeks or washes; however, the tanks used to capture the drilling fluids are generally larger than the actual drilling rigs and require more initial surface disturbance than a reserve pit. With proper construction and reclamation of the reserve pit, as described in Chapter 2 of the EA, minimal impacts are anticipated to occur from the construction of these reserve pits.

- n. What are the potential impacts if the reservoir should leak/seep/or bleed into Dixie Draw, Missouri or Johns Draw, or other downstream watersheds. The EA on page 88 states that underground waterflow is to the northwest, if this holds true for surface flows, the same types of impacts must be assessed to drainages such as Barrel Springs, Hanna Draw, and the Medicine Bow River.**

The NPDES permit for this reservoir states that under this permitting option, the produced water will be contained in a closed basin, playa, or reservoir **that will not flow into any other waters of the state and the “permit prohibits any discharge of water from the reservoir”** (emphasis added). This includes all CBM discharge water and storm water up to a 25-year, 24-hour event. If discharges occur outside of this reservoir, Williams would be in violation of its approved permit.

- o. The document states that Coal No. 2 is the seam targeted for production. What will the impacts be to the coals and aquifers in seams 78 and 80?**

Page 88 of the EA states that the Hanna No. 2 coal lies between strata with lower hydraulic conductivities, so that vertical water movement between the Hanna No. 2 coal and overlying aquifers would be minimal.

- p. Where are the impacts associated with hydraulic fracturing fluids analyzed? Is there a possibility of cross-aquifer communication and contamination?**

There is a very low probability of any impact due to hydraulic fracturing and cross-aquifer communication. See response to 7b2 above.

- q. We support that the drilling water is to be obtained from existing CBM water production; however, there is no analysis of water quality or impacts on the receiving reservoir. The water should be treated first.**

Produced water quality information can be found on pages 91-93 of the EA. Potential impacts to the reservoir from this water is discussed on pages 139-140 of the EA. There is no need to treat this water as long as the requirements of the approved NPDES permit (Appendix C of the EA) are met.

- r. The BLM assumes that casing and cementing always prevent cross-aquifer communication. What studies back this up? Where is it analyzed that prior to casing and cementing, aquifers can and will communicate?**

As stated in response 7b2 above, casing and cementing have a long history of ability to isolate formations. This history includes isolation of very high-pressure gas from low or hydrostatic pressure gas in the Madden Deep Unit, Wyoming. A history of isolation of very dangerous poisonous H₂S gas from sweet gas in the Worland Field, Wyoming, and isolation of high-pressure water and CO₂ gas injection in the Lost Soldier Field, Wyoming, can be documented. This is a very short list of thousands of zonal isolation cases in Wyoming.

- s. There should be monitoring wells in adjacent (and above) aquifers to assess cross-aquifer contamination/communication as well as depletion and recharge rates.**

Page 133 of the EA states that ground water monitoring as a mitigation measure, including the installation of monitoring wells, well logging, and pump testing, that may be required by the BLM. The text indicates that the monitoring plan may be developed by Williams, but this is not entirely correct. The plan will be developed with input and approval of the BLM Rawlins Field Office and the Reservoir Management Group.

- t. Five hundred and sixty days of massive dewatering without any gas production is undue and unnecessary degradation of our public lands and is in violation of the Federal Land Policy Management Act (FLPMA).**

The purpose of this exploration project is to determine whether methane resources can be economically developed within the time frame proposed in the project. It is incorrect to assume that no gas will be produced during this time. In addition, the development of energy resources is encouraged by many federal laws and policies including FLPMA. The water will not be wasted as it will be of benefit to livestock and wildlife during the short duration of this project.

- u. Water and water-based projects are not an accurate description of fracturing fluids. Some other fracturing fluids include guar gel, nitrogen or carbon dioxide gases, gelled oil, diesel oil, sodium hydroxide, hydrochloric, sulfuric and fumeric acid, as well as other additives. What is the basis for the conclusion that all fracturing fluids are retrieved from the target coal seams?**

See response to 7b2 above.

- v. Who has the responsibility for daily monitoring as described on page 27?**

The description refers to inspection of operations that are completed by the operator. The BLM also has procedures in-place to ensure compliance with applicable laws, regulations, lease terms, Onshore Oil and Gas Orders, Notice to Lessees (NTLs), and other written orders of the authorized officer.

- w. ***If the project is successful, then there will be new pipelines and infrastructure “downstream” effects in terms of compression, pipelines, new wells, etc. These should be analyzed in cumulative effects.***

The exploratory project as described in the Proposed Action was developed to indicate how and if methane can be economically extracted from the HDEPA. No speculation will be made as to what future development, if any, might occur. No additional drilling or development would be allowed on federal lands within the Hanna Draw Unit without further NEPA documentation.

- x. ***Why is there no analysis of directional drilling methods which would avoid impacts to sensitive landscapes?***

There are two main reasons for not considering direction drilling for exploratory CBM development. First, directional drilling techniques are different for every project so there is a significant research and development component to planning, which is expensive. Because this project is just exploratory in nature, it is not economical to invest in the research and development to explore the feasibility of directional drilling. Second, because the wells will be shallow, direction drilling winds up with severe geometry. With severe geometry you cannot pump the volumes of water because the rod-type pumps would rub against the casing and wear badly. The pumps were not designed to operate at those kinds of angles. On the progressive cavity pumps, the rod spins and, unless they are hanging under gravity, the casings rub and the rods wear out. The technology to use directional drilling for shallow wells with lots of water is not economically or logistically feasible.

- y. ***Where is the production data to show drop-off from 550 barrels per day to 350 barrels per day?***

Page B-3 of the Water Management Plan, Appendix B of the EA, states the 550 barrel per day water discharge rate is an assumption based on the data from seven wells and assumes that water production will decline at a linear rate over the next 18 months to 350 barrels per day.

- z. ***The reservoir which will hold produced water is unlined. What are the impacts to alluvial aquifer and drinking water supplies? Other questions include the seepage/infiltration rates and impacts? What is the evaporation rate based upon? How will water quality change as contaminants increase in concentration due to evaporation and minerals/salts are carried away with seeping water?***

Approval of the NPDES permit was based on WDEQ/WQD analysis of the water balance study provided by Williams, which considered CBM well inflow, natural precipitation, evaporation, and infiltration. The analysis indicates the reservoir will be adequate to contain all CBM discharge water and/or storm water up to a 25-year, 24-hour event.

The BLM is requiring that the proponent monitor for signs of seepage or springs on public lands using methods described in Appendix E, Monitoring Requirements.

Discussion on page 132 of the EA describes the likely sequence that would occur as evaporation takes place in the reservoir. The analysis indicates that water quality would degrade, but each year about 30% of the water that evaporates would be replenished with fresh precipitation. It is recognized that salt and other major constituent concentrations

would increase in a similar manner to local stock ponds which typically fill and dry annually. Again, water quality monitoring would be conducted in accordance with the NPDES permit.

- aa. *The maximum produced water quantity is 13,750 barrels per day and the maximum capacity of the reservoir is 500-acre-feet. At the maximum rate, the reservoir will fill up in one year (assuming a 5% evaporation loss). How much infiltration will occur? Have the impacts of the reservoir flooding been analyzed? Have the impacts for more than one reservoir to handle all of this water been analyzed?***

The reservoir will be used for temporary storage of produced CBM waters and is not anticipated to be utilized longer than 18 months (page B-3 of the EA). It is assumed that the 25 wells will be phased in over the first 12 months of the exploration program and that the water production in each well will decline linearly. The water balance was required prior to the approval of the NPDES permit. Again, per the NPDES permit, all water must be contained within the approved reservoir, including those flows associated with a 25-year, 24-hour storm event. Williams also has obtained a temporary storage permit for this pond from the State of Wyoming, Office of the State Engineer, which requires the pond to not be filled above 6,915-foot elevation. Per the discussion on page 132 of the EA, "If at any time it appears that the reservoir capacity would be exceeded, Williams would either shut in wells or reduce the rate of water discharge in one or more wells." If all of the assumptions made by Williams and the terms of the NPDES permit and SEO permit are followed, this reservoir will be capable of containing all CBM discharge water associated with the exploration project, or the project will be adjusted so that the capacity of the reservoir is not exceeded. Also see response to 7a5 above.

- bb. *Will this project drawdown the town of Hanna's water supply?***

According to the Seminole No. 2 Mine Permit Renewal Application, 377-T4, the Hanna/Elk Mountain water supply is derived from surface runoff in the Elk Mountain area and is piped to Hanna and held in Rattlesnake Reservoir. This being the case, water discharged from coal seams isolated by a fault, 3,500 to 6,000 feet in depth over seven miles away, is not expected to impact the town's water supply.

- cc. *Before initial reclamation can take place what are the impacts to soil loss and weeds?***

As described on page 137 of the EA, it is recognized that habitat suitable for non-native invasive species and other undesirable plant species would be created as a result of removal of existing vegetation. Mitigation in Section 2.1.13.5 states that the operator will take measures to control undesirable plant invasions pursuant to BLM and Carbon County Weed and Pest Supervisor guidance. Mitigation described on page 131 states that the BLM may deny activities in areas with high erosion potential and that disturbance in this type of area would require site-specific mitigations. Detailed plans may be required for developments proposed on slopes and/or areas where soil or site stability/erodibility factors are deemed to be limited by the BLM. The mitigation would reduce the amount of soil lost due to accelerated erosion from disturbance in areas with high erosion potential.

- dd. *National Historic Preservation Act surveys, road erosion analysis, and wildlife inventories should be done now, not deferred to the APD level. What is proposed to mitigate impacts to 60 prehistoric or historic NHPA sites? Same with prehistoric sites listed on page 117.***

Application of methods and mitigation described in Chapters 2 and 4 of the EA will minimize impacts to historic locations. Because it is not clear the exact locations of the CBM wells, it would be inappropriate to require site-specific mitigation at this time.

ee. *Are there well mitigation agreements for possibly-affected land owners?*

The zones from which water production is being produced lie 3,500 to 5,000 feet below the surface. It is unlikely that any water well would be completed to this depth, especially with the availability of water zones with better water quality located closer to the surface. Page 88 of the EA states that the Hanna No. 2 coal lies between strata with lower hydraulic conductivities which minimize vertical water movement between this coal and overlying aquifers. The deepest well located within the HDEPA is 706 feet. It is unlikely that even this well would be affected by water production 2,800 feet below. Although there is likely no impact to surrounding water well users, page 50 of the EA states that current water uses on and adjacent to the HDEPA would be protected. Also, page 131 of the EA states that there will be compensation for loss of ground water wells.

ff. *How long before native species will be replaced? What happens to biodiversity in the meantime? During the time for native species to come back, how are weed monocultures to be controlled? All new weeds won't be eradicated, how will new vegetation cover affected soils, insects, wildlife, ecological systems, etc.?*

As stated on page 37 of the EA, the short-term goal of reclamation is to stabilize disturbed areas as soon as possible after disturbance to protect sites and adjacent undisturbed areas from degradation and the long-term goal is to return the land to conditions approximating those that existed prior to disturbance. Reclamation will occur in two phases. Initially, wells pads and facility corridors would be partially reclaimed after well testing and production/ancillary facilities are installed. The initial reclamation would reduce the amount of disturbance to that necessary for production operations. The unused portion of the pad would be recontoured and seeded within one year (page 38 of the EA). Reseeding would also be performed on all portions of roads, gathering line ROWs, the pipeline ROW, and well pads that do not need to remain disturbed during production. Reclamation of 39.7 acres required for operational activities would not occur for 5 to 30 years, but the extent of these operations is dependant upon the success of the exploration project.

As stated on page 135 of the EA, "Disturbed areas would produce less forage for a few years until revegetation is successful, after which grasses and possibly forbs would become more abundant and possibly more productive than prior to disturbance."

Weeds would be controlled utilizing project-wide mitigation and environmental practices proposed at 2.1.13.5 and as described at 4.2.3.1, page 137 of the EA, "Williams would take measures to control undesirable plant invasions pursuant to BLM and Carbon County Weed and Pest Supervisor guidance." Exact methods that might be used to control weeds can not be predicted at this time as they would be species dependant.

Because of the small amount and dispersed nature of the disturbance associated with this project, and because sagebrush-steppe communities are common and widespread in this area, little impacts to soil, insects, wildlife, and ecological systems are anticipated from the implementation of this exploration project.

gg. Winter drilling exceptions should be just that; do not grant virtually every exception. Also, these exceptions apply only during drilling; what is in place to mitigate winter production impacts to species?

As stated in Appendix I of the RMP, seasonal restrictions in the standard oil and gas lease stipulations contain the statement, "This limitation does not apply to maintenance and operation of producing wells." This statement was included because the stipulations were developed specifically for application to oil and gas leases at the time of issuance, not for activities associated with producing wells. At lease issuance, the only action that can be generally contemplated is the possibility that exploratory drilling may occur somewhere on the lease area. Unfortunately, the provision has been interpreted by some people to mean that the seasonal restriction disappears at the operational stage. It goes on to state, "It must be understood that at both the oil and gas exploration stage and the operation or development stages, additional site-specific environmental analyses are conducted and any needed restrictions or mitigations identified become part of the operational or development plan. For example, wells may continue to produce, but related activity may be limited." Therefore, if supported by the environmental analysis and onsite investigations prior to development of wells, it is possible for seasonal restrictions to continue in effect and be applicable to maintenance of producing wells. These restrictions are generally described as conditions of approval (COAs) and take into consideration site-specific needs.

The RMP allows for consideration of exceptions to wildlife stipulations if they are consistent with and in conformance with the management direction and plans covering the area and all other requirements are met. Approval of an exception request would only be granted after determining site-specific conditions are such that the drilling activity would not create a conflict with protection of the wildlife species afforded such protection.

hh. What impacts do roads have on greater sage-grouse leks? Studies show grouse reluctance to nest or habituate areas within one mile of a road. Where are noise impacts to grouse analyzed?

It is recognized that roads and associated human disturbances can have an adverse impact, especially to lek and winter habitat areas, but, as stated on page 143 of the EA, greater sage-grouse leks would be protected by restricting construction within 2.0 miles of any lek during the breeding and nesting season. In addition, no surface occupancy is allowed on federal lands within 0.25 miles of an active lek. Under cumulative impacts described in 4.11.2.7, Wildlife and Fisheries, page 161 of the EA, it states that project development (e.g., wells, roads, the pipeline, and water and gas gathering lines) may make management of greater sage-grouse populations more difficult, but that protections in place for greater sage-grouse leks and nesting habitat are strictly enforced to ensure existing populations are maintained.

Page 143 also states, "If the pilot project is successful, the compressor would create long-term noise within the exploration area, which may adversely affect strutting greater sage-grouse." It goes on to state that the BLM may require compressor engines to be enclosed in a building and located at least 600 ft from leks. More analysis of noise and discussion of impacts to greater sage-grouse can be reviewed under 4.1.7, Noise and Odor, page 134 of the EA.

- ii. The BLM has a lot more authority than to “encourage” speed limits on public lands. The BLM should require mitigation and step up to the plate and accept its enforcement responsibilities.**

Although construction of new and upgrading of existing roads may be done with an anticipated vehicle speed, it would generally be the operators' responsibility to inform employees of expected safe speed limits on roads in the project area. Mitigation is included in Chapter 2 of the EA and Appendix C of this Decision Record which states, “speed limits will be set commensurate with road type, traffic volume, vehicle types, and site-specific condition, as necessary, to assure safe and efficient traffic flows. Signs will be placed along roads, as necessary, to identify speed limits, travel restrictions, and other standard traffic control information.”

This mitigation could be implemented as a part of a company safety program. It is not BLM's intent, or responsibility, to police company personnel to determine if they are using appropriate speed limits for road conditions. Only under special circumstances (e.g., a tight or dangerous curve) would the BLM require placement of speed limit signs.

- jj. The document states on page 62 that re-injection was not considered because of the unknown suitability is flat out unacceptable. A hard look requires the BLM to study “unknowns” and provide the public with answers. Further, the “high costs” of re-injection are not the concern of BLM. If re-injection is feasible and makes sense to preserve other values, it is industry's decision, and not BLM's, whether it wants to incur the cost of re-injection. On public lands, industry, as well as BLM, should understand that this is a much different ball game than development on private and state lands. If industry wants to play, BLM should apply, and industry must adhere to, a very different set of playing rules.**

Several alternatives were considered but not analyzed in detail. These alternatives are described on Page 62 of the EA. Re-injection was considered; however, the suitability of geologic conditions for re-injection are not known and would need to be evaluated. The costs associated with this type of evaluation are generally high, so it was not considered for the exploration project. If the exploration project is proven to be successful, geologic investigations could be initiated to determine the feasibility of this method for water disposal.

- kk. The BLM failed to look at alternative well numbers and well locations. This would allow the public to comment on different scenarios.**

As stated on page 62 of the EA, alternate number of wells and location were not considered because the Proposed Action has the best well configuration for determining the commercial feasibility from this exploration project. The Proposed Action looks at a nine-well federal proposal. Adjusting the well numbers up or down by a few wells basically duplicates the Proposed Action, may not give the desired information, and does not result in a major change in impacts (i.e., it will only increase or decrease disturbance by a few acres).

- ll. Windblown snow has a marked impact on vegetation, wildlife, hydrology, and human activities. How will surface disturbance and produced water impact snow accumulations, patterns, and windblown patterns, thus affecting the resources?**

Due to the small amount of disturbance associated with the project (162.7 acres), this disturbance is dispersed over a large area (18,151 acres), and well pads and facility corridors would be partially reclaimed to have only that necessary for operations (39.7 acres), it is unlikely that the implementation of this project would create much more than a localized impact on the placement of snow.

mm. Are outfall pipes directly discharging into the reservoir and if not, what is the impact on any CBM water on the natural hydrograph in each ephemeral stream?

As described on page 33 of the EA, produced water will be transported from well locations to the reservoir via buried pipelines.

nn. What are the impacts to the Medicine Bow River? The baseline SAR for the Medicine Bow is 1.73, while the discharge SAR values are 34.7. What are the impacts to other likely receiving waters? The one reservoir for this project will be bleeding a large amount of water per day into the alluvial aquifer which charges the Medicine Bow and other drainages. With the potential for the reservoir to overflow, to say the quaternary alluvial aquifer will not be affected and not discussed further is a glaring omission in this EA.

Because the NPDES permit (see Appendix C of the EA) is approved only for total containment of produced water from this project, no impacts are anticipated to the Medicine Bow River or other drainages in the project area.

oo. The BLM should provide more baseline data and monitoring well reports on the assertion that there is low hydraulic conductivity between aquifers.

Extensive characterization of the coals have been conducted in the Hanna Basin as a result of mining in the region. However, it is recognized that the rocks associated with the coals of the Hanna Basin are extremely variable. Investigations from well log data from the initial wells developed on private land indicate that the Hanna No. 2 coal is confined by impermeable clays, shales, siltstones, and cemented sandstones. Work done through this exploration project should confirm if these conditions do exist.

pp. Groundwater recharge is from high quality snow melt and rain, how will this compare to constant CBM water infiltrating into the water table? Springs are generally fed by near-ground water supplies, how will these be affected by drawdown, by flooding/saturating the alluvial aquifer, how will their water quality be affected, and will new springs/seepages occur?

To meet the requirements of its approved NPDES permit (Appendix C of the EA), Williams has committed to total containment of the produced water. As long as the requirements of this permit are adhered to, no impacts are anticipated to springs fed by near-ground water supplies.

Additional mitigation proposed in Chapter 4, page 133, states, "To protect public land, no discharge from the produced water reservoir will be allowed to cross public lands surface without BLM's prior approval." As a part of the mitigation required in Chapter 4 and Appendix D of this Decision Record, the operator will be required to monitor for and report any seeps and springs that occur in the area surrounding the reservoir. Should these observations indicate that water is leaving the reservoir, whether through discharge or

infiltration, with the potential to reach public lands, a mitigation and monitoring plan will be developed under the conditions described in Appendix E of this Decision Record.

- qq. Abandoned wells, particularly those reaching the 4,600 foot mark of the Hanna No. 2 coal seam are critical to evaluate in terms of aquifer communication. Have these wells been tested for faulting cement? Where and how many such wells should be part of the baseline?**

These abandoned wells are located on private land and are assigned to the local rancher. BLM has no authority to utilize these wells for baseline or monitoring wells.

- rr. The BLM ignores the impacts of groundwater reaching aquatic systems, soils, and vegetation through underground lateral movement in the alluvial aquifer. Where has BLM taken an ecological approach in this document?**

See responses to 7pp above.

- ss. How long does it take disturbed sagebrush to recover after disturbance? What are the impacts on greater sage-grouse and other wildlife and the ecosystem during the interim? Do interim species that thrive on disturbance gain a stronghold?**

Pages 135 and 138 of the EA discusses the time frame in which sagebrush recovery is expected. Shrubs may take 20 years or more to reach pre-disturbance abundance and productivity. The amount of initial disturbance is small (162.7 acres dispersed throughout the 18,151 acre project area), and within the project area there will be similar adjacent habitats that will be undisturbed. Because project development and operation would be performed in a manner to minimize the disturbance of potential and identified habitat for greater sage-grouse and by implementing mitigation described in Chapters 2 and 4 of the EA, impacts to greater sage-grouse will be minimized.

There are species (e.g., mountain plover) known to utilize areas that have been disturbed; however, it is anticipated that as native vegetation returns, those species would leave and find other suitable habitats and native species would return.

Also see response to comment 7ff above.

- tt. Why is the BLM once again punting to the APD stage and this time to the pipeline route. This project-wide look is the best time to plan cohesively for the exploratory project.**

See response to 7K above.

- uu. How will weeds affect browsing and the native biodiversity of plant communities? What studies are there that predict how long and what treatments are necessary for complete eradication?**

See response to 7ff above. Reclaiming and reseeding areas not required for operations as soon as possible after disturbance will minimize weed establishment. As described on page 43 of the EA, "On BLM lands, an approved Pesticide Use Proposal would be obtained before the applications of herbicides or other pesticides for the control of non-native invasive species." At this time, no prediction can be made as to the types of treatment that

would be required. This would have to be determined once non-native invasive species are detected, and treatment would be based on species type and the extent of their location.

- vv. *On page 97 of the EA it states that 15% of the crucial winter range for pronghorn is in the project area, but what is the impact to the species?***

Disturbance in the project area designated as pronghorn crucial winter range is limited to a maximum of seven wells and the proposed spur roads/facility corridor required to drill, access, and produce from these wells. Proposed disturbance associated with this project located in pronghorn crucial winter is estimated to be 14.9 acres for the LOP (page 138 of the EA). Some of these wells are designated as contingency locations, so it is unlikely that all seven wells will be drilled. Potential impacts to pronghorn antelope as a result of implementation of the Proposed Action are analyzed in the EA on pages 138 through 139.

- ww. *Why is baseline data given for only big game species? What are the population numbers for raptors, greater sage-grouse, prairie dog towns, etc.? What about an evaluation of likelihood of black-footed ferret reintroduction sites?***

Although exact population figures for each of these species is not given, locations for known raptor nests, prairie dog colonies, and greater sage-grouse habitats are identified and discussed in the EA. Site-specific surveys will be conducted once exact well and facility locations are identified. That information will be used to protect species from impacts that may occur from project components.

The project is located within the Shirley Basin/Medicine Bow Management Area (SB/MB) black-footed ferret reintroduction site. The black-footed ferret population in this area has been designated a “nonessential experimental population” per 50 CFR 17.84. All prairie dog towns within the SB/MB area, which include those in the HDEPA, are assumed to be part of the larger complex supporting the reintroduced black-footed ferret population.

- xx. *It appears as if a significant portion of the pipeline route will disturb greater sage-grouse leks. Where are the impacts of that analyzed?***

The exact route of the product pipeline, or if the pipeline will even be constructed, is unknown at this time. Potential impacts to greater sage-grouse are identified on page 143 and 161 of the EA. Should the pipeline be constructed, site-specific impacts to sage-grouse will be analyzed in the NEPA document prepared for the right-of-way grant.

- yy. *The extraction industry has acknowledged to be tied to prices. Where in this document are socioeconomic impacts evaluated in relation to the previous \$9.00/mcf versus the now less than \$2.00/mcf.***

Socio-economics were evaluated in this document at \$2.00/mcf (see page 148 of the EA). While the industry and the amount of development may be tied to current pricing, it is prudent to allow for exploration, such as that proposed in the HDEPA, so that resources, even if not currently economic to develop, are identified with the potential to meet future energy needs.

- zz. *This is a rural landscape with mostly open spaces and wild country. Just like in the Powder River Basin EIS, this EA should describe the current landscape and how that will change to industrial with the impending development.***

The landscape of Carbon County and that of the HDEPA are described on page 119 of the EA. Principal land uses within and adjacent to the HDEPA are described as oil and gas development, livestock grazing, wildlife habitat, coal mining, recreation, and transportation. Coal mining is the most prevalent activity, as mining has occurred in this area since the 1880s.

aaa. *Why did the BLM ignore the opportunity and the requirement to obtain baseline data on recreational use for this EA? How else can the BLM determine the impacts?*

As the EA describes on page 120, the checkerboard land pattern in the project area currently limits the amount of recreational opportunities within the HDEPA. Hunting opportunities may be reduced within the HDEPA for safety reasons; however, legal access to federal lands would not be restricted or eliminated (page 150 of the EA) as a result of the implementation of this project.

bbb. *As the EA discusses on page 125, a nine federal well project may have few air impacts, but what about cumulative impacts. Pages 157 and 158 talk about other projects in the area, but no discussion takes place about prevailing wind patterns and the possible combination of all projects on air quality, such as the Seminole Road and Atlantic Rim CBM projects.*

Cumulative impact analysis for air quality is discussed on page 157 of the EA. Also refer to responses 1b, 1e, and 1g above.

According to meteorological data gathered at the Seminole No. 2 Mine during 2001, the predominant wind direction in this area at all times of the year was from the west-southwest. The wind occurred from this direction an average of 28.4% from April to June 2001 to an average of 46% recorded between October and December 2001 (Seminole II Mine Annual Report 2001-2002).

ccc. *What are the impacts of soil loss, both temporary and long-term, on the topography, and how long will it take for natural vegetation to replace weeds?*

Discussion on page 126 of the EA recognizes that alteration of the existing landscape and potential for increased erosion may occur from the development of features associated with this project. Reclamation of disturbed lands to approximate original conditions upon completion and/or production activities will minimize these impacts. Impacts to soils would include soil exposure due to the removal of vegetation, mixing of soil horizons, loss of topsoil productivity, soil compaction, and increased susceptibility to wind and water erosion. Reclamation and revegetation procedures would be designed to reduce the susceptibility of disturbed areas to soil erosion in both the short-term and for the LOP.

The type and amount of weed invasion which might occur within the project area is unknown; therefore, the amount of time it will take natural vegetation to replace non-native invasive species cannot be accurately predicted. In general, the most effective tool to combat annual weed infestation is plant competition through the establishment of perennial native plants. In most cases, annuals will be out-competed within three years and no additional treatment will be needed. With application of the mitigation described in Chapters 2 and 4 of the EA, and adherence with federal, state, and county requirements for the prevention and treatment of weeds, impacts from non-native invasive species is expected to be minimal.

- ddd. Stating that subsidence will occur, but will be gradual, is hardly a sufficient look at impacts, what about the integrity of Coal No. 2 and all above layered geologic zones and strata.**

The discussion on subsidence is in regard to the now closed Shoshone No. 1 underground coal mine. Subsidence is recognized as an impact from underground mining and is permitted through, and monitoring is required by, the WDEQ, Land Quality Division. No impacts from subsidence are expected to occur from the drilling of CBM wells or any other project component, within the HDEPA.

- eee. The treatment of impacts to soils is typical of the flawed approach of assessing impacts in this document. True soils will be impacted by well pads, sun exposure, erosion, wind, etc., but that is merely describing the nature of impacts, not the actual degree of impacts. For example, how much soil will be lost? How long will it take to replace it? How will losing the top soil horizon affect lower soil horizons? How will produced water impact soil loss and recovery estimates? Will reclamation of the reservoir be possible or will it be a pit full of evaporates?**

Soil loss could be estimated, but it would be just a theoretical number, and overall would not reflect the actual amount of loss. It is more important to note the actions taken to minimize soil loss described in Chapters 2 and 4 of the EA. Because the produced water will be contained within the reservoir in Section 13, soil loss from CBM discharged water would not occur as long as the requirements of the approved NPDES permit are implemented. Reclamation of the reservoir is not under the authority of BLM, since it is located on private land, but as described on page 38 of the EA, if the landowner does not wish to use the reservoir after project completion, the dam would be removed, and the area reclaimed.

- fff. The BLM consistently talks about successful reclamation and applicant-committed practices, but the BLM does not talk about its inspection, monitoring, and enforcement obligations. How many times will BLM personnel inspect drilling operations? How about production operations and reclamation?**

During initial drilling operations, BLM inspectors will observe activities such as the cementing of surface casing, testing of blowout preventors, and will conduct a detailed drilling inspection confirms that the operation meets the requirements of the APD, Onshore Order No. 2. This inspection may cover, but is not limited to, inspecting the environmental aspects of the site development, rig pressure control, and checking to ensure drilling equipment is in proper working condition. Timing of production inspection varies and is generally prioritized based on amount of anticipated production (i.e., wells with higher production will be inspected more frequently), compliance history, safety issues, environmental concerns, etc. Those with higher priority will be inspected annually, others will be inspected at least once every three years.

The reclamation plan will be part of the surface use plan of operations and will be based on site-specific conditions. This requirement is described in item 10, Onshore Order No.1. Any reclamation requirements would be made part of the conditions of approval for this plan. As part of the reclamation discussion in the surface use plan, BLM will require the operator to established a time line when certain reclamation activities will be completed. Final abandonment will not be approved until the surface reclamation work required by the APD or Notice of Intent to Abandon has been completed and is acceptable to the BLM.

- hhh. No impacts are considered from lateral water movement out of the so-called containment reservoir. Either the water will infiltrate into the alluvial aquifer, evaporate, or will flood and spill over in approximately one-year.**

Again, the operator has committed to complete containment of all water produced from its CBM wells associated with this project per the requirements of its NPDES permit. The permit also contains the requirement that all precipitation runoff be contained in the reservoir. The water balance provided in Appendix B of the EA indicates that the reservoir is of sufficient size to hold water from the project for the 18-month exploration phase of the project. Page 132 of the EA states, "If at any time it appears that the reservoir capacity would be exceeded, Williams would either shut in wells or reduce the rate of water discharge in one or more wells." Also see response to 7z.

- iii. Ground water monitoring wells should be mandatory. This is the only way to assess what is going on underground.**

Monitoring will be required under the conditions described in Appendix E of this Decision Record. Also see response to 7s above.

- jjj. At this stage of the game the compressor is reasonably foreseeable and all of its related impacts must be analyzed in this EA.**

It is unclear whether economic quantities of gas will be produced from this project. If the pilot project proves successful, a methane compression facility may be constructed within the exploration area (see page 27 of the EA). Because exact compression needs are unknown at this time, general impacts associated with the compressor are discussed in the EA.

- kkk. Where are the impacts of increased human presence and vehicle trips as they affect soil, vegetation, weeds, wildlife, and air quality?**

Routine maintenance, as described on pages 26-27 of the EA, states that each well site would be monitored daily to ensure operations are proceeding safely and efficiently. Site visits would include checking gauges, valve fitting, and conducting routine, on-site equipment maintenance. This is considered to be casual use; it is anticipated that these maintenance operations would result in no more impact than use of the area by the general public. Chapter 4 of the EA discusses potential impacts that may result from the implementation of this project.

- lll. It is obvious that sagebrush and plant communities will be affected, but for how long, and what will the resulting plant community consist of? How will weed infestation and a change in vegetation types affect soils, wetlands, animals, big game, greater sage-grouse, raptors, ecological systems and the ecosystem?**

See responses to 7ff above.

- mmm. What does it say about a federal lessee if the BLM is requiring the operator to develop a policy to control poaching and harassment of wildlife by its employees?**

Because operators often contract workers from outside of the area, it is a good policy to educate their employees on state laws relating to hunting, poaching, and wildlife harassment and expected conduct when working on the project.

- nnn. Noise is a documented impact to greater sage-grouse. Why not make it mandatory now that if and when the compressor comes in, it be located sufficiently far away from known leks such that the noise level is at or below existing conditions?**

The requirement for compressor noise at greater sage-grouse leks is stated on page 135 of the EA. The BLM may require that noise levels be limited to no more than 10 dBA above background levels at greater sage-grouse leks. In addition, the BLM may require compressor engines to be enclosed in a building and located at least 600 ft away from sensitive receptors or sensitive resource areas. It would be difficult to get noise levels below ambient levels.

- ooo. Two key species here are the white-tailed prairie dog and the greater sage-grouse. It is not a hard NEPA look to say they will be adversely affected. The BLM should provide baseline data on numbers, developing a monitoring program, and assess impacts on animals relocating, impacts to colonies and grouse mortality and other related impacts. The legal duty of the BLM is to assess the degree of impacts rather than just stating the nature of the impacts.**

Although exact population figures for each of these species is not given, locations for known raptor nests, prairie dog colonies, and greater sage-grouse habitats are identified and discussed in Chapter 3 of the EA. Site-specific surveys will be conducted once exact well and facility locations are identified. That information will be used to protect species from impacts that may occur from project components.

The project is located within the Shirley Basin/Medicine Bow Management Area (SB/MB). The black-footed ferret population in this area has been designated a "nonessential experimental population" per 50 CFR 17.84. All prairie dog towns within the SB/MB area are assumed to be part of the larger complex supporting the reintroduced black-footed ferret population.

- ppp. The BLM should have inventoried all cultural resource properties, projected where pads and infrastructure would go, to avoid destroying these resources. If left to the APD stage, where parties have consistently seen project approved without inventories, there will be no chance to look at the project area as a whole and plan cohesively.**

Once the well site location has been identified, a site-specific cultural report is required to be submitted as part of the operator's APD. This report is next reviewed by the BLM archaeologist who, based on his/her review of the report, will make recommendations on the Special Request form and return it to the Natural Resource Specialist preparing the site-specific EA. That report becomes part of the EA and is a required component that must be completed prior to APD approval. If site-specific archaeological values are such that additional mitigation is required, these are included as Conditions of Approval (COAs) for the APD.

- qqq. The recently released Powder River Basin Draft EIS looks at costs to industry for each alternative to give the public and understanding of total revenues minus several**

taxes in relation to the costs of operation. The parties would like to see a similar analysis in the EIS for this project.

The purpose of the proposed project is to determine the commercial feasibility of producing CBM within the HDEPA. Since it is unknown if gas will be produced and, if it is, at what volumes, it is difficult to predict what the total revenue might be. If economic quantities of gas are found and the operator proposes full field development, this type of analysis would be included as part of the EA/EIS completed for the project.

rrr. What are the impacts to vegetation, soil microorganisms, wildlife, etc., due to soil loss being irretrievable?

With the implementation of project-wide mitigation and environmental protection measures found in Chapters 2 and 4 of the EA designed to protect soils, avoiding steep slopes and using best management practices for reclamation and revegetation should minimize impacts to microorganisms, wildlife, and vegetation.

sss. Aquifer drawdown and recharge rates are key impacts to be evaluated for CBM projects and the BLM knows this. It cannot simply duck its responsibility to assess these impacts, since there are already nine operating wells in the area and it is stated that the impacts are unknown.

As stated on page 133 of the EA, ground water monitoring may be required and will be conducted as described in Appendix E of this Decision Record.

ttt. The BLM has forgotten about the 3,880-well Atlantic Rim CBM project and associated exploratory projects, as well as the Seminole Road CBM project, all located in Carbon County. The projects must all be addressed in a proper cumulative impact analysis.

The 3,880-well Atlantic Rim Coalbed Methane proposal is not reasonably foreseeable at this time because not enough data exists to determine the feasibility of the project. However, where cumulative impacts overlap, such as with air quality since these projects are in the Laramie Air Basin, the exploratory CBM projects were included in the analysis. Cumulative impacts analysis areas are described on page 156 of the EA.

uuu. The reservoir appears to be in an ephemeral drainage. If so, this is a waterway of the U.S. and a Clean Water Act 404 permit is required? Has that permit been obtained? In addition, if this is a on-channel wastewater pit, where are the impacts to downstream users and uses evaluated? What affect would the reservoir have on a drainage normally receiving snow melt and rain and will natural flows impeded?

The reservoir has been constructed on the hydrologic divide separating Hanna Draw and Pine Draw. As stated on page 43 of the EA, "If wetlands or other special aquatic sites, riparian areas, streams, and WDEQ Section 401 ephemeral/intermittent stream channels are likely to be disturbed, COE Section 404 permits/authorizations would be obtained as necessary, and appropriate mitigation would be implemented." The NPDES (Appendix C) specifies that all intercepted runoff be contained within the reservoir and this could have a minor impact on the amount of water flowing into ephemeral drainages leading into the Medicine Bow River. However, climatic conditions would likely have a greater impact (i.e., amount of precipitation) on resultant flows.

- vvv. Infiltration rates are assumed to be negligible, but if any infiltration occurs, many of the impacts discussed in the EA will be dramatically altered. What tests have been done near the reservoir and downstream water areas to test for hydraulic connectivity?**

The reservoir is located on private lands surrounded by sections of public land. Because BLM has no authority over this pond, the types of tests made to determine that infiltration rates were negligible are not known. However, WDEQ/WQD reviewed this information as part of its NPDES submittal and were satisfied enough to approve a permit that allowed no discharge. Additional mitigation described on page 133 of the EA says, "To protect public land, no discharge from the produced water reservoir would be allowed to cross public land surface without BLM's prior approval." Discussion on this page continues that installation of monitoring wells may be required. A monitoring well would be required if water that was required to be contained began to seep or be discharged onto public land.

- www. The reservoir is unlined, how can the operator commit to complete containment?**

The terms of the NPDES permit (Appendix C of the EA) state that the operator is committed to complete containment. Approval of this permit was based on the information submitted by the operator to the WDEQ/WQD. The authorization is granted with the understanding that the operator will adhere to the requirements of the NPDES permit. Also see response to 7z.

- xxx. The parties are concerned by numerous statements in the EA regarding the need to meet national energy demands. The parties ask the BLM to state whether any part of the project is related to the implementation of any aspect of the May 2001 National Energy Policy or the creation of the BLM's Energy Office.**

Williams first came to discuss this project with BLM on December 6, 2000, and scoping for the project began in March of 2001. Therefore, it was proposed prior to the release of the National Energy Policy or creation of the Energy Office. Again, exploratory projects give an indication if a play may be economical to develop and/or at what point it may become feasible to develop a particular resource. At this time, it may not be feasible to fully develop resources within the HDEPA. Companies need to systematically identify resources they have within their holdings so that in the future, when energy needs become critical, development of these resources can occur in a timely manner.

8. Biodiversity Associates

- a. The purpose and need for the Hanna Basin project is flawed because it is wholly dependent on the premise that it will meet continuing national needs and economic demands and reduce the country's dependence on foreign fuel sources. However, due to recent collapses in the natural gas market, because of excessive drilling and overproduction, there is currently a glut in the natural gas market. As a result, the nation has more gas than it needs and therefore the premise of the Hanna Draw project does not apply.**

Because natural gas is a clean-burning fuel, it is an integral part of the U.S. energy future. This is an exploratory project, and these types of projects serve to determine where resources exist, even if they are not fully developed at this time. Exploratory projects allow the lessees to gather baseline information about a gas play and determine if and when it

becomes economic to produce. The amount of need for natural gas is cyclic and its need is often dependent on outside influences such as weather and world events. However, the need for this resource will continue, and it can best be served when economically-viable resources can be identified prior to times of need.

b. *The BLM lacks statutory authority to approve coalbed methane projects under the Great Divide RMP.*

The RMP states the entire planning area is open to oil and gas leasing and does not make a distinction 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 CBM development has not been specifically mentioned, the activity is clearly consistent with the terms, conditions, and decisions of the approved plan or plan amendment. 43 CFR 1601.0-5(b).

c. *A survey for occurrences of Gibbon’s beardtongue, Ward’s goldenweed, Nelson’s milkvetch, and blowout penstemon throughout the project area is needed before any ground-disturbing activities can be allowed to commence.*

That is correct. During the on-site inspection which will occur prior to any site-specific development, an examination will be made to see if any threatened and endangered and sensitive plants species are located within the areas to be disturbed. These species were not documented as being present in the HDEPA or adjacent areas (page 108 of the EA).

d. *In addition, the BLM has not clearly disclosed the potential effects of herbicides used to kill noxious weeds.*

Because the potential for invasion, and that the types of weedy species cannot be accurately predicted at this time, the types of treatments that might be used cannot be properly evaluated. It is BLM policy to try to prevent weeds from occurring (proactive instead of reactive) by encouraging the re-establishment of vegetation as soon as possible using weed-free seed and straw. In the event that weeds do become a problem on BLM lands at the project site, an approved Pesticide Use Proposal would be obtained before the application of herbicides or pesticides for the control of non-native invasive species (page 43).

e. *Oil and gas development has been shown to negatively impact sagebrush obligate species such as sage sparrow, Brewer’s sparrow, and sage thrasher. We are concerned that unnecessary road construction within roadless areas will impact BLM Sensitive Species through habitat fragmentation.*

The sage sparrow and the Brewer's sparrow are both sagebrush obligate species that could occur in the area. Because of the inherent mobility and continued availability of suitable habitat on undisturbed lands, the impacts to these species would be minimal. There are no "roadless areas" in the HDEPA, and as it is located within the checkerboard land pattern, no inventories of these areas for roadless or for wilderness values would be conducted because the BLM would have no authority to preclude development on intervening private lands. Only roads necessary for project development will be approved on BLM lands.

- f. *Ground-disturbing activities should not occur within the viewshed of sites eligible for listing on the National Register of Historic Places, whether archaeological or historical sites. In addition, the Arapaho, Shoshone, and other tribes native to this area must be consulted regarding the presence of religious and cultural sites within the project area.***

All appropriate tribes with interest in the area have been notified of this project. The operator must include a cultural report when submitting its APD. As stated on page 147, potential impacts will be mitigated on a case-by-case basis as determined during the site-specific APD and ROW reviews, following the procedures found at 35 CFR 800, the National Cultural Programmatic Agreement and the Wyoming State Protocol. Implementing the mitigation procedures found at 2.1.13.3, Cultural Resources, page 41 of the EA, will minimize impacts to these resources.

- g. *In western Wyoming it has been demonstrated that the construction and use of oilfield development caused game animals to abandon a significant acreage of winter range and drilling caused animals to avoid traditional calving areas. Stipulations protecting big game crucial winter range restricting human activity between November 15 and April 15 should be enforced with no options to grant exceptions.***

The impact analysis on page 138 concurs that some level of habitat displacement noted in pronghorn populations occurs adjacent to oil and gas development; however, the discussion goes on to state that the pronghorn returned to these areas once the source of the disturbance left. It also states that particular studies indicate that mule deer appeared less sensitive to human-caused disturbances than pronghorn. One of the major objectives of this stipulation is to relieve stress on big game herds during the winter seasons, but particularly in times of severe winter conditions.

The RMP allows for consideration of exceptions to wildlife stipulations if it is consistent with and in conformance with the management direction and plans covering the area and all other requirements are met. Approval of an exception request would only be granted after deciding that site-specific conditions are such that the drilling activity would not create a conflict with protection of the wildlife species afforded such protection.

- h. *The proposed pipeline corridor follows rights-of-way granted to the Simpson Ridge Windpower Project and encompasses potential nesting habitat for mountain plover. The pipeline should be re-routed to follow the existing highway to avoid impact to plover recovery.***

The United States Fish and Wildlife Service reviewed the Biological Assessment included as Appendix D of the EA, and in a letter to the BLM dated February 19, 2002, stated its determination that, as long as mitigation measures outlined in the EA are implemented in

full, the project, as proposed, is unlikely to jeopardize the continued existence of the mountain plover.

- i. Dewatering of subsurface aquifers in the floodplain might reduce the number of days that downstream sections of river flow. It could also negatively impact waterfowl, shorebirds, amphibians, aquatic species, riparian plants, wetlands, and terrestrial wildlife. If the quality of the produced water is alkaline or substantially different from water flowing in the Little Medicine Bow River water table, then serious potential for cross-contamination exists in both the upper well bore and at surface pipeline and collection facilities. Accelerated erosion as a result of construction activities and roads could affect water quality in the Little Medicine Bow River, particularly because of the alkaline soils present in the Hanna Draw area. Surface-disturbing activities should be constructed of only pH neutral gravels, and mitigation measures are needed to prevent flow of runoff from roads or other disturbed sites that may impact the Little Medicine Bow River.***

As discussed on page 113 of the EA, samples were taken to determine if the produced CBM water has any connection to the surface water which supplies the North Platte River System, which would result in a depletion to that system. Testing concluded that the well water must have recharged to the aquifer during the last ice age in this region, approximately 5,000 years ago. Based on this finding, production of CBM in this region would not impact water flow in the Medicine Bow River.

Page 44 of the EA states that roads will be constructed with adequate drainage and erosion control structures (i.e., relief culverts, drainage culverts, wing ditches, etc.). The mitigation described in regard to soils on page 47 of the EA discussed that project roads would be crowned, ditched, and appropriately surfaced (e.g., gravel). This would aid in reducing the amount of soils eroding into the watershed from the development of this project. With the implementation of project-wide mitigation designed to protect soils as described in Chapters 2 and 4 of the EA, impacts to soils and soil erosion would be minimized.

- j. In our scoping comments, we requested that the BLM inventory the project for roadless areas larger than 5,000 acres. Because no analysis was presented in the EA with regard to lands that meet the official BLM definition of "roadless" in the project area, it is unknown what the project impact to roadless areas might be. We now reiterate our request and ask the BLM to restrict roads and other surface disturbances from any such lands that are identified.***

Figure 1.2, page 3 of the EA shows the landownership pattern within the HDEPA. The area is located within the checkerboard land pattern. Inventory of roadless areas within the checkerboard will not occur because BLM has no authority over the intervening private/state sections and would be unable to reasonably manage these as roadless or wilderness areas.

- k. Having an unlined reservoir may leak produced waters into the groundwater system and may lead to cross contamination of groundwater and/or surface waters, including the Little Medicine Bow River. The proposed reservoir should be lined with impermeable synthetic liners to prevent percolation of produced water into the ground. We would discourage the retention of the reservoir beyond the lifespan of the project and suggest that the BLM require complete reclamation following the termination of the project.***

The reservoir has been constructed on private land with the approval of the landowner. BLM has no authority over the construction of this pond nor the ability to determine if the pond remains after the exploratory project has been completed. Construction of the pond was approved through the Wyoming State Engineer's Office and the authority overseeing the discharge into the reservoir is the Wyoming Department of Environmental Quality, Water Quality Division.

- l. Complete reclamation, including reseeding with native species, of all well sites, roads, and pipelines, created or upgraded should be required.***

As stated on page 37 of the EA, the long-term goal of the BLM regarding reclamation on all disturbed public lands, is to return the land to conditions approximating those that existed prior to disturbance.

- m. Reserve pits for storage of drilling muds should not only be fenced to protect terrestrial livestock, but should be covered with netting to protect waterfowl and shorebirds. Drilling muds should not be buried on-site but should be removed from the site because toxic substances could be released as liner materials.***

The EA on page 51 states that reserve pits or other project-related impoundments potentially hazardous to wildlife would be adequately protected (e.g., fenced, netted) to prohibit wildlife access in order to protect migratory birds and other wildlife.

- n. The range of alternatives in the Hanna Draw EA was limited to the Proposed Action and No Action alternatives, and given the lack of depth in its analysis, appears to be regarded as a strawman by the BLM.***

According to 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 proposed action does not necessarily mean that alternatives must be analyzed." The Handbook raises the question whether there are reasonable alternatives for satisfying the need for the proposed action, and will these alternatives have meaningful differences in environmental effects. The Proposed Action looks at the impacts of 9 wells, facilities corridors, and interconnect pipelines on federal lands with a total initial disturbance of 162.7 acres and LOP disturbance of 39.7 acres. Because of the small number of wells, changing the number of wells and associated facilities would essentially be the same as analyzing the Proposed Action and would not result in meaningful differences in environmental effects. Alternatives to the interconnect pipeline were considered but not analyzed in detail. The rationale for this is discussed on page 62 of the EA.

- o. Several recent policies has emphasized the need to employ directional drilling technologies. If the Hanna Draw project must proceed, directional drilling techniques should be used to prevent significant impacts to the lands and wildlife within the project area.***

Refer to 7x for the response to this comment.

APPENDIX C

PROJECT-WIDE MITIGATION MEASURES AND PROCEDURES

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Project-Wide Environmental Practices and Protection Measures

The following section describes applicant-committed and agency-required measures and procedures that will be implemented to avoid or mitigate resource or other land use impacts within the HDEPA. The BLM may waive mitigation measures and design features if, after a thorough analysis, the BLM determines that the resource(s) for which the measure was developed will not be impacted and/or alternative BLM-approved measures or guidance for protecting the resource(s) are developed (e.g., alternate survey methodologies). Further site-specific mitigation measures may be identified during NEPA, APD, and ROW application processes.

With the exception of environmental practices and protection measures for cultural resources, paleontological resources, and greater sage-grouse, mitigation measures identified in this EA will be adhered to on federal and private land, subject to landowner preferences or agreements with Williams. Mitigation for cultural resources, paleontological resources, and greater sage-grouse will be applied on all federal land and on private land affected by any federal undertaking unless landowner denial for access is documented in writing.

Preconstruction Planning and Design Measures

Well pads and associated access roads and gathering lines and the interconnect pipeline will be designed and located to minimize disturbance to areas of high wildlife habitat and/or recreational value, including wetlands and riparian areas.

To allow project activities to proceed in restricted areas and/or during periods of restriction (e.g., mild winters, unused raptor nests, or potential greater sage-grouse breeding/nesting sites, etc.), approval from the BLM in consultation with other agency personnel [e.g., Wyoming Game and Fish Department (WGFD), U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (COE), and State Historic Preservation Office (SHPO)] will be required. This approval will be acquired prior to the initiation of specific project activities (i.e., well pad construction, drilling, completion, and facility installation) on areas requiring federal authorization when sensitive resource constraints are involved.

Disposal of Sewage, Garbage, and Other Waste Material

Portable self-contained chemical toilets will be provided for human waste disposal. Upon completion of operations, or as required, toilet holding tanks will be pumped and their contents disposed of at an approved sewage facility in accordance with applicable rules and regulations regarding sewage treatment and disposal. Each well site will be provided with one or more such facilities during drilling and completion operations.

All garbage, trash, refuse, etc., will be collected in self-contained portable dumpsters or trash cages, and, upon completion of operations or as needed, the accumulated trash will be hauled off-site to an approved sanitary landfill. No trash will be placed in the reserve pit.

As soon as practical after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned up, removed from the well location, and disposed of at an approved landfill. No potentially harmful materials or substances will be left on location.

Cultural Resources

Impacts to cultural resources will be mitigated following procedures as specified in 36CFR800 and/or the national programmatic agreement for cultural resources and statewide protocol. Class I and Class III inventories will be conducted prior to disturbance on all federal lands and on state and private lands affected by federal undertakings unless landowner denial for access is documented in writing. Where landowners deny access, alternative cultural resource mitigation resolution methodologies may be applied or the development may be denied. In selected areas identified by the BLM, cultural resource surveys may require testing and/or mitigation to determine significance. All resources identified during these inventories will be evaluated for eligibility for the NRHP by the BLM, and the SHPO will be consulted as necessary under the statewide protocol. In addition, all eligible or listed sites identified in Class I and Class III inventories will be avoided or mitigated, as will areas with high potential for significant cultural deposits--such as aeolian deposits, alluvial deposits along perennial waterways and other major drainages and terraces, and colluvial deposits at the base of low slopes and hills, where possible. If any NRHP (eligible or listed) sites found within proposed disturbance areas cannot be avoided, a data recovery program or other mitigation will be implemented as deemed appropriate by the BLM in consultation with the SHPO, the Advisory Council on Historic Preservation as necessary, and Williams. Cultural sites identified during inventories will be avoided, where possible.

If a large number of sites cannot be avoided or other adverse effects may occur, a programmatic agreement among the aforementioned parties may be developed. Programmatic agreements will usually be in place when properties are subjected to mitigation through data recovery. Additionally, programmatic agreements and/or discovery plans may be required to be in place prior to approval of APD or ROW applications in areas with high densities of cultural resource sites, which may occur along culturally sensitive areas such as the ephemeral drainages that flow through the HDEPA.

In addition to Class I and Class III inventories, construction activities in areas where the BLM believes there is a high potential for buried cultural deposits may be monitored by a BLM-permitted archaeologist. If historic or prehistoric materials are discovered on public land by Williams or its contractors during construction, further surface-disturbing activities at the site (in an area defined by the BLM) will cease immediately, and the BLM will be notified by Williams to assure proper handling of the discovery by qualified archaeologists. An evaluation will be made by the BLM to determine appropriate actions to prevent the loss of significant cultural resources. Williams may be responsible for the cost of site evaluation and mitigation; any decision as to proper mitigation (e.g., data recovery) will be made by the BLM after consulting the SHPO, the Advisory Council on Historic Preservation as appropriate, and Williams.

The BLM will require that all field personnel be informed by Williams of the importance of cultural resources and the regulatory obligations to protect such resources. Any cultural resource (historic or prehistoric site or object) discovered on public land by Williams or any person working on its behalf will be reported immediately to the BLM. The BLM will require Williams to instruct field personnel not to disturb cultural resource sites or collect artifacts and that disturbance and collection of cultural materials from public land is prohibited and against the law.

Paleontological Resources

If paleontological resources are uncovered during ground-disturbing activities, Williams will suspend all operations that may further disturb such materials and immediately contact the BLM, who will arrange for a determination of significance and, if necessary, will recommend a recovery or avoidance plan. Mitigation of paleontological resources will be on a case-by-case basis, and Williams will incur costs associated with BLM-required mitigations. Surface-disturbing activities will not resume until a Notice to Proceed is issued by the BLM.

Non-native Invasive Species

Williams will control non-native invasive species along ROWs and at wellpads, as well as on areas where the weeds originate on the ROW and invade adjacent areas. A list of non-native invasive species is provided in Section 3.2.1.3, which was obtained from the BLM and Carbon County Weed and Pest Office. On BLM lands, an approved Pesticide Use Proposal will be obtained before the application of herbicides or other pesticides for the control of non-native invasive species.

Herbicide applications will be kept at least 500 ft from known special status plant populations.

Removal or disturbance of vegetation will be kept to a minimum through construction site management by utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, and other appropriate means.

Williams will seed and stabilize disturbed areas in accordance with BLM-approved reclamation guidelines and/or private landowner specifications.

Vegetation

Removal or disturbance of vegetation will be kept to a minimum through construction site management by utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, and other appropriate means.

Vegetation and soil removal will be accomplished in a manner that will minimize erosion and sedimentation.

Williams will seed and stabilize disturbed areas in accordance with BLM-approved reclamation guidelines and/or private landowner specifications.

Wetlands, Other Special Aquatic Sites, and Other Waters of the U.S.

Williams will evaluate all project facility sites for occurrence of wetlands, other special aquatic sites, and other waters of the U.S. according to COE's requirements. Efforts will be made to avoid these sensitive areas. If wetlands or other special aquatic sites, riparian areas, streams, and WDEQ Section 401 ephemeral/intermittent stream channels are likely to be disturbed, COE Section 404 permits/authorizations will be obtained as necessary, and appropriate mitigation will be implemented.

Road Construction/Transportation

Existing roads will be used to the maximum extent possible and upgraded as necessary. To decrease potential impacts, the number and mileage of roads will be limited by discouraging development of looped roads and by accessing wells from short resource roads off local roads. All roads will be constructed for the specific purpose of field development. Site-specific analysis under standard BLM procedures will be conducted for all roads during development.

All roads will be constructed with adequate drainage and erosion control structures (i.e., relief culverts, drainage culverts, wing ditches, etc.). Details will be provided in each APD and ROW application.

Roads will be built, surfaced, and maintained to provide safe operating conditions at all times as determined by the BLM, and all roads in areas of rough terrain or high erosion potential will be designed and monitored during construction by a professional engineer. The area disturbed will be minimized to reduce both impacts and the area requiring reclamation.

All development activities along approved ROWs will be restricted to areas authorized in approved ROWs.

Available topsoil (up to 12 inches) will be stripped from all road corridors prior to commencement of construction activities, stockpiled, and redistributed and reseeded on backslope areas of the borrow ditch after completion of road construction activities. Borrow ditches will be reseeded in the first appropriate season after initial disturbance.

All project-related roads not required for routine operation and maintenance of producing wells or ancillary facilities will be closed and reclaimed as soon as possible as directed by the BLM or private landowner. As necessary, these roads will be permanently blocked, recontoured, reclaimed, and revegetated by Williams, as will disturbed areas associated with permanently plugged and abandoned wells.

Williams will be responsible for maintenance of roads in the HDEPA and for closure of roads following production activities.

Williams will maintain roads in a safe usable condition. A regular maintenance program will include, but not be limited to, blading, ditching, culvert and cattleguard maintenance/replacement, and surfacing, as needed. Design, construction, and maintenance of roads will be in compliance with the standards contained in BLM Manual 9113: Roads (BLM 1985), and in the "Gold Book," *Oil and Gas Surface Operating Standards for Oil and Gas Exploration and Development, Third Edition* (BLM and U.S. Forest Service 1989). No off-road travel will occur, except in emergency situations.

During drilling and production operations, traffic will be restricted to Carbon County Road 291 and roads developed for the project. Use of unimproved roads will be allowed only in emergency situations. Speed limits will be set commensurate with road type, traffic volume, vehicle types, and site-specific conditions, as necessary, to assure safe and efficient traffic flows. Signs will be placed along roads, as necessary, to identify speed limits, travel restrictions, and other standard traffic control information. In addition, newly-developed or improved roads through crucial wildlife areas will be gated and locked as directed by the BLM to prevent unnecessary wildlife disturbances.

Williams will comply with existing federal, state, and county requirements and restrictions to protect road networks and the traveling public.

Special arrangement will be made with the Wyoming Department of Transportation (WDOT) and Carbon County to transport oversize loads to the HDEPA. Otherwise, load limits will be observed at all times to prevent damage to existing road surfaces.

Hazardous Materials

Williams and its contractors will manage all hazardous materials in compliance with all federal, state, and local regulations. If necessary, a Spill Prevention Control and Countermeasure (SPCC) Plan will be in place and will be followed in the event of a spill. Williams will prepare a field-wide SPCC Plan and, after each well is drilled and determined to be suitable for production, will prepare a SPCC Plan specifically for that well. Copies of the SPCC Plans will be given to all appropriate Williams personnel, contractors, and field personnel and will also be available at Williams Denver, Colorado, office.

Air Quality

Williams will adhere to all applicable WAAQS, NAAQS, and permit requirements, including preconstruction testing, operating permits, and other regulations, as required by the WDEQ/AQD.

Williams will initiate immediate abatement of fugitive dust by application of water, chemical dust suppressants, or other measures on federal lands and during times of high use (i.e., construction, drilling, and workover operations) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ/AQD. These concerns include, but are not limited to, potential exceedences of applicable air quality standards. The BLM will approve dust control measures, locations, and application rates. If watering is the approved control measure, Williams will obtain water from BLM-approved sources, possibly including the water produced from existing CBM wells. Use of produced water for uses other than disposal in the reservoir will be approved by WDEQ prior to implementing the alternate use.

Topography and Physiography

The BLM may deny all proposed surface disturbances, except those associated with pipeline construction, within 500 ft of perennial surface water and/or wetland areas and/or within 100 ft of intermittent and ephemeral drainage channels. Additionally, the BLM may deny activities in areas with high erosion potential and/or rugged topography. Any disturbance in the aforementioned areas will require site-specific mitigations. All roads will be crowned, ditched, and appropriately surfaced (e.g., graveled).

Areas with high erosion potential and/or rugged topography (i.e., steep slopes, stabilized sand dunes, floodplains, unstable soils) will be avoided where practical. Special mitigation measures to control erosion will be applied to such areas if they are disturbed.

Upon completion of construction and/or production activities, Williams will restore the topography to near pre-existing contours at well locations, facilities corridors, pipelines, and other facility sites.

Soils

The BLM may deny all proposed surface disturbances, except those associated with pipeline construction, within 500 ft of perennial surface water and/or wetland areas and/or within 100 ft of intermittent and ephemeral drainage channels.

All roads will be crowned, ditched, and appropriately surfaced (e.g., graveled). The BLM may require Williams to apply gravel or other appropriate road-surfacing materials to specific HDEPA roads. Five feet of fill may be required over reclaimed reserve pits. The BLM may also limit surface disturbance (e.g., limiting ROW surface grading) during gas and water line and interconnect pipeline construction.

Sufficient topsoil to facilitate revegetation will be segregated from subsoils during all construction operations and returned to the surface upon completion of operations. Topsoil stockpiles will be seeded or otherwise protected to prevent erosion and to maintain soil microflora and microfauna.

Williams will keep the area of disturbance to the minimum necessary for drilling activities and subsequent production activities while providing for safety.

No off-road travel will occur except in emergency situations.

Williams will minimize project-related travel during periods when soils are saturated and excessive road rutting (e.g., >4 inches) may occur.

Where practical, Williams will locate gas and water gathering lines immediately adjacent to roads or existing utility corridors to avoid creating additional disturbance.

Surface disturbance and/or occupancy will not occur on slopes in excess of 25%, nor will construction occur with frozen or saturated soil material or when watershed damage is likely, unless an adequate plan is submitted to the BLM that demonstrates potential impacts will be mitigated.

Temporary erosion control measures such as mulch, jute netting, or other appropriate methods will be used on unstable soils, steep slopes, and wetland areas to prevent erosion and sedimentation until vegetation becomes established.

Williams will minimize disturbance to vegetated cuts and fills on new and existing roads.

Williams will replace topsoil or suitable growth materials over all disturbed surfaces prior to revegetation.

Williams will revegetate all disturbed sites as soon as practical following disturbance.

Water Resources

Williams will adhere to the mitigation and monitoring measures identified in WDEQ/WQD water discharge permits. All project actions will be conducted in compliance with the *Clean Water Act*.

Williams will follow all practical alternatives and designs to limit disturbance within drainage channels, including ephemeral and intermittent draws.

The BLM may deny all proposed surface disturbances, except those associated with interconnect pipeline construction, within 500 ft of perennial surface water and/or wetland areas and/or within 100 ft of intermittent and ephemeral drainage channels.

All roads on federal lands will be crowned, ditched, and appropriately surfaced (e.g., graveled). The BLM may require Williams to apply gravel or other appropriate road-surfacing materials to specific HDEPA roads on federal land. Five feet of fill may be required over reclaimed reserve pits. The BLM may also limit surface disturbance (e.g., limiting ROW surface grading) during gas and water line and interconnect pipeline construction.

Williams will complete the necessary notifications, documentation, or permit acquisition to ensure project compliance with Sections 401 and 404 of the *Clean Water Act*.

No surface disturbance will occur within 100 ft of intermittent and ephemeral drainages, where practical.

Where wetlands, riparian areas, or stream, river, or ephemeral drainage channels must be disturbed, the following measures will be employed.

1. Wetland and flood-prone areas will be crossed during dry conditions (i.e., late summer, fall, or dry winters). Winter construction activities will only occur prior to soil freezing or after soils have thawed.
2. Streams, wetlands, and riparian areas disturbed during project construction will be restored as near as practicable to pre-project conditions. If impermeable soils contributed to wetland formation, soils will be compacted to re-establish impermeability.
3. Perennial water crossings and facilities construction adjacent to such waters will not be constructed during important fish spawning periods in those waters.

4. Streams will be crossed perpendicular to flow, where practical.
5. Wetland topsoil will be selectively handled.
6. Recontouring and BLM-approved native species will be used to revegetate the banks to aid in soil stabilization.
7. Revegetation operations will begin on impacted areas in the first appropriate season after completion of project activities.

The discharge of all water (storm water, produced water) will occur in conformance with WDEQ/WQD, BLM, and WOGCC rules and regulations (WDEQ 1978; *BLM Onshore Oil and Gas Order No. 7*).

Mitigation to lessen any impacts from flooding or high flows during and after construction will include the re-establishment of existing contours, implementation of proper erosion and sediment control procedures (e.g., install interceptor ditches around well pads, sediment traps, waterbars, etc.), and prompt revegetation of all disturbed areas.

Current water uses on and adjacent to the HDEPA will be protected, and project activities will be conducted to prevent adverse effects on water quality and quantity as required by federal and state regulations.

BLM/WOGCC casing and cementing requirements will be implemented to protect all subsurface mineral- and water-bearing zones, in accordance with standard oilfield practices.

Noise and Odor

Noise and odor on the HDEPA will be minimized by muffling and maintaining all internal combustion engines.

Wildlife and Fisheries

Removal or disturbance of vegetation will be minimized through construction site management (e.g., by utilizing previously disturbed areas, using existing ROWs, designating limited equipment/materials storage yards and staging areas, scalping), and Williams will develop and implement detailed reclamation specifications including stabilizing and revegetating disturbed areas to minimize impacts from project-related activities.

To minimize wildlife mortality due to vehicle collisions, Williams will advise project personnel regarding appropriate speed limits on designated access roads. Potential increases in poaching will be minimized through employee and contractor education regarding wildlife laws. If violations are discovered, the offending employee or contractor will be disciplined and may be dismissed by Williams and/or prosecuted by the WGFD and/or USFWS.

Firearms and dogs will not be allowed on-site by project employees. Williams will enforce its company's existing drug, alcohol, and firearms policies.

To protect wildlife habitat, project-related travel will be restricted to designated access roads--no off-road travel will be allowed except in emergencies.

Potential impacts to fisheries will be minimized by using proper erosion control techniques (e.g., water bars, jute netting, rip-rap, mulch). Construction within 500 ft of open water and 100 ft of intermittent or ephemeral

channels will be avoided unless otherwise authorized by the BLM. Channel crossings requiring trenching will be constructed when flows are not expected (late summer or fall). All necessary crossings will be constructed nearly perpendicular (at right angles) to flow.

Reserve pits or other project-related impoundments potentially hazardous to wildlife will be adequately protected (e.g., fenced, netted) to prohibit wildlife access as directed by the BLM and to ensure protection of migratory birds and other wildlife.

Williams will implement policies designed to control poaching and littering and will notify all employees (contract and company) that conviction of a major game violation may result in disciplinary action. Contractors will be informed that any intentional poaching or littering within the HDEPA may result in dismissal.

Well construction and drilling activities and other facilities development on crucial big game winter range designated in this EA will be curtailed during critical winter periods (November 15 through April 30) unless exceptions are granted by the BLM pursuant to its rules, regulations, and policies.

ROW fence erection will be minimized and any necessary ROW fences will meet BLM and WGFD approval for facilitating wildlife movement. Wildlife-proof fencing will be constructed around areas potentially hazardous to wildlife (e.g., reserve pit, toxic materials storage location) as deemed necessary by the BLM and around reclaimed areas if it is determined that wildlife use is impeding successful re-establishment of vegetation.

Proposed disturbance within 0.5 to 1.0 mi of identified raptor nests will require survey by a qualified biologist to determine nest activity status prior to commencement of drilling and construction during the raptor nesting period. If an active raptor nest is identified within 0.5-1.0 mi (depending on species and line of sight) of a proposed site, Williams will restrict construction during the critical nesting season for that species.

Known active greater sage-grouse leks and adjacent public lands (2.0-mi radius from lek centers) will be avoided during the breeding and nesting season (March 1 through June 30) and no surface occupancy will be allowed on public lands within 0.25 mi of known active greater sage-grouse lek sites. Construction activities on public lands in greater sage-grouse nesting habitat within 2.0 mi of active greater sage-grouse leks will not occur without a BLM-approved biologist first surveying for greater sage-grouse nests, and if a nest is found, the area will be avoided until after nesting is complete.

Threatened, Endangered, Proposed, Candidate, and Sensitive Animal and Plant Species

All Species:

1. BLM will consult with USFWS as required by Section 7 of the *Endangered Species Act* (ESA) to ensure the protection of threatened, endangered, proposed, and candidate (TEP&C) species.
2. To ensure construction activities are conducted in accordance with required mitigations, a BLM-approved biologist will be on-site during construction as deemed appropriate by the BLM and as identified during APD and ROW application processing.
3. Well pads, roads, gas and water gathering lines, the interconnect pipeline, and ancillary facilities will be located and designed to minimize disturbance in areas of high wildlife habitat value [e.g., prairie dog colonies, suitable mountain plover habitat, greater sage-grouse leks, cushion plant communities (mountain plover nesting habitat), playas, wetlands, and riparian areas].

4. Areas with high erosion potential and/or rugged topography (steep slopes, stabilized sand dunes, floodplains, unstable soil) will be avoided, where practical.
5. Areas potentially hazardous to threatened and endangered (T&E) or other sensitive species (e.g., reserve pits, evaporation pits, hazardous material storage areas) will be adequately protected (e.g., fenced, netted) to prevent access by wildlife and to ensure protection of migratory birds and other wildlife as deemed necessary by the BLM.
6. To protect plant populations and wildlife habitat, project-related travel will be restricted to designated access roads--no off-road travel will be allowed except in emergencies.
7. Wildlife-proof fencing will be utilized on reclaimed areas if it is determined that wildlife species and/or livestock are impeding successful vegetation establishment.
8. Williams will finance site-specific surveys for TEP&C and other sensitive plant species [e.g., blowout (Hayden's) penstemon] prior to any surface disturbance in areas determined by the BLM to contain potential habitat for such species (BLM Directive USDI-BLM 6840). These surveys will be completed by a qualified botanist, as authorized by the BLM, and this botanist will be subject to BLM's special status plant survey policy requirements. Data from these surveys will be provided to the BLM, and if any sensitive plant species are found they will be avoided or, if their habitats are found, BLM/USFWS recommendations for avoidance or mitigation will be implemented. Project facilities will be relocated, if deemed necessary by BLM to avoid TEP&C and other sensitive plant species and/or their habitat.
9. Herbicide applications will be prohibited within 500 ft of known sensitive plant populations.
10. Site-specific surveys for TEP&C (e.g., black-footed ferret, mountain plover) and other sensitive animal species will be conducted prior to surface disturbance in areas determined by the BLM to contain potential habitat for such species pursuant to BLM Directive USDI-BLM 6840. These surveys will be completed by the BLM and/or a BLM-authorized Williams-financed biologist prior to disturbance. Surveys will focus on those TEP&C species known to occur on the HDEPA, as well as those potentially occurring in the area. If TEP&C or other sensitive animal species are found on the HDEPA, construction activities will be delayed, the BLM and USFWS will be notified, and appropriate avoidance and/or protection measures will be implemented as determined necessary during conferencing and consultation. Habitats where TEP&C and other sensitive animal species are found or are likely to occur will be avoided, if deemed necessary by BLM, through relocation of project facilities.
11. Pursuant to the ESA, Williams will adhere to all survey, mitigation, and monitoring requirements identified in the Biological Assessment (BA) (Appendix D) and USFWS Biological Opinion (BO) for this project.

Black-footed Ferret

1. Williams and its contractors will be shown how to identify black-footed ferret and their sign and will be provided with information about its habitat requirements, natural history, status, threats, possible impacts of gas development activities, and ways to minimize these impacts.
2. All active white-tailed prairie dog towns/complexes will be mapped within the HDEPA on federal land beginning in 2002 and every three to five years thereafter throughout the LOP. Burrow density

determinations will not be necessary because any colonies within the HDEPA are part of the large complex supporting the reintroduced black-footed ferret population.

3. Attempts will be made to locate all project components at least 50 m (164 ft) from these towns/complexes on federal land to avoid direct town/complex disturbance.
4. Surface-disturbing activities will not occur in potential black-footed ferret habitat (i.e., active prairie dog colonies) on federal land, unless the area has been surveyed within the previous 12 months for black-footed ferret pursuant to USFWS (1989) guidelines or other BLM- and USFWS-approved methodology.
5. In the event a black-footed ferret or its sign is found, the BLM Authorized Officer will stop all action on the application in hand and/or action on any future application that may directly, indirectly, or cumulatively affect the colony/complex and will initiate Section 7(a)(4) conferencing with the USFWS. No project-related activities will be allowed to proceed until the USFWS issues its BO. The USFWS BO will specify when and under what conditions and/or prudent measures the action could proceed or whether the action will be allowed to proceed at all.
6. Williams and its contractors will prohibit project employees from having pet dogs on the HDEPA.
7. All suspected observations of black-footed ferrets, their sign, or carcasses on the HDEPA and the location of the suspected observation, however obtained, will be reported within 24 hours to:

Wildlife Biologist, BLM
Rawlins Field Office
P.O. Box 2407
1300 North Third Street
Rawlins, WY 82301
(307) 328-4200

and

Field Supervisor or Designee, USFWS
Wyoming Field Office
4000 Airport Parkway
Cheyenne, WY 82001.
(307) 772-2374

Observations will include a description including what was seen, time, date, exact location, and observer's name, address, and telephone number. Carcasses or other suspected ferret remains will be collected by the BLM or USFWS employees and deposited with the USFWS, Wyoming Field office.

Mountain Plover

1. Williams and its contractors will be shown how to identify mountain plover and will be provided information about its habitat requirements, natural history, status, threats, and possible impacts of gas development activities. Incidental observations of mountain plovers will be solicited from all field personnel.

2. During the period of May 1-June 15 throughout the LOP, unless otherwise approved by the USFWS, mountain plover surveys will be conducted by the BLM or a Williams-financed, BLM-approved biologist in accordance with existing or revised USFWS guidelines (USFWS 2001).
3. If an active nest and/or mountain plover are found within 0.25 mi of proposed facilities, informal conferencing will occur with the USFWS.
4. If an active nest is found in the survey area, planned activities will be delayed 37 days, or 1 week post-hatching, or if a brood of flightless chicks is observed, activities will be delayed at least 7 days.
5. Where access roads and/or well locations have been constructed prior to the mountain plover nesting season (April 10-July 10) and use of these areas has not been initiated for development actions prior to April 10, a BLM-approved biologist will conduct surveys of these disturbed areas prior to use to determine whether mountain plover are present. In the event plover nesting is occurring, Williams will delay development activities until nesting is complete.
6. If nesting habitat is disturbed, these disturbed areas will be reclaimed to approximate original conditions (topography, vegetation, hydrology, etc.) after completion of activities in the area, in part to ensure suitable mountain plover breeding habitats are present on the reclaimed landscape. Seed mixes and application rates for reclamation in previously suitable mountain plover habitat will be designed to produce stands of sparse low-growing vegetation suitable for plover nesting, while meeting the BLM's requirements for stabilizing soil and controlling weeds. Reclamation will attempt to return the plant community to the pre-existing condition as soon as possible.
7. To minimize destruction of nests and disturbance to breeding plovers from construction and reclamation activities, grading, seeding, or other ground-disturbing activities will not occur from April 10 to July 10, unless surveys within 0.25 mi of project facilities (conducted using USFWS-approved methods) find that no plovers are nesting in the area.
8. All suspected observations of mountain plover adults, eggs, chicks, or carcasses on the HDEPA, however obtained, will be reported within 24 hours to:

Wildlife Biologist, BLM
Rawlins Field Office
P.O. Box 2407
1300 North Third Street
Rawlins, WY 82301
(307) 328-4200

and

Field Supervisor or Designee, USFWS
Wyoming Field Office
4000 Airport Parkway
Cheyenne, WY 82001.
(307) 772-2374

Observations will include a description including what was seen, time, date, exact location, and observer's name, address, and telephone number. Carcasses or other suspected plover remains will be collected by the BLM or USFWS employees and deposited with the USFWS, Wyoming Field Office.

Socioeconomics

Williams will implement hiring policies that encourage the use of local or regional workers.

Livestock/Grazing Management

Williams will coordinate project activities with ranching operations to minimize conflicts with livestock movement or other ranch operations and will maintain all fences, cattle guards, and other livestock-related structures required for their transportation network.

In areas of high livestock use, fencing of reclaimed areas will occur as necessary to ensure successful revegetation.

Land Status/Use

Roads, water and gas collection lines, and pipelines will be located adjacent to existing compatible linear facilities wherever practical.

All abandoned wells will be plugged utilizing BLM, WOGCC, and WDEQ procedures designed to protect subsurface aquifers; procedures may also include MSHA/WOGCC-approved techniques designed to facilitate future surface and subsurface coal mining operations at specific public land locations and in specific coal seams as deemed appropriate by the BLM.

Williams will secure a ROW on public lands from the BLM prior to facilities and pipeline construction or use of other areas and will notify authorized ROW users of any crossings or overlaps. Any associated river, creek, or utility crossing permits will be secured from the appropriate regulatory agency or private entity prior to facilities/pipeline construction.

Care will be used, including hand/shovel exposure where appropriate, for all facilities/pipeline construction work that parallels or crosses existing subsurface ROWs (e.g., pipelines, cables, power lines), and the minimum clearance between Williams's facilities/pipelines and existing features will be 12 inches unless a closer proximity is specifically authorized.

Recreation

BLM will encourage Williams to establish speed limits on project-related roads. Williams will inform its employees, contractors, and subcontractors that long-term camping (greater than 14 days) on federal lands or at federal recreation sites is prohibited.

Visual Resources

All surface facilities within the HDEPA will be designed to minimize disturbance and to conform to standards for the applicable Visual Resource Management (VRM) class (Class III or IV). Facilities will be painted with standard environmental colors to blend with the surrounding landscape.

APPENDIX D

ADDITIONAL
BLM-REQUIRED MITIGATION

APPENDIX D

ADDITIONAL BLM-REQUIRED MITIGATION

The BLM will require site-specific mitigation for activities located in high erosion potential and/or rugged topography. Detailed plans of proposed surface-disturbing actions may be required for developments proposed on slopes and/or in areas where soil or site stability/erodability factors are deemed to be limited by the BLM. This mitigation will reduce the amount of sediment that will enter surface waters due to accelerated erosion from disturbed areas with high erosion potential and/or rugged topography. In the event that satisfactory mitigation cannot be developed, the BLM will deny activities in these areas.

To protect public land, no discharge from the produced water reservoir will be allowed to cross public land surface without BLM's prior approval. The BLM will require the proponent to monitor for conditions that indicate that water may be leaving the reservoir through subsurface infiltration. These conditions include, but are not limited to, recording observations of springs or seeps or changes in vegetation downslope locations on public lands.

All mitigations required by WDEQ/WQD as conditions on the water containment reservoir permit will be required by the BLM.

The BLM will recommend that facilities be sited below ridge lines and screened from known vantage points.

The BLM will require no more than 10 dBA above background levels at sage grouse leks located on public lands. Exceptions to this mitigation may be considered on a case-by-case basis. To comply with these noise limits, the BLM will require compressor engines located on public lands to be enclosed in a building and located at least 600 ft away from sensitive receptors or sensitive resource areas (BLM 1999d).

The BLM will require minimal surface disturbance (e.g., limited ROW surface grading) during gas and water line and interconnect pipeline construction. On public lands where new roads are constructed instead of upgrading existing roads/two-tracks and these new roads make existing roads/two-tracks redundant, the BLM will require reclamation of the existing redundant roads/two-tracks. Both of these measures will slightly reduce both initial and LOP surface disturbance.

The BLM will recommend that facilities be sited below ridge lines and screened from known vantage points. This additional mitigation will reduce the visibility of facilities to the casual observer.

APPENDIX E
MONITORING REQUIREMENTS

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MONITORING REQUIREMENTS

Surface and Ground Water Monitoring Requirements for the Hanna Draw Project

The State of Wyoming Department of Environmental Quality has issued an National Pollutant Discharge Elimination System permit for waters discharged during exploration operations in the Hanna Draw Coalbed Methane (CBM) Exploration project area. The reservoir approved to receive discharged waters is located in the E½, section 13, Township 23 North, Range 81 West. The pond is located on private lands, and the permit requires that all waters discharged, including intercepted runoff, be contained within this reservoir.

Lands under the administration of the Bureau of Land Management surround the lands on which the containment reservoir is located. Because the NPDES permit requires total containment of discharged waters within the reservoir located on private lands, impacts to BLM lands from surface discharge of produced water are not anticipated. Potential impacts of subsurface flow are uncertain.

In accordance with mitigation described in Section 4.1.6.3, in order to protect public land, no discharge from the produced water reservoir would be allowed to cross public land surface without BLM approval. To ensure no surface water impact public lands, as part of this approval, the BLM requires that the proponent take the following steps:

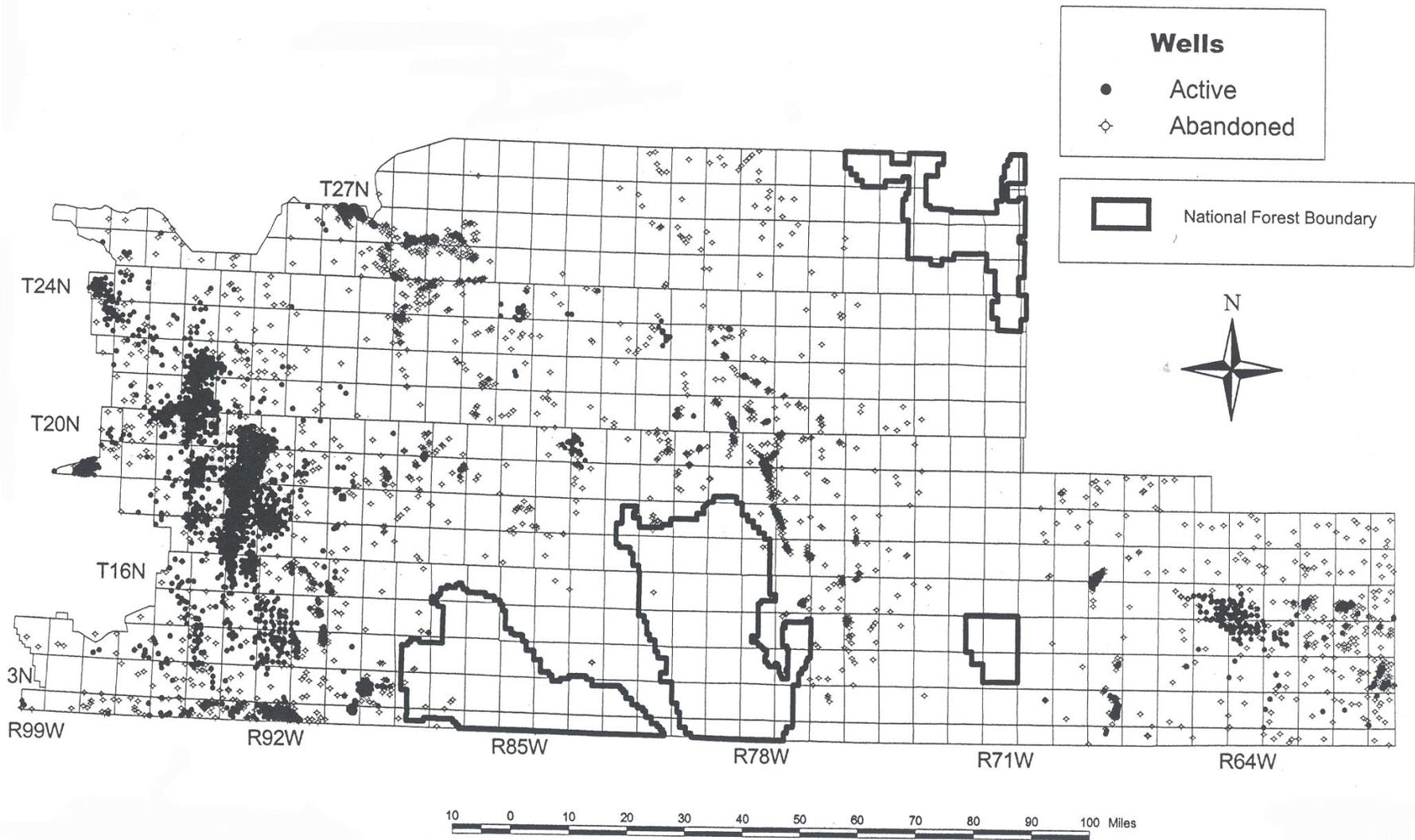
1. The proponent will be required to visually survey all public lands within ¼-mile of the affected drainage down-gradient of the reservoir (constructed to contain water produced from CBM wells associated with this project) to the confluence of the channel with the Medicine Bow River. This survey will be conducted each month during the first year of operation and every three months thereafter during the remaining life of the project.
2. Any observations of springs, seeps, and wetlands outside of the reservoir area will be noted and a written report of findings will be submitted within two weeks of performing the monitoring to the Field Manager, Rawlins Field Office, Box 2407, Rawlins, Wyoming 82301.

Should it become apparent through these observations, or any other information, that water is leaving the reservoir, either through discharge or infiltration and it has reached, or appears it could reach, public lands, a mitigation and monitoring plan will be developed by Williams and approved by the BLM Authorized Officer. This plan could require that monitoring wells and flow measuring devices such as stream gaging flumes will be placed on public lands to determine: the extent of infiltration, increased flow from springs or seeps, quality of water, and what mitigation may be required.

Additional mitigation at 4.1.6.3, states that ground water monitoring, including the installation of ground water monitoring wells, well logging, and pump testing, and water quality analysis may be required by BLM to monitor project impacts on ground water. A monitoring plan will be developed and implemented by Williams, subject to BLM's approval. The CBM wells proposed for this project are located at depths greater than 3,500 feet. There are no known users of water wells or monitoring wells at these depths. If other activities and uses on adjacent lands such as, but not limited to, coal mining water monitoring or water well users, indicate that the CBM exploration project could be potentially impacting these uses (i.e., lowering of water table, drying up of wells, significant changes in water qualities, etc.), the drilling of ground water monitoring wells will be required. In addition, as described in the EA, water users will be compensated for the loss of ground water wells if it is determined that it is as a result of the implementation of this project.

APPENDIX F

MAPS



All wells drilled within Rawlins Field Office boundaries. Data from IHS Energy Group's PI/Dwights PLUS on cd and Wyoming Oil and Gas Conservation Commission online database.